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OMNI-CHANNEL BANKING IN CONTEXT TO CUSTOMER SATISFACTION AND LOYALTY ALONG THE FINANCIAL SERVICES PROCESS

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CONFIDENTIALITY CLAUSE

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AUTHOR'S DECLARATION

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this dissertation are the work of the named candidate and have not been submitted for any other academic award.

Michael Menrad

Abstract

Due to the dynamic developments in digital banking, the integration of distribution channels, the ability to analyse big data and the use of artificial intelligence for interacting with bank customers, the research on customer behaviour is highly relevant for science and practice in order to better understand what customers demand, accept, tolerate, and even reject. The purpose of this research is, therefore, to fill a part of this gap in the literature by expanding our understanding pertaining to how satisfied bank customers are with an operating omni-channel system of a bank and whether customer loyalty can be achieved by managing an omni-channel system. Since the purchase process is very important in understanding overall customer satisfaction, in addition to the close causal relationships associated with customer loyalty, the purchase process was examined on the basis of successive purchase stages. Research involving an omni-channel object in the banking business is still very rare as the networking of complex distribution channels is still in its infancy. For this reason, the initial question is how customer satisfaction with a bank can be conceptualised and operationalised for an omni-channel system? This also leads to questions about the relevant indicators for assessing the customer satisfaction of bank customers using an omni-channel system. Furthermore, the question arises as to the influence of the individual purchase stages on customer satisfaction and ultimately customer loyalty? German Volksbanken Raiffeisenbanken are well advanced in the implementation of an omni-channel system. That is why a quantitative customer survey was conducted to obtain data for this customer group to investigate customer satisfaction ratings and loyalty behaviour. A total of 380 bank customers participated in this study, 320 of whom completed the questionnaire entirely, and thus, their data were usable for the evaluation. Various statistical analyses were applied, including descriptive statistics, data distribution analysis, variance analysis, factor analysis, correlation analysis and structural equation analysis to answer the research questions. The analysis of the complex relationships of the latent variables in the described causal model of this dissertation was conducted using a structural equation model (PLS-SEM). The findings reveal that perceived channel integration has a positive impact on customer satisfaction as well as customer loyalty for financial services. The financial services of finance-related advice, cash custody, financing and payment transactions were investigated in this research as these services usually pass through the entire purchasing process. The results of this investigation confirmed that the satisfaction of bank customers during the purchase process of financial services in the omni-channel environment positively influenced their

overall satisfaction. Furthermore, it was revealed that the overall satisfaction of bank customers is significantly influenced by the time after the purchase of financial services. This purchasing stage also shaped the customers' loyalty to the bank; however, it has been observed that indirect effects from the pre-purchase and purchase stages also had a positive impact on the post-purchase stage. A positive relationship between overall customer satisfaction and customer loyalty was also demonstrated. In this research work, customer loyalty to an omni-channel bank refers to the intention of customers to use the bank's services again in one of its channels and/or to recommend the bank's services to family, friends and/or acquaintances and/or to make further purchases from the bank. The causal model that consisted of reflective and formative indicators was constructed. The path coefficients of the formative indicators provided tangible evidence regarding the respective influence on the latent constructs. Unobserved heterogeneity in the data could be largely excluded by means of a Finite-Mixture-PLS (FIMIX-PLS) analysis.

In summary, the study provided important insights into customer behaviour, establishing customer satisfaction and loyalty in an omni-channel environment of a bank. The purchase process of financial services was integrated into the study as an important process stage, and it was ascertained that the management of an omni-channel environment positively influences customer satisfaction. Furthermore, for the first time, it was possible to verify, with an omni-channel system in use at a bank that perceived channel integration has a positive effect on customer loyalty.

From a practical standpoint, the study provides insights into which trigger points banks should focus on during implementation of the omni-channel system if they want to achieve customer satisfaction and loyalty. The results point to the importance of providing follow-up support to bank customers post-transaction in order to generate overall customer satisfaction and loyal customer behaviour. Finally, the results revealed that the implementation of an omni-channel system would be worthwhile for banks. Furthermore, this dissertation provides directions for future research and identifies limitations.

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List of abbreviations

AIC ..... Akaike information criterion
ANOVA ..... Univariate Analysis of Variance
ATMs ..... Automated Teller Machine
AVE ..... Average Variance Extracted
BCa ..... Bias-corrected and accelerated bootstrapping
BIC ..... Bayesian information criterion
BVR ..... Bundesverband der Deutschen Volksbanken und Raiffeisenbanken
CAIC ..... Consistent Akaike information criterion
CB-SEM ..... Covariance-based structured equation model
CFA ..... Confirmatory Factor Analysis
CITC ..... Corrected Item-Total Correlation
c_{sv} ..... Substantive validity coefficient index
DZ Bank ..... Deutsche Zentral-Genossenschaftsbank
e.g. ..... exempli gratia; example
EDT ..... Expectation Disconfirmation Theory
EFA ..... Explorative factor analysis
EKB ..... Engel-Kollat-Blackwell model
EN ..... Standardised entropy statistics
e-service quality ..... electronic service quality
f^2 ..... *f^2-effect strength*
FIMIX-PLS ..... Finite-Mixture-PLS approach
GoF ..... Goodness-of-fit
HQ ..... Hannan–Quinn information criterion
HTMT ..... Heterotrait-Monotrait ratio of correlation
i.e. ..... id est, that is
IT ..... Information technologies
ITC ..... Item-total Correlation
KMO ..... Kaiser-Meyer-Olkin test
KS test ..... Kolmogorov–Smirnov test
MANOVA ..... Multivariate Analysis of Variance
MAR ..... Missing at random
MCAR ..... Missing completely at random
MDL ..... Minimum description length approach

MIMIC.....Multiple indicators and multiple causes model
MSA .....Measurement of Sampling Adequacy
NMAR .....Not missing at random
PCA .....Principal-Component Analysis
PhD .....Doctor of Philosophy
PLS-SEM.....Partial-least-squares structured equation model
p_{sa}.....Proportion of substantive agreement index
q^2.....*q^2-effect*
Q^2.....Stone-Geisser criterion
R^2 .....Coefficient of determination
resp. .....respectively
SD.....Standard deviation
SEM.....Structural Equation Model(s)/Modeling
SERVQUAL.....Service Quality model
SOR .....Stimulus-Organism-Response framework
SPSS .....Statistical Package for the Social Sciences
SW test.....Shapiro-Wilk test
UTAUT2.....Unified Theory of Acceptance and Use of Technology model
VIF.....Variance Inflation Factor
VR bank.....Volksbank Raiffeisenbank
vs.....versus
Wilk's Λ .....Wilks-Lambda
η^2.....Partial Eta Squared

1 Introduction

The word “omni” descends from Latin, meaning “all”. Defined in linguistic as a prefix, it is placed in front of the root of a word (WordReference.com, 2020), producing words such as omnifarious, omnipotence, omniscient and among others omni-channel.

Omni-channel is a young term that was created to refers to the significant changes brought about by digitalisation, social media, mobile and online channels and, ultimately, by the adaptation of many business models (Verhoef et al., 2007). Companies use omni-channel systems to completely and seamlessly network their distribution channels, as well as to achieve efficiency gains for themselves, and above all for their customers (Yurova et al., 2017; Zhang et al., 2018). Due to the variety of possible touchpoints of customers in relation to a company and the customer’s desire to use several channels simultaneously, companies are changing their multi-channel services towards omni-channel management, in which the boundaries separating offline, online and digital channels disappear (Hamouda, 2019; Hossain et al., 2017). The introduction of an omni-channel necessitates a considerable amount of integration effort for the company, as this affects all channel stages, channel types and channel agents within the company (Saghiri et al., 2017). Banks are also following this approach and implementing omni-channel management (Hamouda, 2019), breaking up the existing structures to create new customer experiences and higher customer value (Menrad, 2020).

1.1 Rationale for Research

The rapid and accelerating disruptive effects of information technologies (IT) on value chains and business models lead to the abolition of the existing cross-sector speed limits, which particularly hits the financial service sector hard and provokes consequences such as disintermediation, loss of earnings and reorganisation of the value chain with a consideration of new players and competitors (Gasser et al., 2017). In addition, there is a changed customer behaviour in terms of not only demanding to increasingly interact with their banks through digital channels but also accepting that the established distribution structures would be adapted by the banks (Geng et al., 2015). The effects on these channels are already visible and will be explained further in a later chapter (2.1.1) of this dissertation.

Overall, it can be stated that banking is a fast-moving sector in the midst of fundamental changes (Klaus & Nguyen, 2013). Customer demand has considerably changed as the use of the Internet continues to explode and new technologies such as smartphone and tablet transactions, as well as social media activities, emerge, along with further decreasing low margins (Leeflang et al., 2014). The banking sector suffers from high competitive pressure, and tech companies are entering the business as its new competitors; digitalisation can cause disruptive effects, and banks are being burdened with high fixed costs and increasing regulatory costs (Buchak et al., 2017; Gasser et al., 2017; Menrad, 2020; Menrad & Varga, 2020; Pratz et al., 2015).

In order for banks to compete, customer satisfaction and quality of services are vital (Akram, 2009; Siddiqi, 2011). Loyal customers can be very decisive in this market environment. Formerly product-oriented banks are becoming increasingly customer-oriented as per the basic principles of relational marketing, whose main objective is ensuring customer loyalty (Beerli et al., 2004).

Service quality, service value and customer satisfaction in the service literature have a high priority and have previously been investigated, both operationally and conceptually (Cronin et al., 2000). Customer satisfaction and customer loyalty are two closely linked concepts (Giering, 2000). This dissertation examined customer satisfaction in more depth and considered it in the pre-purchase stage, purchasing as well as post-transaction stages. Due to the long-term business relationship between bank customers and the bank, the advisory intensive financial services and the often long-term life cycle of banking services (e.g. mortgage financing, investment products), the purchase process of a financial service is of particular importance. This dissertation examined customer satisfaction and customer loyalty in a bank's omni-channel environment. In particular, the drivers of satisfaction were investigated to better understand the needs of a bank customer in such an environment.

1.2 Research Aims and Questions

The aim of this research project is to evaluate an omni-channel system operated by a bank for customer satisfaction regarding the purchase process. The different stages of the purchasing process and partial satisfaction levels for each of these stages are of particular importance as the causes of customer satisfaction and the effect on the overall customer satisfaction and loyalty were to be examined. Furthermore, the integration of the distribution

channels is analysed as the perceived channel integration characterises an omni-channel system in particular. Finally, the impacts of customer satisfaction and the perceived channel integration on the loyalty of bank customers were analysed in an omni-channel environment. In the context of this dissertation, bank customers in the omni-channel system are customers who use different channels within a single purchasing process for different purchase stages (pre-purchase, purchase and post-purchase stages).

The following research questions were defined within the scope of this dissertation in fulfilment of the research objective:

1. How can customer satisfaction with a bank operating an omni-channel system be conceptualised and, subsequently, operationalised, if the process of purchasing before, during and after the purchase of financial services is to be covered?
2. Which customer satisfaction indicators concerning the banking sector have significant relevance for the enhancement of bank customer satisfaction in the purchasing process?
3. Which indicators allow bank customers to perceive the integration of the banks' distribution channels and are, therefore, highly relevant in assessing customer satisfaction related to an omni-channel system?
4. What influence does pre-purchase customer satisfaction exert on the bank customer's purchase satisfaction and purchase satisfaction on post-purchase satisfaction in the overall context of an omni-channel system?
5. What is the impact of pre-purchase, purchase and post-purchase satisfactions on the customer's overall satisfaction with a bank operating an omni-channel system?
6. Does the customer perceived channel integration in an omni-channel system have an impact on overall customer satisfaction?
7. Does customer satisfaction in the pre-purchase, purchase, post-purchase stage, overall satisfaction as well as the perceived channel integration within a bank's omni-channel system influence customer loyalty to the bank?
8. Does the use of the bank's services for financial advice, cash custody, financing and payment have an impact on the satisfaction level of bank customers in the pre-purchase, purchase and post-purchase stages, overall satisfaction as well as loyalty to the bank?

1.3 An Outline of Research

The purpose of this dissertation was to systematically deepen the understanding of customer satisfaction and loyalty for an omni-channel system of a bank. As the purchasing process is very important in understanding overall customer satisfaction, the purchasing process was examined on the basis of successive purchasing stages (pre-purchase, purchase and then post-purchase stages).

Initially, this dissertation faced several challenges in understanding the research area as this area consists of the modules "*Omni-channel banking*," "*in context to customer satisfaction and loyalty*," "*along the financial services process*." The introductory chapter (**Chapter 1**) is followed by a review of the entire theoretical background in **Chapter 2** to establish a common understanding of the essential elements of this dissertation. First, the omni-channel approach in the banking business is explained. This will help gain an understanding of the unique characteristics of the omni-channel approach and explain the challenges it poses for banks and the value it brings to the customers. A definition of omni-channel management in banking is provided to reveal the scope and value of the approach. Second, it is described why customer satisfaction is investigated in this dissertation and how it can be researched. In addition, it is explained how customer satisfaction differs from other related concepts, but nevertheless, complementary model approaches have been formed. This dissertation examined the effects of customer satisfaction on customer loyalty, due to which both the concept of customer loyalty and how it is defined are explained. Following these explanations, the crucial step in the purchasing process for this dissertation is specified. The present author believes that much more in-depth analysis is necessary for assessing customer satisfaction in the banking business and that such an assessment should not be solely based on the overall satisfaction of the customer, but also perceive that the overall process that led to the overall assessment is equally relevant. Banking transactions are multi-layered and complex for many customers, which is why intensive assistance and advice are often provided in the pre-purchase stage. Since customer relationships in banking are often based on long-term cooperation, the grounds for a new business are laid post-transaction. Due to the highly competitive nature of the banking business and the multi-account relationship of many customers, there is a risk that bank customers will take their next business elsewhere, to a competitor. Therefore, maintaining customer loyalty should be of great importance for banks. This context was examined in this dissertation through an omni-channel approach. The second chapter concludes by reviewing the existing studies in the literature, highlighting research gaps and explaining the value added by this dissertation.

Next, **Chapter 3** develops a causal model for the banking business based on an omni-channel approach, which covers customer satisfaction, with a consideration of the purchase process of financial services, and customer loyalty. For this purpose, customer satisfaction with the bank operating an omni-channel system is conceptualised, customer satisfaction is defined and hypotheses are developed, which are subsequently tested through an empirical study. In this chapter, the perception of distribution channel integration is also conceptualised as the effort to implement omni-channel management is justified only when bank customers are aware of it. For this reason, the perception of channel integration is also defined in this chapter. In addition, further hypotheses pertaining to the perceived channel integration are formulated. Finally, in this chapter, the impact of satisfaction on customer loyalty to the bank operating an omni-channel system is explained, customer loyalty in relation to the scope of this dissertation is defined and the final hypotheses on customer loyalty to the omni-channel bank are formulated. With this step, the final causal model was built.

Chapter 4 operationalises the previously established concept and describes the methodology – the procedure of the empirical work and the evaluation. To investigate the specific aspects of customer satisfaction in the banking business in an omni-channel environment and evaluate customer perception of channel integration, exogenous and endogenous measurement constructs were operationalised. The empirical study examines the causal model and the established hypotheses in terms of significance.

Chapter 5 presents the results of the study and ends with a discussion of the findings.

Next, **Chapter 6** addresses the limitations of the research and the practical implications for the banking business. It also points out the possibilities for future research. Finally, **Chapter 7** provides a conclusion.

2 Review of Literature and Research Gap

First, this chapter describes the omni-channel approach, discusses the distribution channels in banking and explains the added value of an omni-channel environment and channel management for a bank. In addition, the channel integration and perceived advantages for the bank customer are explained. Afterwards, customer satisfaction and customer loyalty in relation to the banking business are analysed to study them in the context of an omni-channel system. Subsequently, the purchase process of financial services is explained, along with its components, in order to gain a holistic view of bank customers' individual purchasing behaviour. Finally, this chapter provides an overview of the current state of research and research deficits and explains the motivation behind conducting this study.

2.1 Omni-Channel Approach in Banking

Digitalisation and the developments in digital communication (Hagberg et al., 2016), the use and popularity of smart devices and related technologies (Baptista & Oliveira, 2015; Menrad & Varga, 2020) as well as online services have significantly changed consumer behaviour in relation to the banking business (Gasser et al., 2017; Hamouda, 2019; Huré et al., 2017). Inevitably, this will lead to a revision of the existing bank distribution channels and the introduction of a more progressive and customer-oriented distribution channel environment (Henk & Holthaus, 2015). Ostrom et al. (2015) identify the management of customer experience across complex and diverse offerings, touchpoints and channels and, thus, omni-channel management as one of the most important topics in service research today.

Below, the key touchpoints in banking are discussed; distribution channel approaches are distinguished, and the omni-channel system is described as a holistic approach for bank customers. Finally, the importance of channel integration for the omni-channel approach is discussed.

2.1.1 Touchpoints and Channels in Banking

Key touchpoints in the banking sector include interactions (e.g. condition query, complaint, account opening), direct or indirect contacts between a bank and a customer or an interested party during a purchase process (comprising the pre-purchase and post-purchase stages and also irrespective of the purchase transaction), whereby these interactions may occur across channels and at different times (Stein & Ramaseshan, 2016; Verhoef et al., 2015).

A conceptual framework for touchpoints, in general, was provided by Baxendale et al. (2015), which was then expanded by Lemon and Verhoef (2016), who identifying four categories related to customer experience. The first group was brand-owned touchpoints that are designed by companies and under their control. This group includes all brand-owned media (e.g. advertising, websites, loyalty programs) and brand-driven elements of the marketing mix (e.g. attributes of products, packaging, services, price, convenience, salesforce). Second, partner-owned touchpoints were identified, whose boundaries with brand-owned touchpoints are vague but indicate the connection to distribution partners. This includes, for instance, the solutions for a cross-company network (uniform app solution, website, flyers, advertisements) of banks such as cooperative banks or savings banks that use a common data centre. The third one is the customer-owned touchpoints that are driven by customer actions and are exclusively determined by the customer (e.g. customer needs, desires, choice of payment method). Fourth, social/external touchpoints were mentioned, which describe the relationships with a third party (e.g. peer influence, environments, recommendations) (Lemon & Verhoef, 2016).

Distribution channel indicates the point-of-sale where products and services are offered (Hsieh et al., 2012; Neslin et al., 2006). The variety of customer needs, demands and possibilities require an adaptation of a channel range, with corresponding channel strategies, to continue to attain the desired customer base (Pentina et al., 2009). For the reasons of competition, cost and customer loyalty, product and service distribution across multiple channels is indispensable (Dholakia et al., 2005). Touchpoints can, therefore, occur within different channels as the customer can select the available and preferred channel based on the situation, but the channels are designed for specific (usually several) touchpoints (Melero et al., 2016).

The traditional way of customer interaction is a branch (Hsieh et al., 2012), which has evolved and is no longer just a personal access point to the service area but has become a hub with additional touchpoints, which helps enhance customer services (Pantano & Viassone, 2015). Nevertheless, the branch business in banking has changed considerably, and customers are less likely to consult local bank employees, as a result of which banks are gradually reducing their branch density despite the increased business volume (Menrad & Varga, 2020). Figure 1 shows the developments in the German banking market between 1999 and 2019.

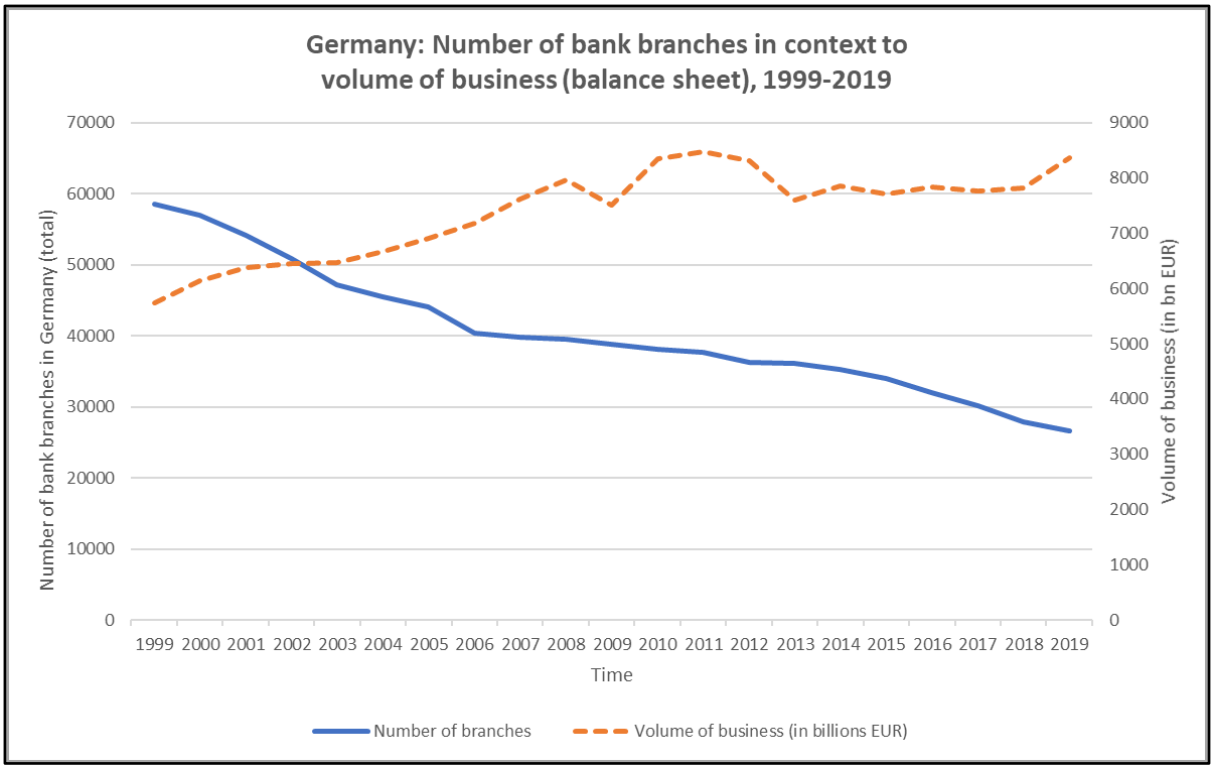

Figure 1: Number of German Bank Branches in the Context of Volume of Business, 1999-2019

Bank customers increasingly access banks using digital channels although touchpoints in banking are very extensive and, in some cases, sector- and region-specific (Deloitte, 2017; Menrad, 2020; Reis et al., 2019; Sousa et al., 2015). Figure 2 provides an overview of the main channels in banking business and illustrates an omni-channel environment. Customer-bank interactions are categorised as face-to-face interaction, digital communication and a mixture of both - defined here as personal/digital banking. The banking channels are seamlessly interconnected; the interactions take place in each channel bilaterally to the customer, and the customer has the choice of touchpoint. The network is also designed for third-party providers, so an application programming interface to cooperation partners is included in this case (Menrad, 2020). Despite its still high relevance (Zhou et al., 2017), the frequency of face-to-face banking (Froehle & Roth, 2004) by customers are decreasing, while digital touchpoints are gaining importance (Menrad & Varga, 2020; Tesche, 2018). Moreover, bank customers operate increasingly in a hybrid, channel-independent and, therefore, multichannel manner (Menrad, 2020; Zhou et al., 2017). The decrease in branches leads to an increase in the use of digital channels in place of face-to-face activities. These include activities that are less complex, routine and transaction-driven (Menrad, 2020; Sousa et al., 2015).

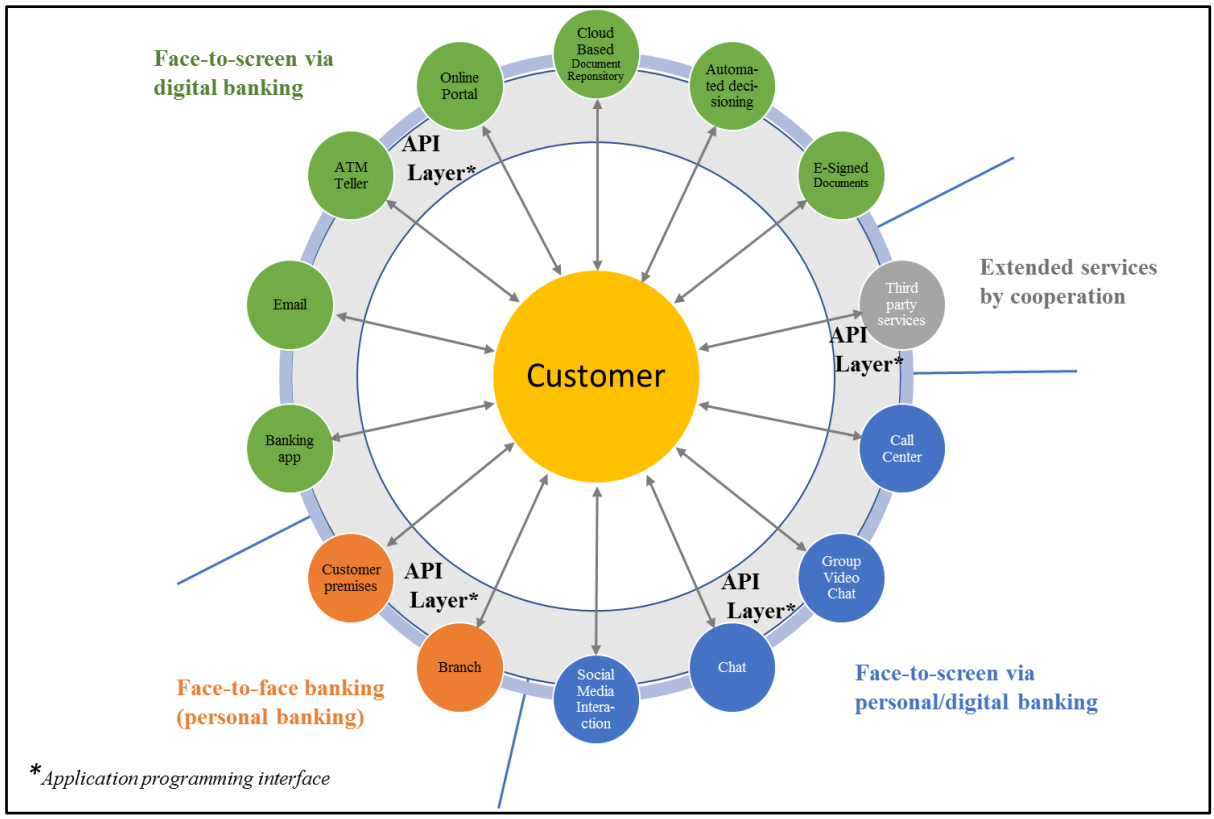

Figure 2: Data Management in an Omni-Channel Environment

Source: Menrad (2020)

Bieberstein (2015), instead, distinguishes between personal and impersonal distribution by assigning branches, field service and call centers to personal distribution and digital channels (e.g. online-portal, banking apps, Automated Teller Machines [ATMs]) to impersonal distribution. In addition, he identifies opening hours, premises, costs, the scope of services and security aspects as the differentiating factors of these channels.

Digital banking is partly referred to in the literature as electronic banking, virtual banking, self-service banking, banking 2.0, electronic fund transfer (Shaikh & Karjaluoto, 2016); according to Shaikh & Karjaluoto (2016), it is defined as a collective term for various customer access points for banks customers, who uses technology (e.g. the Internet, smartphone, tablet, ATM) for financial services, independent of time and space. Digital banking business, particularly the Internet and mobile banking, is highly valued by bank customers and tends to continue developing positively (Calisir & Gumussoy, 2008; Liu et al., 2016; Mavri & Ioannou, 2006; Sia et al., 2016). In view of increased customer acceptance and the widespread use of the Internet, e-commerce and smartphones, bank customers are increasingly using computers, tablets and smartphones for banking transactions (Menrad & Varga, 2020). That is

why Sia et al. (2016) consider a digital business strategy to be essential in the banking business. In this context, e-commerce includes digital initiation, negotiation and transaction processing (Clement et al., 2001). Digital banking and, in particular, mobile banking allows customers to access banks without spatial or temporal restrictions; thus, neglecting necessary framework conditions for technology and network, these channels enable a higher service as well as a high level of convenience for progressive and technology-savvy customers (Menrad & Varga, 2020; Zhou, 2011).

This dissertation examined *the distribution channels branches, online portal (Internet banking)* and *banking app (mobile banking)*, since more complex financial services with an increased need for information for customers (this is also the customer requirement) continue to be advised in the branch (Bieberstein, 2015; Dümmler & Steinhoff, 2015a; Frambach et al., 2007; Oberle, 2015), and as customers mostly use the Internet or smartphones during the pre-purchase and post-purchase stage (Coelho & Easingwood, 2008; Cortiñas et al., 2010; Hallikainen et al., 2019; Sousa et al., 2015). Nevertheless, the dynamic developments in Internet banking and mobile banking have a direct impact on the branch business (e.g. video consulting, product information, customised app solutions, extended product range) (Menrad & Varga, 2020; Oberle, 2015). That is why these two important channels were also being examined in this research, in addition to the branch. A reference is also made to section 2.4, which describes the purchasing stage and customer behaviour. Furthermore, it should be noted that the scope of this dissertation is the purchase process and not the information process, which is why the distribution channels and not the information channels were examined (Heinemann, 2011).

2.1.2 Distribution Channel Development and Characteristics

The distribution channel connects a bank and a customer or a prospective customer with a business activity. The channel is the connection through which a service is offered and, in the narrower sense, excludes communication or media channels since the advertising aspects for the service are dominant (Bieberstein, 2015).

There is no consensus among scientists regarding the exact delimitation of the distribution channel approaches. Therefore, Picot-Coupey et al. (2016) conducted a literature review and classified the approaches – multi-channel, integrated multi-channel, cross-channel and, finally, omni-channel – as the most recent stages of development as per the definitions used. In the literature, a number of combinations of terms are used to describe the management

of a distribution channel. Hence, Schröder (2005) explains that the variants are usually composed of three parts. The first part explains the technical aspect (single, multi, cross or omni), the second part the object (usually the channel) and, finally, the last part describes the usage (management, marketing, system, commerce, sales, retailing or banking). In order to distinguish the conceptual subtleties of the various distribution channels, references were made to Beck and Rygl (2015), Bernon et al. (2016) and Reis et al. (2019). In addition to the distribution approaches mentioned by Picot-Coupey et al. (2016) above, single-channel management operates only with one distribution channel, and customers interact with their banks only through this channel (Aradhana, 2016; Chiu et al., 2011; Hsieh et al., 2012; Menrad, 2020). Using a multi-channel approach, banks offer their customers and prospects information, products, services and support (or any combination thereof) through two or more synchronised channels (Coelho & Easingwood, 2008; Gassenheimer et al., 2007; Menrad, 2020; Rangaswamy & Bruggen, 2005). While Sousa and Voss (2004), Neslin et al. (2006) and Zhang et al. (2010) define multi-channel services by connecting the digital and the physical components of a distribution channel, Beck and Rygl (2015) and Jeanpert and Paché (2016) regard the cross-channel as the most frequently used channel in the banking business since customers can initialise impulses and make requests in one channel and, subsequently, continue with another channel (Menrad, 2020). Finally, the omni-channel is rated as highly important by both scientists and managers in meeting customer requirements and maintaining competitiveness (Hamouda, 2019; Melero et al., 2016; Ostrom et al., 2015). The omni-channel approach enables the complete networking and integration of the channels into a comprehensive, simultaneous and seamless sales channel, which fully integrates information, communication and sales of all existing channels (Aradhana, 2016; Menrad, 2020; Rigby, 2011; Verhoef et al., 2015). Multi-, cross- and omni-channel approaches differ essentially in their degree of channel integration (Cao & Li, 2015; Hamouda, 2019; Lewis et al., 2014). Although Verhoef et al. (2015) mention that that an omni-channel approach, firstly, tends to involve more channels, and secondly, it implies a broader perspective as it includes not only channels but also touchpoints; thirdly, the channels are interconnected such that the borders between the channels disappear; and fourthly, brand experience is specific (Picot-Coupey et al., 2016). Table 1 summarises the main differences between the distribution approaches comparatively.

Table 1: Description of the Different Distribution Channel Characteristics
Source: Menrad (2020)

Characteristic	Single-channel	Multi-channel	Cross-channel	Omni-channel
Contact points customer/bank	One-dimensional	Different channels	Channel and touchpoints	Channels and touchpoints
Channel integration	One-dimensional	Channel switch is not supported	Channel and touchpoint switch possible with restrictions	Possible without restrictions
Management/Support	Limited to channel	Disjunct	Individual. Channel and touchpoint pairing occurs	Across all channels and touchpoints
Interaction	One-dimensional	Two-way	Unlimited	Unlimited
Network	No data transfer	No data transfer across channels	Possible with limitations	Unlimited
Customer perspective	Per Channel	Per Channel	Per channel. Selectively holistic	Holistic
Bank perspective	Per Channel	Per Channel	Per Channel	Holistic; however with sales planning and controlling for each distribution channel

2.1.3 Definition of Omni-Channel Management in Banking

This dissertation considers omni-channel management for banking business based on the definition of Menrad (2020), which is, in turn, based on the general definition of Verhoef et al. (2015) for omni-channel management. According to this, omni-channel management is the *synergetic management of all essential and long-term distribution channels and touchpoints of a bank and its essential cooperation partners, in such a way that the networked range of services can be perceived as optimal by the customer throughout the entire financial service process. The customer decides independently and according to their present needs which contact point is the most ideal. For the customer, the previously different bank channels are perceived as one, only the form of communication is of significance for the customer now.*

This definition includes third-party business with close distribution partners. These include, for example, distribution partners for high net worth clients, insurance companies, mortgage banks, and custodians. Distribution partners are particularly important for universal banks in order to meet customer needs and to exclude gaps in offerings (Menrad, 2020; Ogwueleka et al., 2015). This integrative approach aims to create perceptible value for the customer and, thus, increases their satisfaction levels (Menrad, 2020).

2.1.4 Omni-Channel Integration Quality and Perceived Customer Value

Enhanced channel *integration* is one of the most important unique features in an omni-channel approach as compared to the previous approaches (Hamouda, 2019; Lazaris & Vrechopoulos, 2014). Saghiri et al. (2017) state that without complete integration of the channels, an omni-channel approach would never evolve; therefore, the quality of integration

is critical for success (Hamouda, 2019; Hossain et al., 2017; Shen et al., 2018). Channel integration is concerned with the management of touchpoints for the customer and the coordination of existing channels (Seck & Philippe, 2013) in order to achieve a seamless and completely networked real-time channel interaction (Brynjolfsson et al., 2013; Goersch, 2002). The degree of channel integration determines the *integration quality* (Sousa & Voss, 2006; Zhang et al., 2018). Saghiri et al. (2017) define omni-channel integration in three dimensions: - channel stage, channel type and channel agent. First, the integration between channel stages allows channel hopping without confusion, the loss of control and data; second, the integration between channel types considers the cooperation between channels that are used to lead to synchronised operations and decisions; third, the integration between channel agents considers the coordination of the various agents involved.

Channel integration benefits both the customer, who can take advantage of each channel for their specific situation, and the company, which can better synchronise, coordinate and optimise the channels (Hamouda, 2019; Shen et al., 2018). Both perspectives were subjected to analysis in previous channel research. Verhoef et al. (2015) provide an overview. The previous focus of the omni-channel approach was only on the banks' perspective, neglecting the inclusion of the customer perspective. In light of such neglect, Verhoef et al. (2015) initiated a call for research, and accordingly, this dissertation examined the customer's point of view.

Customers will choose to use an omni-channel environment if they recognise an additional value in terms of convenience in location, saving of money and time, transaction confidence, increasing personal control, fast problem-solving, and others (Hsiao et al., 2012). This *perceived value* is individual customers' evaluation of a service on the basis of what they had expected and, subsequently, perceived (Zeithaml, 1988). The perceived value and customer satisfaction are very important topics for this dissertation. Section 2.2 discusses the latter topic.

2.2 Significance of Customer Satisfaction

The central objective of a marketing concept is the achievement of the company's maximum customer orientation in order to fulfil existing and prospective customer needs, which, in turn, accomplishes the company's own business objectives (Runia et al., 2011). Therefore, customer satisfaction is one of the most important business goals of companies that are competitive, profit-seeking and long-term oriented (Belás et al., 2015; Belás & Gabčová, 2014; Churchill & Surprenant, 1982; Oliver, 1980). Customers are categorised as an intangible

asset of a company and reported in the balance sheet as goodwill (Sacui, 2016). The amount is determined by the current and future income generated for the company from the customer (Nerdinger & Neumann, 2007). That is why customer satisfaction as a business target is widely accepted (Stauss, 1999) and is the target of marketing activities (Fournier & Mick, 1999) and the fundamental for securing loyal customer relationships (Giering, 2000; Hallowell, 1996). As a decisive link between customer behaviour and the company, satisfaction, in close connection with loyalty, forms the backbone for higher turnover, repeat and additional purchases as well as recommendations (Hallowell, 1996; Heskett et al., 1994; Kuss & Tomczak, 2000; Storbacka et al., 1994). Accordingly, maintaining a favourable customer satisfaction can lead companies internally to more precise sales forecasts (Haislip & Richardson, 2017) and externally to further customer acquisition through the recommendations, as well as higher sales through additional cross-selling (Wangenheim & Bayón, 2007). In addition, satisfaction is also a relevant component of customer complaints, especially when customer expectations are not fulfilled and minimum customer expectation (below a still tolerable expectation) is undercut (Fornell et al., 1996; Santos & Boote, 2003). Consistent processing of customer complaints can lead to a sustainable positive customer experience, which would support the establishment of long-term customer relationships and transformation of a company into a quality provider (Fornell & Westbrook, 1984; Homburg et al., 2013; Homburg & Fürst, 2005; Umashankar et al., 2017; Yilmaz et al., 2016). However, this requires an authentic openness to feedback in the corporate culture (Umashankar et al., 2017). During 1965–1975, the analysis of the customer complaint behaviour was the basis for satisfaction research in addition to other business considerations (Russo, 1979).

The above-mentioned aspects are of crucial importance for a full-service bank since customer satisfaction is very often central to the success of a bank that operates with high competition, regulatory requirements and considerable overheads (Belás et al., 2015; Belás & Gabčová, 2016; Chavan & Ahmad, 2013; Keisidou et al., 2013). Subashini (2016) provides a literature review of studies on customer satisfaction in the financial services industry and, thus, an overview of previous research priorities. Customer satisfaction is an integral part of the bank's strategy, a central indicator and evaluation centre for customer access, a guideline for operational processes and a reflector of the performance of different services (Munari et al., 2013).

2.2.1 Explanatory Cognitive and Behavioural Approaches

Customer satisfaction is a subjective, theoretical and hypothetical construct that cannot be directly observed by a single parameter (Giese & Cote, 2000; Schütze, 1992). Occasionally, it is described as a feeling towards a service or a product, selectively as a subjective evaluation process (Isac & Rusu, 2014; Jamal & Naser, 2002; Tse & Wilton, 1988; Westbrook, 1980). A variety of definitions and theoretical-conceptual explanatory approaches exist for the construct of customer satisfaction, but there is no general and persistently referenced explanation (Moraru & Duhnea, 2018b). Yüksel and Yüksel (2008), Giese and Cote (2000) and Rudolph (1998) provide an outline of definitions and concept explanations. Despite the multitude of theories and models, a general consensus exists that satisfaction is an ex-post evaluation of customers, a post-purchase phenomenon that assesses customer experiences of services or products (Westbrook & Oliver, 1991). Therefore, it is directly related to an experience, activity or transaction (Churchill & Surprenant, 1982; Oliver, 1980; Schütze, 1992; Westbrook & Oliver, 1991). Meanwhile, this initially strictly cognitive perspective is often supplemented in research by the influence of emotional components (Thaler, 2000), which makes the approach more complex but accurate (Homburg et al., 2006; Mooradian & Oliver, 1997; Oliver, 2010; Richins, 1997; Westbrook & Oliver, 1991). As a result of their home banking study, Wirtz and Bateson (1999) concluded that customer satisfaction is subject to both cognitive and affective influences. Customer satisfaction is seen as a dynamic time-dependent construct where the influence of the cognitive components increases over time, while the influence of emotional components decreases (Homburg et al., 2006).

2.2.2 A Distinction with Other Approaches

Service quality, *attitude* and *loyalty* are terms and concepts that are related to the approach of satisfaction. *Service quality* was substantially determined by Parasuraman, Zeithaml and Berry with their SERVQUAL model, establishing not only some similarities with the approach of customer satisfaction but also quite significant differences (Bloemer et al., 1998; Oliver, 2010; Parasuraman et al., 1985, 1988; Spreng & Mackoy, 1996; Taylor & Baker, 1994). Stauss (1999) and Spreng and Mackoy (1996) provide an overview of scholars dealing with differentiation. Oliver (2010) identified prior experience, connected attributes and dimensions, level of expectation, the influence of affection, conceptional antecedents and temporal aspects as key differentiators. While satisfaction is always linked to the past, since experience is associated with it, quality can be assessed irrespective of experience (Bloemer et

al., 1998; Liljander & Strandvik, 1995; Oliver, 2010; Parasuraman et al., 1988; Rahman et al., 2012). Evaluations of quality are always directly related to a decision-giving characteristic in this context, whereas satisfaction is superordinate, has partial aspects, influenced by other aspects and is summarised as an aggregated assessment of satisfaction, albeit a service or product experience, nevertheless, must have been experienced (Bloemer et al., 1998; Cronin & Taylor, 1992; Oliver, 2010). Moreover, the models differ in terms of the demand level of expectation. Quality is based on the ideal condition; satisfaction is subjective and has different levels of requirements (Churchill & Surprenant, 1982; Giering, 2000; Wirtz, 1993). While customer satisfaction was initially regarded as a purely cognitive decision, as was quality assessment, satisfaction is being increasingly regarded as a cognitive and emotion-dependent decision (Oliver, 2010). Finally, time aspects are relevant as differentiation factors dividing satisfaction into brief and subjective time periods and quality, generally, into longer and more global evaluation periods (Anderson et al., 1994; Fleer, 2016; Giese & Cote, 2000; Oliver, 2010; Sivadas & Baker-Prewitt, 2000). Customer satisfaction is a fragile status that companies must continuously work on in order to prevent the loss of customers and the reduction of customer satisfaction levels. Chandrashekaran et al. (2007) argue that customer satisfaction must be seen as a two-dimensional statistical construct that embodies both the level and the strength to classify reliable and less robust customer relationships. Besides this time aspect to the stability of emotion, customer satisfaction sequentially follows the quality of service or product as perceived by the customer (Anderson et al., 1994; Bloemer et al., 1998; Cronin & Taylor, 1992; Liljander & Strandvik, 1995; Parasuraman et al., 1994; Stauss, 1999; Zeithaml, 1988).

Another concept related to customer satisfaction is *brand attitude* (Oliver, 1980, 2010; Suh & Yi, 2006). By creating brands, companies produce a mood image in the mind of customers and subjective perceptions of a product or service (Patterson, 1999). While attitudes generate particular long-term feelings and are more anticipatory and situation-dependent, customer satisfaction is transient, declarative and experience-dependent (Oliver, 1981; Schütze, 1992; Schwarz, 2007; Spears & Singh, 2004). Empirical studies demonstrate the difference between the satisfaction and attitude (Oliver, 1980; Westbrook & Reilly, 1983). They are determined by cognitive processes and decisions, though not exclusively. Satisfaction assessments, however, have a subjective and direct relationship with experience, which is the main advantage of this concept. On the other hand, attitudes are of product-assessment character and do not necessarily have a direct association with experience (Schütze, 1992; Westbrook &

Reilly, 1983). In addition, time and path-dependent decision components are used selectively as distinguishing features (Churchill & Surprenant, 1982; LaTour & Peat, 1979; Oliver, 1980; Suh & Yi, 2006). In general, distinctions are made among attitudes – post-purchase attitudes in this context, which can be influenced by satisfaction judgements (LaTour & Peat, 1979; Oliver, 1980; Suh & Yi, 2006).

Loyalty is another related concept that is very important to evaluate long-term customer relationships. Due to the focus and scope of this work, this parameter is discussed separately in section 2.3.

2.2.3 Priority of Concepts in the Financial Business

Due to the homogeneity of financial services, a bank can mainly distinguish itself from its competitors by providing high-quality services (Akram, 2009; Siddiqi, 2011). Correspondingly and transformed into steps of a process, customers first perceive service quality, which subsequently leads to customer satisfaction. Akram (2009) provides a literature review on the relationship between service quality and customer satisfaction in the banking business. In this context, it should be considered that service quality is only one of the various factors influencing customer satisfaction (Anderson et al., 1994; Belás & Gabčová, 2016; Cronin & Taylor, 1992; Oliver & DeSarbo, 1988). Customer satisfaction can lead to positive and more far-reaching customer attitudes if the customers are convinced of the quality of the bank's products and services, bearing in mind that well-formed attitudes before a satisfaction verdict reached can lead be different from post-purchase attitude (Oliver, 1980; Suh & Yi, 2006). Summarising the above-mentioned aspects, satisfaction is determined by cognitive and affective aspects; it is not necessarily linked to performance, is more sensitive and not merely a preference, but a result of a customer evaluation (Belás et al., 2015; Belás & Gabčová, 2016; Bena, 2010). Overall, customer satisfaction is, alongside customer loyalty, the most comprehensive construct in banking business that can lead to successful and stable customer business (Belás et al., 2015; Bloemer et al., 1998).

2.2.4 Key Approach: Expectation Disconfirmation Theory (EDT)

Despite the numerous theories to explain satisfaction, the explanatory approach of the EDT by Oliver (1977, 1980) was established and has prevailed in research (Homburg et al., 1998; Nerdinger & Neumann, 2007; Stauss, 1999; Wirtz, 1993). A large number of publications

are based on it (Giering, 2000; Oliver, 2010; Oliver & DeSarbo, 1988; Stauss, 1999). EDT is also referred to as *expectation confirmation theory*, *expectancy disconfirmation model*, *confirmation/ disconfirmation-paradigm*, *disconfirmation-paradigm*, *c/d-paradigm* and others in the literature (Churchill & Surprenant, 1982; Fornell et al., 1996; Giering, 2000; Homburg, 2016; Homburg & Stock-Homburg, 2016; Oliver, 1980, 1981). Based on the idea that customer satisfaction is the result of comparing the perceived idea of the performance with expectations (Churchill & Surprenant, 1982; Oliver, 1980; Oliver & DeSarbo, 1988), the theory compares pre-behaviour and post-behaviour variables (Lin et al., 2005). First, this approach implies that customers have ex-ante expectations of services or products and that the act of purchase or use, subsequently, leads to an ex-post perceived performance influenced by those expectations (Bhattacherjee, 2001; Lin et al., 2005; Santos & Boote, 2003). This evaluation process is presented in Figure 3.

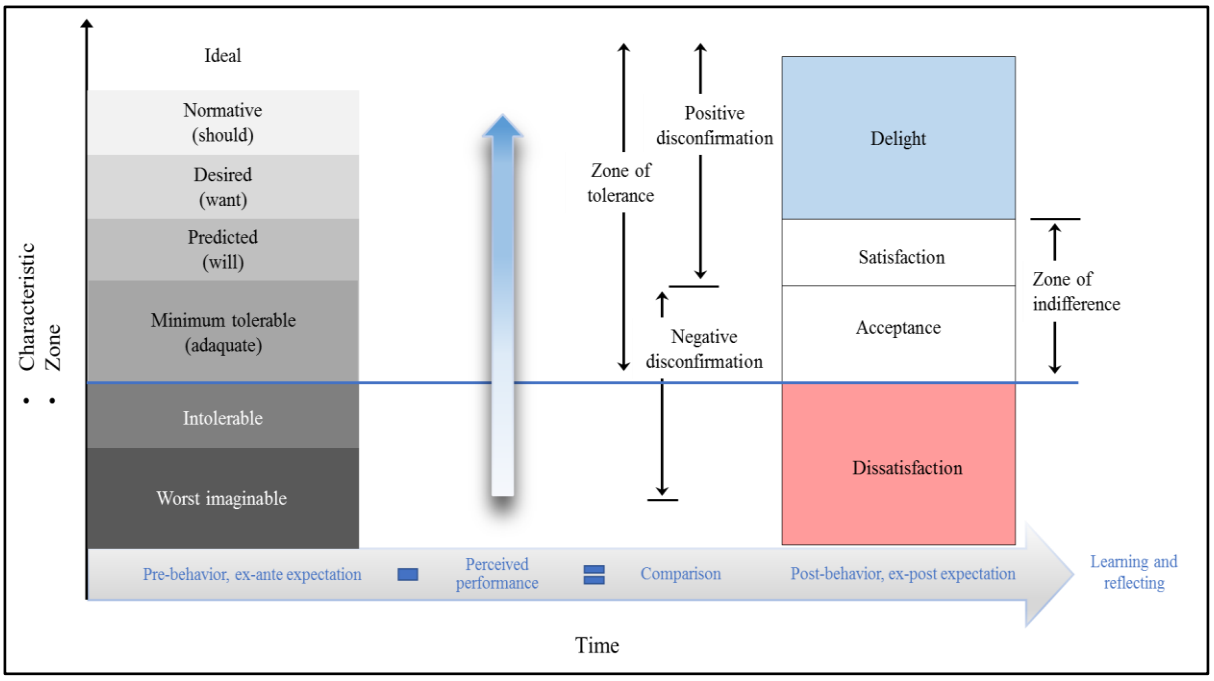

Figure 3: Model of Expectation Disconfirmation Theory (EDT)
Source: Author's elaboration, adapted from Santos & Boote (2003)

If the perceived performance exceeds expectations, the term positive disconfirmation in the model refers to an expectation being fulfilled. The customer finds satisfaction or even delight in this scenario. The term negative disconfirmation refers to when a customer's expectation is not fulfilled, which leads to dissatisfaction or, ideally in this case, to customer acceptance (Giering, 2000; Homburg & Stock-Homburg, 2016; Oliver, 2010; Oliver & DeSarbo, 1988; Santos & Boote, 2003). The scenario of fulfilment of expectation is discussed

controversially among satisfaction scholars (Nerdinger & Neumann, 2007). Some of them assume that satisfaction is attained only if the perceived performance exceeds previously formed expectations (above the lowest point of acceptance, which is still adequate to them). They define a zone of indifference that generates neither customer satisfaction nor dissatisfaction (Bhattacherjee, 2001; Hill, 1986; Woodruff et al., 1983). Many researchers, however, believe that customer satisfaction is fulfilled when all expectations have been met (occasionally an acceptance zone is interposed); they opine that a clear exceedance leads to delight (Churchill & Surprenant, 1982; Homburg & Rudolph, 1998; Oliver & DeSarbo, 1988; Santos & Boote, 2003). Zeithaml et al. (1993) have a leading influence on the theory of the tolerance zone, which accords that the performances between ideal norm and minimum tolerable level are considered satisfactory by consumers. A number of determining factors, including company-controlled variables such as price and service attributes, are relevant for customer evaluation (Santos & Boote, 2003). Liljander and Strandvik (1993) regard the tolerance zone as an inertia zone that prevents customers from having a negative reaction.

The benchmark for perceived performance is previously formed customer expectation (Bhattacherjee, 2001; Bhattacherjee & Premkumar, 2004; Fournier & Mick, 1999; Oliver, 1980; Olson & Dover, 1979; Swan & Trawick, 1981; Tse & Wilton, 1988). Expectation influencing factors are wide-ranging and include, among others, individual customer needs and convictions about future characteristics as well as own past experiences, recommendations and supplier commitments (Kuss & Tomczak, 2000; Santos & Boote, 2003; Spreng et al., 1996; Woodruff et al., 1983). The term expectation is interpreted extensively in the literature, but there are no generally accepted definitions. Fournier and Mick (1999) note that not only predictive expectations but also customer desires, experience-based norms and equity-expectations are suitable as comparative standards. Santos and Boote (2003) offer a hierarchy of expectations by clustering 56 different definitions of standards and, therefore, highlight that expectations are very individual and situational but also scalable. Thereby, they discuss the aspects of each level of expectation and consider how the different levels of expectation interface and interact (Santos & Boote, 2003). However, the application of standards in customer judgement formation is not rule-based and cannot be assigned directly; it can be applied asynchronously and in a multi-tiered manner and is subject to temporal changes (Giering, 2000; Tse & Wilton, 1988).

In addition, the input parameters of EDT, along with the comparison process, offer room for interpretation. The perceived service, the perceived performance for customers, even if it is

objectively the same, can be subjectively evaluated by customers (Churchill & Surprenant, 1982; Nerdinger & Neumann, 2007). Tse and Wilton (1988), therefore, distinguish between objective (provided) and subjectively perceived performance; although consensus exists, only the subjectively perceived performance should be applied in the comparison process (Churchill & Surprenant, 1982; Giering, 2000; Wirtz, 1993). Subjectively perceived performance is influenced by individual perception effects, experiences, wishes and attributed values as well as by individual norms in the context of expectations and can, therefore, be individually different, which is also because there are above-mentioned different valences of customers (Fleer, 2016; Kaiser, 2005). Customer satisfaction assessments are often multi-layered and complex as customers apply multi-dimensional comparative standards, which are used to develop opinions (Tse & Wilton, 1988). The grade of a customer's requirement significantly determines their subsequent evaluation, which is why different parameters are highly discussed as a benchmark in science (Wirtz, 1993). However, diversity amongst comparative approaches shows that different results, misinterpretations and, consequently, incorrect conclusions can occur (Fleer, 2016; Stauss, 1999). A satisfaction assessment based on individual transactions is often of short duration; therefore, overall satisfaction based on several satisfaction decisions is increasingly relevant as it is more stable and persistent (Giering, 2000). However, since the coherency of customer satisfaction decisions cannot yet be conclusively explained, scholars advise against analysing customer satisfaction in the development process and, instead, recommend using the results of customer satisfaction (Faullant, 2007; Fleer, 2016; Giering, 2000).

2.2.5 Comprehensive and Complementary Theoretical Approaches to EDT

Despite the above-mentioned advice to use the results of the customer satisfaction process, EDT's closely associated explanatory approaches are analysed to enable the evaluation of satisfaction results more accurately. Since customer expectations and perceived performance are affected by different interactions and fulfilment requirements, the comparison process assumes an important role. Numerous psychological theories extend and enhance the core model of EDT in customer satisfaction research (Nerdinger & Neumann, 2007), including assimilation theory/dissonance theory and contrast theory, which examine expectations, on the one hand and performance, on the other. Thus, this, forms the groundwork for assimilation-contrast theory, which, in turn, forms the basis for many other theories, including the important and widely accepted EDT (Yüksel & Yüksel, 2008). The *prospect theory*, which discusses the

degree of satisfaction, provides an equally important contribution in customer satisfaction research, as it considers not only cognitive aspects but also affects and emotions (Homburg, 2016). Therefore, this theory will be described more closely later. Yüksel and Yüksel (2008), Nerdinger and Neumann (2007) and Homburg (2016) provide an overview of additional explanatory approaches. However, not all of them can be described in this study since no consensus prevails among these researchers regarding which standard in satisfaction research might be the most appropriate one (Cote et al., 1989; Yüksel & Yüksel, 2008).

2.2.5.1 Assimilation-Contrast Theory

Assimilation theory and contrast theory, which initially form their own approaches, together shape the assimilation-contrast theory, according to Hovland et al. (1957), and are adopted by other theories. The assimilation theory, based on the dissonance theory of Festinger (1957), aims at a balance of individuals in relation to the cognitive system. While a cognitive equilibrium is achieved when customer expectations balance with the perceived performance, a cognitive imbalance exists when states deviate (Festinger, 1957). Customers intrinsically strive for a reduction of discrepancy by a subsequent adjustment of expectations or a subsequent adjustment of the perceived performance (looking for positive information or overcoming negative opinions) to regain the desired balance (Anderson, 1973; Cardozo, 1965; Nerdinger & Neumann, 2007; Sheth et al., 1999; Yüksel & Yüksel, 2008). The mechanism of adaptation to an aspired equilibrium is known as the assimilation effect (Anderson, 1973).

In contrast to this approach, the contrast theory describes the widening of the imbalance with an equally retroactive correction of the customer (Anderson, 1973). According to the theory, customers tend to increase the discrepancy between expectations and perceived performance (Hovland et al., 1957). This perspective was developed by Herry Helsons between 1930 and 1970 (Edwards, 2018). Exceeding expectations leads to subjectively more satisfied customers as they are positively surprised, whereas failing expectations lead to higher dissatisfaction due to disappointments (Cardozo, 1965; Nerdinger & Neumann, 2007; Yüksel & Yüksel, 2008). In conclusion, overall, this theory predicts that product performance below expectations will be evaluated lower by the customer, while performance above expectations will be evaluated higher (Oliver & DeSarbo, 1988). This effect is called the contrast effect (Hovland et al., 1957).

The combined assimilation-contrast theory uses individual anchor incentives as a reference in the deviation analysis of customers (Hovland et al., 1957). Therefore, the individual

deviation analysis from expectation in relation to the perceived performance determines whether an assimilation effect or a contrast effect occurs. If perceived performance and expectation are closely bound, assimilation effects are generated, but if both conditions are very different, contrast effects occur (Hovland et al., 1957; Sherif & Hovland, 1961). Sherif and Hovland (1961) identify the zone of acceptance, the zone of rejection and the zone of indifference (neutral zone) as individual tolerance thresholds. While the assimilation effect occurs in the zone of acceptance, the contrast effect is applied in the zone of rejection. In the zone of indifference, neither of the two effects will be realised, and expectation and perceived performance will not be adapted (Homburg & Stock-Homburg, 2016; Nerdinger & Neumann, 2007; Sherif & Hovland, 1961). Each customer decides individually and situationally which effect should be applied and which effect occurs (Nerdinger & Neumann, 2007).

2.2.5.2 Prospect Theory

The prospect theory developed by Kahneman and Tversky (1979) pursues a descriptive approach, belongs to the utility theory and characterises actual choices (Thaler, 2000). The prospect theory neglects economic expected benefits in favour of risk and security aspects. This is because guaranteed payments are preferred to higher but uncertain profits (Tversky & Kahneman, 1981, 1991). Benefits are expressed by deviations (positive or negative) from a reference point, whereby a loss is valued more negatively than an equal profit (non-linearity). The typical S-form in prospect theory indicates diminishing marginal sensitivity to gains and losses, a basic result in the psychology of perception (psychophysics) according to Thaler (2000). The prospect theory assumes a risk aversion among individuals, which is described by the steepness of the loss function as compared to the profit function (Thaler, 2000; Tversky & Kahneman, 1981, 1991). According to Thaler (2000), humans feel the impact of a gain of 100 units less than a loss of 100 units. For this reason, prospect theory differs from cognitive decision theories since emotional aspects can lead to cognitive biases and, beyond that, even constitute a comprehensive module of human preference for risk according to McDermott et al. (2008). While EDT applies an ex-post approach to measure customer satisfaction by evaluating perceived performance and expectation, the prospect theory considers the decision ex-ante and anticipates the desired outcome (Homburg & Stock-Homburg, 2016). Neglecting the time components, prospect theory can also be applied to customer satisfaction according to Homburg and Stock-Homburg (2016). The reference point, thereby, must be interpreted as the level of expectations and the utility as satisfaction (Figure 4).

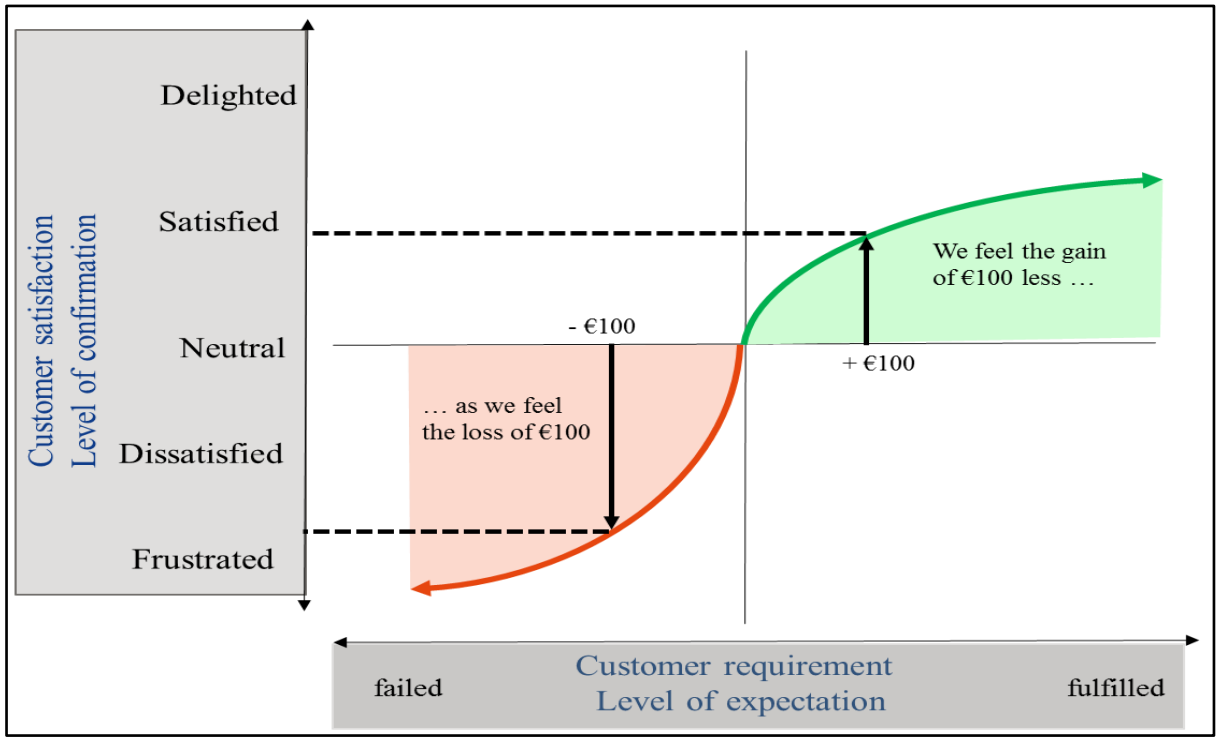

Figure 4: Prospect Theory in the Context to Customer Satisfaction

Source: Author's elaboration, adapted from Homburg & Stock-Homburg (2016)

2.2.5.3 Two-Factor Theory of Customer Satisfaction / Kano Approach

The two-factor theory of customer satisfaction distinguishes different performance levels for satisfaction determination – not all performance levels influence customer satisfaction equally or at all (Homburg & Stock-Homburg, 2016). The initial theory was based on the two-factor theory of employee satisfaction (Herzberg et al., 1959) and distinguished between hygiene factors, which are the minimum requirements whose fulfilment is assumed, and motivators, which are not taken for granted (Herzberg, 1965, 1966). Various dimensions such as satisfaction and dissatisfaction are independent and disjunct (Nerdinger & Neumann, 2007). Non-fulfilment of motivators does not create dissatisfaction and only affects satisfaction, whereas hygiene factors only influence dissatisfaction and not satisfaction (Herzberg, 1966). If hygiene factors lead to the fulfilment of expectations, then the outcome is not satisfaction, but merely a neutral status, which can be described as non-dissatisfaction. Satisfaction, however, is determined by motivators whose non-fulfilment also results in a neutral status, but disjunct and at a different level than hygiene factors (Nerdinger & Neumann, 2007).

By transforming this approach into the concept of customer satisfaction, three types of different and disjunctive factors can be distinguished, namely expected attributes (monovalent dissatisfier), desired attributes (bivalent satisfies) and exciting/surprising attributes (monovalent satisfies) (Homburg & Stock-Homburg, 2016; Oliver, 2010). The expected attributes correspond to Herzberg's hygiene factors and are assumed by customers to be self-evident (Homburg & Stock-Homburg, 2016). Exciting/surprising characteristics are not explicitly demanded by customers; therefore, they have no expectations in this respect and, as such, are not dissatisfied with non-fulfilment (Homburg & Stock-Homburg, 2016). Fulfilment, therefore, simply has an upside (excluding worsening) and is congruent to the motivators on the Herzberg model (Nerdinger & Neumann, 2007). Finally, desired attributes have a linear relationship between customer satisfaction and the degree of fulfilment and influence both satisfaction and dissatisfaction, which is why they are also called bivalent satisfiers (Oliver, 2010). Customer satisfaction is, therefore, directly dependent on the fulfilment of expectations (Homburg & Stock-Homburg, 2016; Nerdinger & Neumann, 2007).

This approach is also described using the Kano approach, although the terms are used differently. Expected attributes (monovalent dissatisfier) are termed as "must-be" qualities, desired attributes (bivalent satisfies) are called "one-dimensional" qualities and exciting/surprising attributes (monovalent satisfies) are referred to as "attractive" qualities, increasingly also as "delighters" (Oliver, 2010). Although the Kano model, referred to in the literature as Kano et al. (1984) (Homburg & Stock-Homburg, 2016; Mikulić, 2007; Mikulić & Prebežac, 2011; Oliver, 2010), had initially focused on service quality theory, it was successfully implemented and empirically tested in numerous studies across various service settings (Mikulić, 2007; Rashid, 2010). Mikulić and Prebežac (2011) deliver a review of the most commonly used approaches to the classification of quality attributes according to the Kano model. One way how this model can be applied in customer satisfaction research was provided by Bailom et al. (1996). Figure 5 presents an overview of the Kano model. The aspects that initially provide satisfaction as "delighters" will become "must-have" customer requirements over time and new satisfaction factors, if necessary also different weightings, will then serve as delighters in customer evaluations (Bailom et al., 1998).

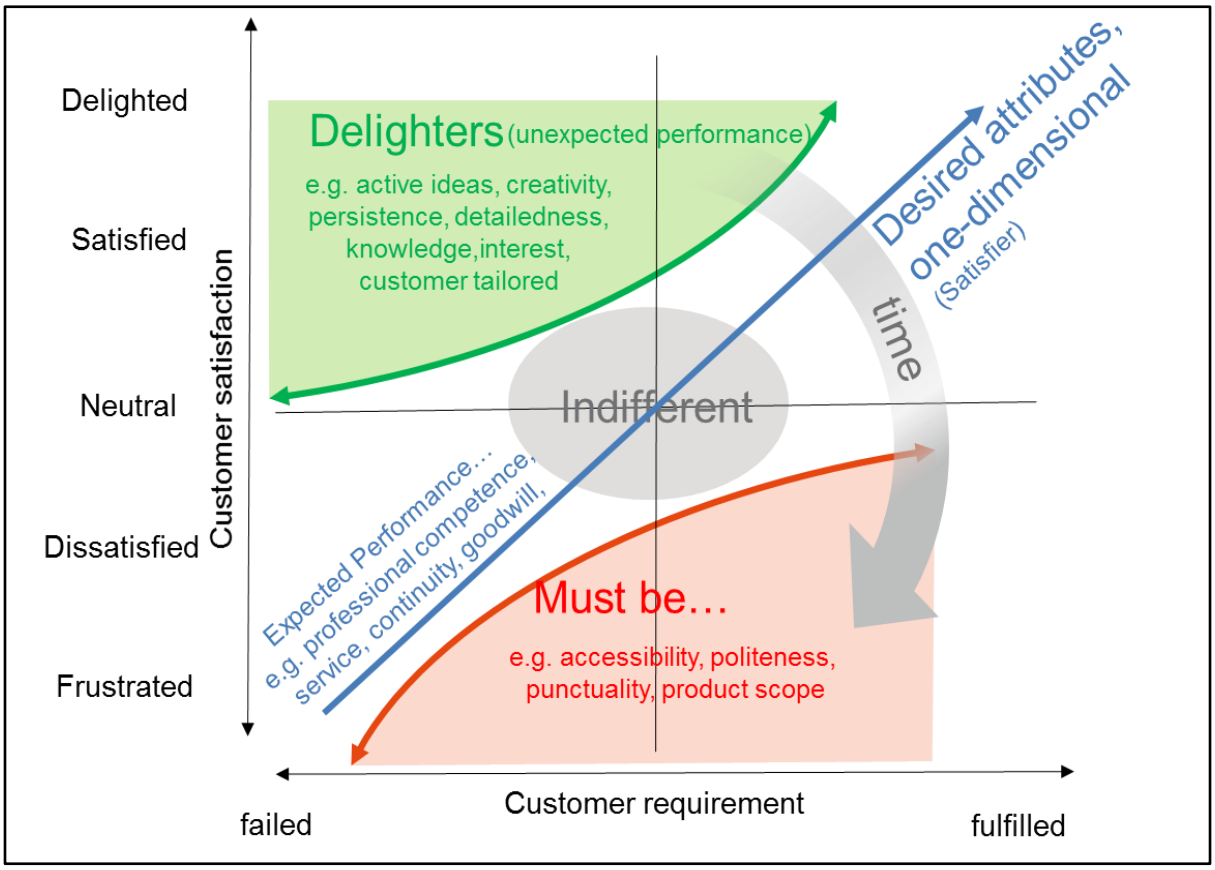

Figure 5: Kano Approach to Customer Satisfaction

Source: Author's elaboration, adapted from Bailom et al. (1998)

The importance of specific attributes for the customer determines to which factor the attribute belongs to and whether the fulfilment of that attribute leads to customer satisfaction or its unfulfilment bears a potential for dissatisfaction (Fleer, 2016; Oliver, 2010). Homburg and Klarmann (2016) distinguished between direct survey and indirect determination of the importance of attributes. Gustafsson and Johnson (2004) and Chu (2002) observe that each of the direct and indirect methods that have been tested have its own strengths and weaknesses, and it is important to choose a method that is compatible with the research objectives and context. Direct importance measures may result in socially acceptable or status quo answers and poor discrimination (when customers rate all attributes as relatively important; the inflation of entitlements) and, therefore, leads to possible biases (Fleer, 2016; Gustafsson & Johnson, 2004; Scott & Wright, 1976). The success of the indirect methods depends on the statistical method considered appropriate, on the consideration of the relationship between the level of satisfaction and the attributes and on the handling of missing values (Homburg & Klarmann, 2016). The indirect method helps form the statistical relationship between satisfaction with attributes and the separately assessed total satisfaction (Homburg & Klarmann, 2016).

2.2.5.4 Attribution Theory

This theory essentially stems from the studies of Weiner et al. (1971) and the initial research work of Heider (1958) and describes the way individuals explain happenings and attribute they encounter. In context to customer satisfaction, attribution theory explains different levels of satisfaction despite the same confirmation level (Homburg & Stock-Homburg, 2016). The categories are used as reasons for this include the following: locus of causality, stability and controllability (Bitner, 1990; Folkes, 1984; Oliver & DeSarbo, 1988; Weiner et al., 1971; Yüksel & Yüksel, 2008).

- Locus of causality (internally or externally): The events that are either attributed to one's own person (internally) or another's person or situations (externally) (Homburg & Stock-Homburg, 2016; Oliver, 2010). The influence of the fulfilment of expectations on the level of satisfaction strongly depends on whom customers hold responsible for the fulfilment of their expectations (Homburg & Stock-Homburg, 2016; Oliver & DeSarbo, 1988). Satisfaction occurs particularly when the customer themselves is responsible for fulfilling their expectations (internal allocation of causes); on the other hand, when the cause of fulfilment is an external party (e.g. the supplier), it leads to a lower level of satisfaction (Folkes, 1984; Homburg & Stock-Homburg, 2016; Yüksel & Yüksel, 2008).
- Stability: Causation is perceived as either permanent or temporary and stable or unstable (Homburg & Stock-Homburg, 2016; Oliver, 2010). Long-term failure to fulfil a customer expectation leads to dissatisfaction, whereas temporary dissatisfaction can be improved (Folkes, 1984).
- Controllability: This is constituted by influenceable (controllable) and uninfluenceable (uncontrollable) causes (Homburg & Stock-Homburg, 2016; Oliver, 2010). The negative impact is higher if a customer is convinced that a provider can influence the outcome than if the customer believes that they cannot (Folkes, 1984; Nerdinger & Neumann, 2007).

The attribution theory has stronger relevance in relation to research on customer dissatisfaction and complaints than customer satisfaction; however, it is regarded as a supplement to EDT (Homburg & Stock-Homburg, 2016; Oliver, 2010; Yüksel & Yüksel, 2008).

2.3 Significance of Customer Loyalty

Customer loyalty generally refers to the strength of the relationship between an individual's relative attitude and repeated patronage; this relationship is determined by social norms and situational factors (Dick & Basu, 1994; Giering, 2000). Customer satisfaction and loyalty are, thereby, very closely related (Giering, 2000; Hallowell, 1996; Homburg, 2017; Oliver, 1999). An overview of the factors affecting customer loyalty is provided by Kuusik (2007). Oliver (1999) describes the relationship as asymmetrical as loyal consumers are generally satisfied; however, satisfaction does not mean everlasting loyalty. Homburg and Bucerius (2016) describe customer loyalty as the most frequently discussed outcome of customer satisfaction. Satisfaction is a necessary and decisive factor in loyalty formation. However, it loses significance when other mechanisms such as personal determinism ("fortitude") and social bonding at the institutional and personal level become more important (Oliver, 1999). Both scientists and practitioners agree that loyalty is an essential part of business operations (Gremler & Brown, 1996). Marketing activities of a company are based on the belief that long-term business relationships with customers are economically advantageous; therefore, these companies pursue the development, maintenance or improvement of customer loyalty to their products and services as the main target of their marketing strategy (Dick & Basu, 1994). As a result, companies expect benefits in terms of increased turnover, reduced costs as well as predictability and stability in sales (Homburg, 2017). Moreover, customer acquisition can be significantly more expensive than customer retention, which is why the analysis of existing customers and customer retention management can be very useful (Lindgreen et al., 2000; Rai & Srivastava, 2012; Rosenberg & Czepiel, 1984).

Although in the past brand loyalty has been frequently studied in market research, vendor loyalty, service loyalty and store loyalty are equally significant (Dick & Basu, 1994; Giering, 2000). In scientific research, customer loyalty in the service industry seems to be of high importance (Beerli et al., 2004; Bloemer et al., 1999; Caruana, 2002; Rai & Srivastava, 2012), along with being widely accepted. The impact of successful customer loyalty in terms of sustainable competitive advantage in service companies remains undisputed (Dick & Basu, 1994; Gremler & Brown, 1996; Keaveney, 1995).

However, increasing customer loyalty does not always mean the same for all companies[1]. Initial benefits can overturn as the expectations of loyal customers rise, proving to be detrimental to the company. Loyalty rebates – more intensive and individual customer service and possible cluster risks towards loyal customers – have to be taken into account in customer and profit management (Reinartz & Kumar, 2002). Numerous empirical studies, for instance, the overviews provided by Homburg et al. (2013) and Homburg and Bucerius (2016) examined the positive effects of loyal customers with regard to repurchase, additional purchase and recommendation behaviour as well as the intention to behave.

2.3.1 Explanatory Conceptual Frameworks and Approaches

Loyalty is a complex phenomenon that warrants multifaceted conceptualisation (Dick & Basu, 1994; Gremler & Brown, 1996). Customer loyalty is a two-dimensional construct of both a behavioural dimension and an attitude dimension, which was significantly influenced by the publication of Day (1969) according to Kuusik (2007) and Bobâlcă et al. (2012). While behavioural dimensions are based on the customer's previous (past-oriented) loyal behaviour, attitude dimensions are based on the customer's present loyal attitude to the business relationship and are directed towards the future (Fleer, 2016; Foscht et al., 2017; Giering, 2000; Homburg et al., 2013). In this context, Foscht et al. (2017) differentiate, on the one hand, the viewpoints that are based on behaviourist perspectives and ex-post reference, and on the other hand, the viewpoints that are based on neo-behaviourist perspectives and ex-ante reference. Behavioural approaches derive from previous behaviour alone and refer exclusively to metrics such as purchase intensity, affection, fidelity, customer penetration rate, time passed since the last purchase and contact density (Diller, 1996; Foscht et al., 2017).

Meanwhile, this view of loyalty, based purely on the purchasing behaviours of customers that only takes into account repeated demand rather than the cause of the behaviour, has become superseded (Homburg et al., 2013). Consensus exists today that, in addition to purchasing behaviour, positive customer attitudes towards the supplier should also be assessed on the basis of recommendation behaviour and additional purchasing intentions to draw conclusions about loyalty (Figure 6) (Homburg et al., 2013; Newman & Werbel, 1973).

[1] Homburg (2017), p.9, note, that under specific conditions a focus on isolated transactions with occasional customers can be more successful than a marketing objective based on long-term customer relationships. In addition, a relationship-oriented perspective complements an activity-oriented perspective. Relationship marketing is more specific in terms of marketing aims, but also more unspecific in terms of activities.

Latent customer loyalty is based on an intensive positive attitude in combination with low behavioural activities towards the company. Subjective norms, situational influences and desired diversity of different vendors can influence this form of customer loyalty; nevertheless, it can offer a high potential for companies. The purchasing behaviour of customers in the case of pseudo-loyalty is determined by the factors that are not determined by the attitude of the customer (including convenience). In case there are more advantageous alternatives for customers, they will migrate to the company offering those alternatives. Therefore, customer loyalty, which is also the ideal case from the point of view of the company, is determined by the intensive positive attitude of the customers with simultaneously high customer behaviour (Foscht et al., 2017).

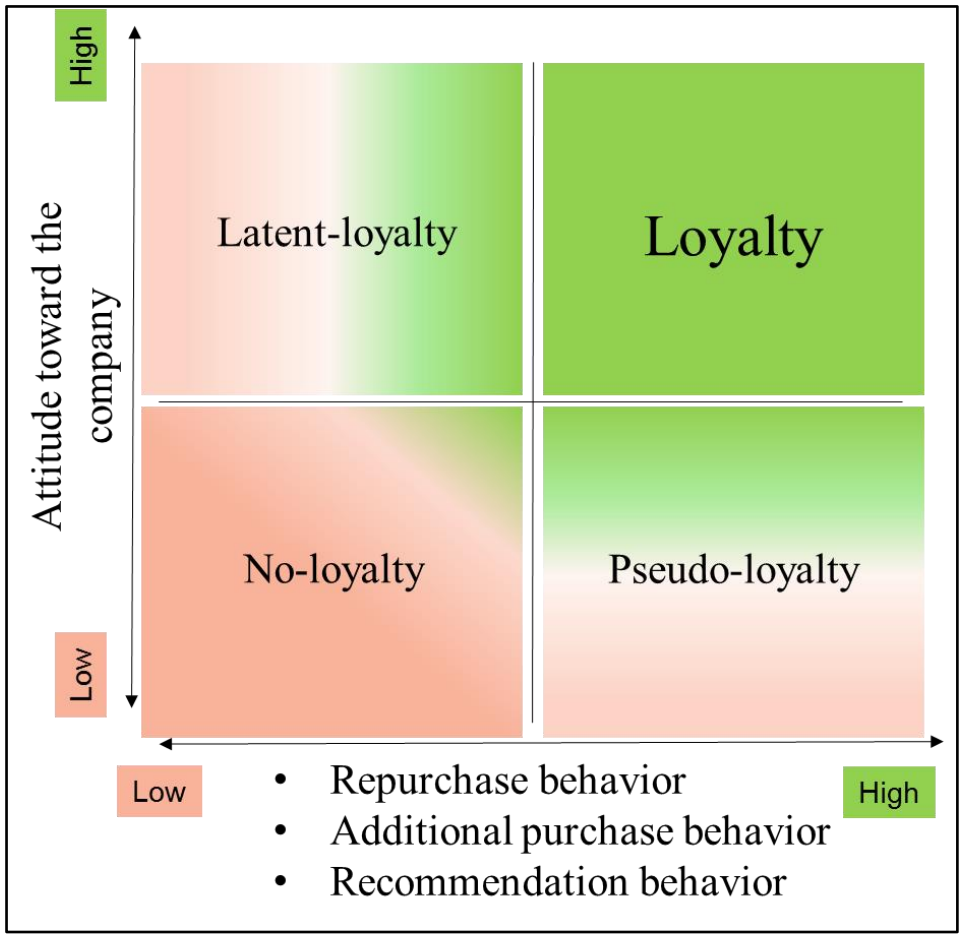

Figure 6: Relationship between Attitude and Behaviour to Determine Loyalty
Source: Author's elaboration, adapted from Foscht et al. (2017)

In comparison with unconscious accidental customer behaviour, conscious, active behaviour towards families, friends or acquaintances is frequently preferred in loyalty concepts since the positive attitude of customers towards a supplier is indirectly depicted by behaviour

patterns (Duhan et al., 1997; Giering, 2000; Riley et al., 1997). Giering (2000) assumes that customers practicing positive word-of-mouth behaviour for their suppliers are, indeed, loyal and feel bound to the supplier; thus, random influences and change barriers to competitors can be excluded. Therefore, except in the case of stable customer relationships, former behaviour cannot be used as a substitute indicator for future behaviour as it provides only a minor explanation of loyal customer behaviour (Foscht et al., 2017). The fact that a customer has purchased in the past does not mean that they will again in the future (Fleer, 2016). Consequently, recent studies followed the neo-behaviouristic perspective and combined customer loyalty with customer attitude and their conviction for a product or a service and future behaviour (Fleer, 2016; Giering, 2000). This ex-ante perspective is based on the understanding that current customer satisfaction cannot influence past loyalty behaviour and must, therefore, be directed towards the future (Fleer, 2016; Foscht et al., 2017; Giering, 2000; Homburg et al., 2013). Figure 7 provides an overview of the two perspectives.

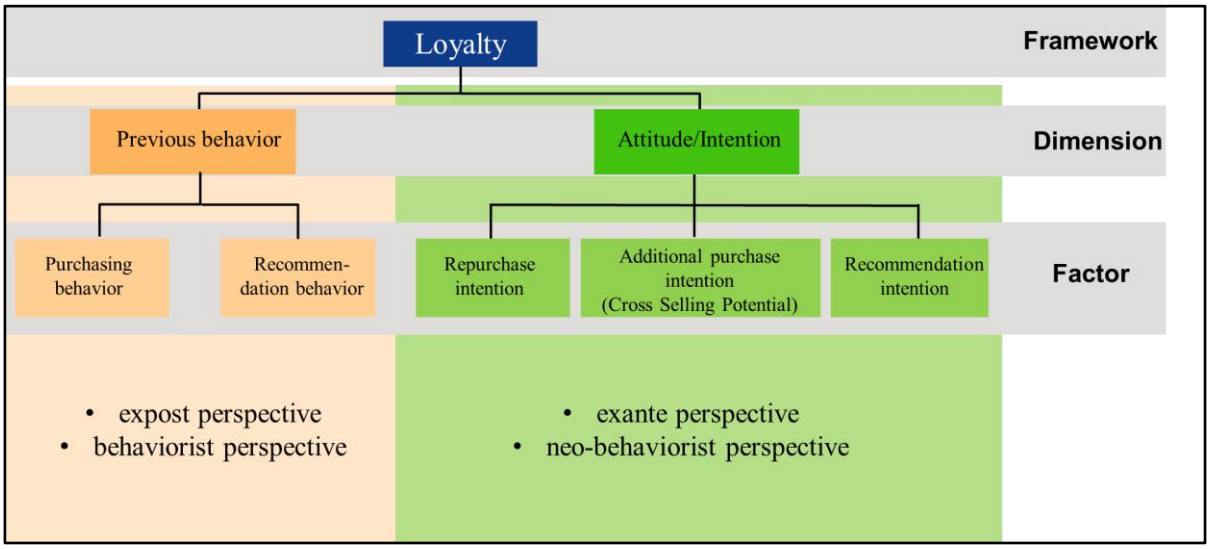

Figure 7: Conceptualisation of the Construct Customer Loyalty
Source: Author's Elaboration, Adapted from to Homburg et al. (2013)

In order to clarify whether a customer's certain behaviours reflect loyalty for the supplier, Fishbein and Ajzen (1975) recommend a simple, proven and the most efficient means of clarification – asking the customer. The relevant parameters for measuring the intention to loyalty are the customers' repurchase behaviour intention in relation to the same product/service from the same supplier (Heskett et al., 1997), additional purchase intention towards more products/services from the same supplier (Belás & Gabčová, 2016; Edvardsson et al., 2010; Gee et al., 2008) and customers recommendation intention towards other potential customers

(Dick & Basu, 1994; Duhan et al., 1997; Khan & Fasih, 2014; Mooradian & Olver, 1997). These parameters are characterised by the fact that they cannot be directly observed, which is why, in this context, loyalty is defined as an attitude and intention (Diller, 1996; Foscht et al., 2017).

In addition to the one- and two-dimensional concepts of loyalty, the existing literature discusses a four-level model, which, according to Oliver (1997), explains cognitive loyalty, affective loyalty, conative loyalty and action loyalty, with each level denoting an increase in the intensity of loyalty (Blut et al., 2007; Bobâlcă et al., 2012; Oliver, 2010).

- Cognitive loyalty: In this level of loyalty, customer loyalty is determined by information such as price and quality of the offer, and the customer considers the net benefits from following providers (Blut et al., 2007; Foscht et al., 2017). There is a high risk on this level that the customers will switch to a competitor if they prove to be more advantageous for them (Blut et al., 2007; Kalyanaram & Little, 1994).
- Affective loyalty: This form of loyalty requires multiple transactions and customer satisfaction as the determining factors (Blut et al., 2007). Declining affective loyalty is also a result of deterioration of the relationship, mainly due to the increased attraction for competitive offers (Sambandam & Lord, 1995), and an increased preference for competitive brands (Blut et al., 2007). Both cognitive and affective loyalty are relatively (Foscht et al., 2017).
- Conative loyalty: Intending an action in the form of a repurchase, an additional purchase or a recommendation is a prerequisite for this form of loyalty (Blut et al., 2007; Evenschitzky & Wunderlich, 2006). Conation implies a brand-specific commitment to repurchase (Oliver, 1997). Customer satisfaction in the purchasing process has a positive effect on conative loyalty (Fleer, 2016).
- Action loyalty: The fourth stage where the behavioural intention is implemented, due to which customers purchase a product or use a service offered by the same company, is referred to as action loyalty (Fleer, 2016; Foscht et al., 2017; Oliver, 2010).

Bruhn (2016) and Foscht et al. (2017) provide an overview of the multitude of various explanatory approaches to long-term loyalty.

2.3.2 Distinctions to Other Approaches

In addition to satisfaction, the concepts and approaches of relational bonds, commitment, trust and confidence are closely related to loyalty but are not congruent with it.

Relational bonds are considered to be business relationships that are not random but based on reasons (Diller, 1996; Giering, 2000) such as financial bonds, social bonds, structural bonds, technological bonds, knowledge bonds, planning bonds and legal/economic bonds (Liljander & Strandvik, 1995; Shammout et al., 2007). Relational bonds consider two fundamental perspectives: on the one hand, the supply side, which has more of an instrumental character, and on the other hand, the demand side, which is interpreted in a more behavioural sense (Fleer, 2016; Giering, 2000; Homburg et al., 2013). Customer loyalty focuses exclusively on the demand side and, as described above, cannot be claimed as it is voluntary and based on the conviction that a customer can change at any time, which is why loyalty is, therefore, narrower overall (Fleer, 2016; Giering, 2000).

According to Moorman et al. (1992), *commitment* is defined as an enduring desire to maintain a valued relationship. Morgan and Hunt (1994) broadened this definition and regard commitment as having a belief in a continuous relationship with the exertion of maximum effort to maintain that relationship. Increasingly significant becomes Meyer and Allen (1991) three-part construct of commitment, which differentiates between an instrumental component, resulting from a cost-benefit comparison to maintain the relationship (sacrifice), an attitude component where customers feel a psychological bond or identity (loyalty) for the supplier, and a temporal dimension indicating that the relationship exists over time (stability) (Giering, 2000; Lin et al., 2003). The commitment approach encompasses both the customer and the supplier side and, thus, is more comprehensive than the loyalty concept. That is because, in this approach, providers also show a strong interest in maintaining the relationship and are even willing to make specific sacrifices for it (Giering, 2000).

Moorman et al. (1992) define the concept of trust as the willingness to rely on someone they have confidence in. Morgan and Hunt (1994) and the scholars mentioned in this paper extend this definition by the factor integrity and reliability and refer, in this context, to qualities such as consistency, competence, honesty, fairness, responsible, helpful and benevolence. In addition, it has been discussed whether the willingness to act is a redundant factor within the trust concept since it is implicitly present and can only be viewed as an outcome of trust, but not as an input factor (Morgan & Hunt, 1994). Trust is the emotional basis and, therefore, a

prerequisite for cooperation, while loyalty is brought in and arises when long-term cooperation is based on trust. However, the (temporary) failure of trust does not necessarily undermine loyalty (Barbalet, 1996).

Trust is a special form of confidence that is the emotional basis of action and agency (Barbalet, 1996). Thus, confidence is even more generic and considered as a feeling that encourages one to go one's own way; confidence is an emotion of self-projection (Barbalet, 1996) and a cognitive antecedent of loyalty (Dick & Basu, 1994).

2.3.3 Customer Loyalty in Financial Business

Customer loyalty is of particular importance for banks, especially after the financial crisis of 2008, because of the focus on core businesses and the necessary increase in profitability, both for practitioners and academics Belás et al. (2015), and also because of the high importance of customer capital in general Bontis et al. (2007). However, it has always been an important area of academic research (Beerli et al., 2004; Bloemer et al., 1998; Hallowell, 1996; Oly, 2007). Due to the major changes in the banking landscape as a result of digitalisation, changed needs and processes, fierce cut-throat competition (Gasser et al., 2017; Wong et al., 2019), as well as selectively burgeoning disruptive developments (Christensen et al., 2015; Lee & Shin, 2018), including technology companies and shadow banks (Buchak et al., 2017), customer loyalty is a decisive factor in sustaining a bank's competitive edge (Bhat et al., 2018; Hegner-Karar et al., 2018). Customer orientation is particularly important in the banking segment because of the limited opportunities for differentiating one's own core products from those of competitors (Barnes & Howlett, 1998; Beerli et al., 2004). Belás and Gabčová (2016) point out that the highly intense relationships of loyal customers with their banks are primarily based on emotions, but results in increased product sales and high referral rates to friends and family. Information exchange between the customer and the bank is a very important element of loyalty, which is why loyal customers often provide information to their banks because they trust the banks and expect the bank to use the provided information for ensuring their advantage (Murugiah & Akgam, 2015). A large number of customers not only have a bank account but also distribute the bank's portfolio of services and products among various institutions, which means that although bank accounts are rarely closed, the share of wallet is distributed (Aurier & N'Goala, 2010; Du et al., 2007). This effect shows that banks have considerable customer potential within their own portfolios and that they can leverage this potential through targeted sustainable market cultivation based on customer loyalty (Du et al.,

2007). The results of customer loyalty can be summarised as follows: fewer cancellations by customers, an increase in sales, lower service costs compared to new customers, positive word-of-mouth leading to the acquisition of new customers, increased market share and loyal customers' willingness to pay premium prices (Belás & Gabčová, 2016; Gee et al., 2008; Khan & Fasih, 2014).

2.3.4 Theoretical References to Selected Behavioural Explanatory Approaches

There is no single theory to explain why customers enter into long-term business relationships with a positive attitude and behaviour towards a particular supplier. A whole set of explanations are required for such an understanding (Conze, 2007). In this context, relevant theories concern the relationship between customer satisfaction and customer loyalty, whereby behavioural theories establish the existence of a positive relationship between the two constructs as per various cognitive or motivational phenomena (Giering, 2000). *Dissonance theory*, *instrumental learning* and *risk theory* are assigned to the behavioural theoretical explanatory approaches and identify satisfaction as a key determinant of loyal behaviour (Fleer, 2016; Giering, 2000; Homburg et al., 2013).

Dissonance theory was already described in point 2.2.5.1 in the context of assimilation theory; therefore, it has been referred to here. Cognitive dissonances often follow purchase decisions (Stroebe & Jonas, 1990) and can be caused by the initial doubts or critical comments of competently perceived third parties about a product or a service (Kroeber-Riel & Gröppel-Klein, 2013). The more expensive the purchase, the higher is the level of cognitive dissonance, which can also result in customers changing their vendor and/or point of purchase (Blackwell et al., 2006). Consumers, by contrast, experience balance when they are satisfied and try to maintain this balance by engaging in loyal behaviour (Giering, 2000). Cognitive dissonances can be avoided in sales channels if customers continue to remain in their provider's channels (Schramm-Klein, 2003a). Successful companies use strategies such as after-sale calls, toll-free numbers or hang-tags to avoid cognitive dissonances (Blackwell et al., 2006).

Another theory that explains loyal customer behaviour is the theory of *instrumental learning*, also known as the theory of operant conditioning. In classical conditioning, the first unconditional stimulus is set towards the customer, which then leads to a reaction. Subsequently, a further, now-conditioned stimulus is set, which leads to a similar or equivalent result (Krech et al., 1992; Kroeber-Riel & Gröppel-Klein, 2013). Instrumental learning occurs

when information processed in short-term memory is stored in long-term memory (Blackwell et al., 2006). In this theory, a distinction is made between positive and negative behavioural enhancement, whereby positive behavioural enhancement (customer satisfaction) has a rewarding and recurring effect (learning success), whereas negative behavioural (customer dissatisfaction) enhancement always leads to behavioural changes (Giering, 2000; Homburg et al., 2013; Wilkie, 1994). With regard to distribution channels and suppliers, loyal customer behaviour can, thus, be traced back to learned behaviours (Schramm-Klein, 2003a).

While the two theories discussed above have an ex-post character, *risk theory* concerns forward-looking views concerning the explanation of customer loyalty (Fleer, 2016). Customer behaviour is essentially determined by risk aversion, which means that individually perceived risk in purchasing decisions is minimised and negative consequences are avoided by customers (Fleer, 2016; Gröppel-Klein et al., 2013). The subjectively perceived risks include the known risk dimensions, namely financial performance, time, psychological, social, physical (Stone & Manson, 1995), which trigger a reaction depending on subjective discomfort and the probability of occurrence (Gröppel-Klein et al., 2013). Perceived risks also depend on the involvement of the customer – perceived risk increases with an increase in the level of involvement (Beatty et al., 1988; Laurent & Kapferer, 1985). Customers can reduce risks by researching and building confidence in their product selection and evaluation capabilities (Beatty & Smith, 1987; Dowling & Staelin, 1994), by establishing loyal behaviour (Derbaix, 1983; Gröppel-Klein et al., 2013; Punj & Staelin, 1983) or by following influencers (Homburg et al., 2013). Distribution channels of banks and companies can also be perceived as a risk reduction strategy, in this context, in different purchase stages of loyal customers (Schramm-Klein, 2003a).

2.4 Customer Behaviour in Omni-Channel Environments

The aim of this dissertation was to assess the omni-channel environments of banks for customer satisfaction and loyalty. Since customer satisfaction and loyalty are highly complex processes and cannot be fathomed one-dimensionally and contains multi-dimensional aspects, a granular analysis of customer decisions is necessary to understand customer needs in the individual stages of the decision-making and enable their adaption in the future. Therefore, Foscht et al. (2017) recommend observing the behaviour of customers in individual stages and using appropriate strategies and instruments, in the sense of a closed concept of customer orientation, in a stage-specific and cross-phase manner. Considerations of customer behaviour before, during and after the purchase provide the necessary information (Kuss & Tomczak,

2000; Neslin et al., 2006; Solomon, 2016). Since customer decision processes take place in a multi-layered, but networked, sales channel system through different channels, a detailed analysis of the decision processes is of particular importance (Fleer, 2016).

2.4.1 Decision Making Models and their Process Stages

Customer research aims to understand current customer behaviours, predicting what customers intend to do and then influencing their behaviour in a beneficial way (Kroeber-Riel & Gröppel-Klein, 2013; Wilkie, 1994). Pachauri (2002) and Madhavan and Chandrasekar (2015) provide an overview of the development of behavioural approaches and explain the differences among them. In addition to the selection of products and brands, customer usage of different channels and touchpoints is of central importance for banks and companies (Schramm-Klein, 2003a). The chronological selection processes of a customer in choosing a shopping location, products and, perhaps, brand choices are individual and situation-specific (Fotheringham, 1988; Peterson et al., 1997; Schramm-Klein, 2003a). Modern customer marketing, which is based on a holistic consideration and understanding of the customer's specific behaviour in the individual stages, intends to develop strategies on the company level and make use of appropriate instruments (Foscht et al., 2017). Engel, Kollat und Blackwell Consumer Decision Model, *EKB model* (Engel et al., 1968), also known today as *EBM model* (Blackwell et al., 2006), is one of the core theories of consumer behaviour and proposes a sequential decision-making process comprising a) problem recognition, 2) information search, 3) evaluation of alternatives, 4) purchase, and 5) post-purchase evaluation (Ashman et al., 2015; Blackwell et al., 2006; Foscht et al., 2017; Solomon, 2016).[2] The model assumes that a rational decision-maker is conceived as who follows a fixed sequence of different stages in purchasing decisions, systematically accessing and sieving information to optimise acquired benefits(Ashman et al., 2015; Solomon et al., 2010). However, depending on the complexity, the significance and novelty of the decision-making problem, the stages do not always have to be completed with the same intensity (Fleer, 2016; Schramm-Klein, 2003a). Starting from the feeling of deficiency and the desire to satisfy a need (*problem recognition*) to close the gap between the actual state and the ideal state, customers search for *information* (Blackwell et al., 2006). Information searches, in this context, can be carried out primarily internally (e.g. memory, own experience) but also externally (e.g. collecting information from peers, family

[2] The literature also occasionally refers to an extended form with 7 individual stages in order to present the consumer decision process (CDP) Blackwell et al. (2006).

and the marketplace), whereby the access and reliability of the information as well as the time available are of particular importance (Foscht et al., 2017; Schramm-Klein, 2003a). Blackwell et al. (2006) also distinguish between marketer-dominated and non-marketer-dominated sources, where the former include advertising, salespeople, infomercials, websites, and point-of-sale materials, and the latter include friends, family, opinion leaders and the media. In the *evaluation process*, completed by the *purchase*, the information received from the customer is measured in terms of advantageousness as the customer thinks of *salient attributes*, such as price, reliability and product differences, which are finally evaluated. *Determinant attributes* (e.g. style) determine which brand or distribution channel is the right one, particularly when the salient attributes are identical (Blackwell et al., 2006). The time spent by the customer and their personality traits is also an important influencing factor in the decision regarding alternatives to both the product and distribution channel (Foscht et al., 2017). *Post-purchase evaluation*, as described in section 2.2, provides information on the customer's satisfaction with the product, the bank/vendor and the distribution channels (Blackwell et al., 2006).

Schramm-Klein (2003a) and the references made in this study point out that the EKB model is also applicable to the selection of distribution channels. Levy et al. (2019) also follow this approach and combine the selection of purchasing channels with product selection. The stages of the EKB model have to be passed through twice to select the purchasing channels and the product. Again, the process sequence is not predefined in this approach but runs flexibly and situationally (Levy et al., 2019). New channels and technologies, particularly for the success of the mobile channel and the omni-channel approach, changed customer behaviour and led to heterogeneity of consumer preferences in terms of the channel and product selection processes (Frasquet et al., 2015; Levy et al., 2019; Park & Lee, 2017). Furthermore, the popularity of price search engines, in comparison to portals, further increases the complexity as customers first compare prices and then select the bank/supplier (Heinemann, 2019; Wang & Wright, 2020). As channel differentiation across the omni-channel approach increasingly diminishes, customers are deploying cross-channel networked ways across the entire transaction process. Increasingly, customers are informing themselves online and purchasing through the branch or bringing them back there (Kim et al., 2017; Levy et al., 2019). Figure 8 exemplarily depicts a bank client's decision-making process and illustrates the interaction of channels in financial services selection in an omni-channel environment. Since additional and

repeat purchases are possible after the post-purchase evaluation, this processes are not terminated here but provides for further forms of development.

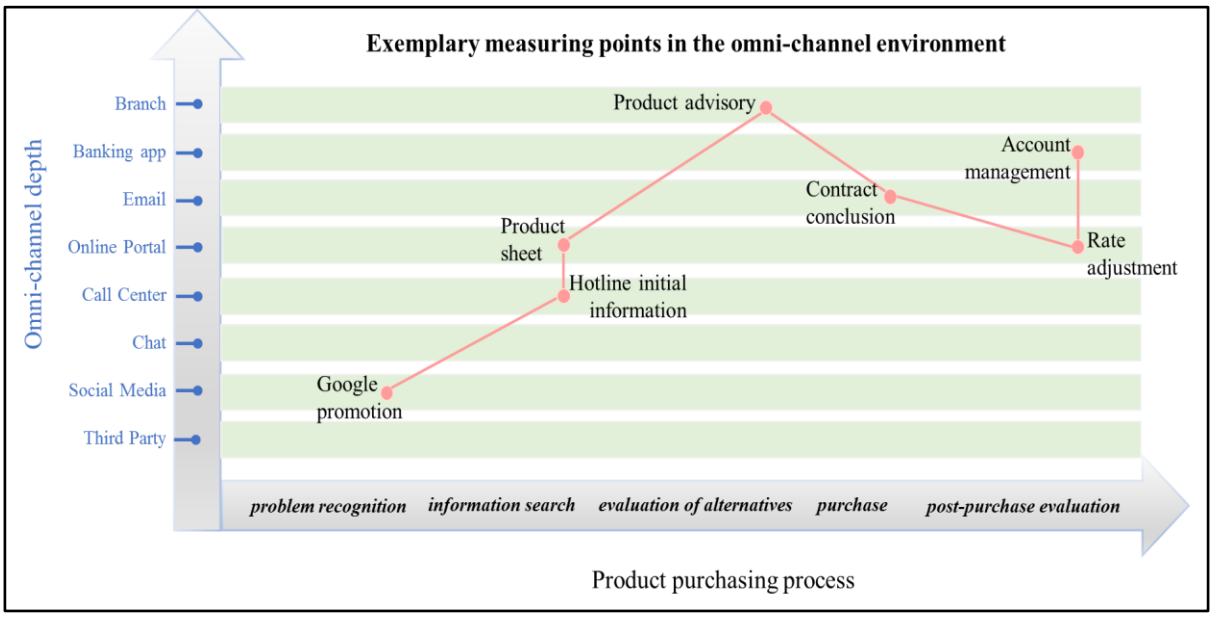

Figure 8: Customer Decision Processes in an Omni-Channel Environment

Numerous scholars, including Ehrlich (2011), Foscht et al. (2017), Neslin et al. (2006) and Puccinelli et al. (2009), recommend limiting the decision-making process to the information/pre-purchase stage, the purchase stage and the post-purchase stage for the customer's preferred sales channels. The information stage is compressed, and the channel selection decision is reduced to these three largely independent decisions (Ehrlich, 2011).[3] Customer-specific behaviour can be determined by sequential marketing, customer-oriented strategies as well as instruments, and the customer is holistically supported by the bank/company in fulfilling his needs (Foscht et al., 2017). This dissertation also followed this three-step approach. Therefore, the individual sections/subsections/points presented later describe these steps in greater detail.

2.4.1.1 Pre-Purchasing Behaviour

The information stage in a complex distribution channel environment of a bank/ company is characterised by a high stimulus overload from the various mixed marketing approaches of different touchpoints and is media offered (Rowley, 2000; Schramm-Klein,

[3] Among other things, Boehm (2006); Fleer (2016); Frambach et al. (2007), has implemented this three-stage subdivision in empirical studies.

2003a). The activity classes, namely *information requirements*, *procurement*, *processing*, *retention* and *information transfer*, are central to the customer's purchasing decision process but are still situational, customer-specific and, thus, flexible (Schramm-Klein, 2003a; Silberer, 1981). Due to an unsatisfied need, the information demand gets activated and the subjectively necessary information procurement (internal/external sources as described above) is initiated (Levy et al., 2019). The easy, anytime and barrier-free possibility to obtain information online, even for complex services with a multitude of outstanding attributes, increasingly leads to this preferred form of initial information procurement (Shankar et al., 2003), although attributes such as age and the Internet experience are certainly of additional importance here (Frambach et al., 2007; Montoya-Weiss et al., 2003). The amount of information a customer considers necessary depends on the individual's subjective cost-benefit perception (Blackwell et al., 2006; Maity et al., 2014). Customers have been benefiting from the strong increase in digitalisation and other technological possibilities by cost savings in information searches (Levy et al., 2019). In addition, by networking the channels within an omni-channel environment, customers save considerable time and gain process reliability. A bank/company's goal is to limit customers to their own channels. The conversion rate measures a customer's contract conclusion rate within the bank's own sales channels (Levy et al., 2019). Information reception and processing need to differentiate between whether a customer consciously receives information or the information reception is rather random and fleeting. In addition, the customer's absorption capacity is of particular importance (Blackwell et al., 2006; Kroeber-Riel & Gröppel-Klein, 2013). Cognitive decisions determine the selection of information channels, although situational factors (e.g. time pressure, sympathy), perceived risk, experience and satisfaction are very important in information searching (Kroeber-Riel & Gröppel-Klein, 2013). Banks/companies try to convince customers that their products are for their own interest in order to achieve a high level of acceptance among customers and to store the information firmly in customers' memory (retention) such that it is accessible for future use and recommendation (Blackwell et al., 2006).

2.4.1.2 Purchase Behaviour

The information stage is followed by the purchase stage, where all customer interactions with the brand and its environment take place (Lemon & Verhoef, 2016). This stage is characterised by behaviours of *choice* (whether to buy and from where), *order* (when and what to buy) and *payment* (how and how much to pay) (Blackwell et al., 2006; Lemon & Verhoef, 2016). In this stage, the focus of the customer is on identifying alternatives, their evaluation,

developing intention (behavioural intention) and, finally, making the purchase, including the settlement (Foscht et al., 2017; Frambach et al., 2007). The more complex the services or products (e.g. mortgages, investments, derivatives), the more extensively the customer needs to compare individual product attributes and benefits (Gensch & Javalgi, 1987). Usually, complexity leads to uncertainty and the disruption of decision making, requiring additional cognitive resources to solve the problem (Xia & Sudharshan, 2002). Since interruption can also lead to a reduction in customer satisfaction, advice from the bank/company is desirable as customers would then be able to evaluate the benefits of the channel attributes (Frambach et al., 2007; Xia & Sudharshan, 2002). This is where the strengths of a salesperson's personal advisory services over online channels come into play, and by networking the channels in the omni-channel environment, the advisor can intervene directly in order to help the customer and reduce any sort of complexity (Frambach et al., 2007). Vroomen et al. (2005) point out that first-time buyers are less likely to use an online channel for purchasing complex products (mortgage loans were one of them at that time). Beck (2004) provides an overview of customers' choice of distribution channels and differentiates the determinants of such a choice as follows:

- Object-specific determinants (e.g. price, assortment, personnel, service, accessibility, atmosphere and institutional conditions);
- Sociodemographic characteristics (e.g. gender, age, education, income, family, mission statements);
- Situational factors (e.g. special offers, time pressure, shopping occasion and current mood)

One of the bank/company's tasks at this stage is to offer simple, fast and transparent processing (Foscht et al., 2017). In terms of the loyalty effect, both the core benefit (e.g. availability) and the additional benefit (e.g. advice), at this stage, are of particular importance for the customer (Foscht et al., 2017). The congruence between channel and product (Morrison & Roberts, 1998) is particularly significant in the purchasing stage, especially since the effects of the potential negative consequences of a decision are felt most strongly at this stage. This effect (such as they are dissatisfied) may lead to customers switching to competitors (Tversky & Kahneman, 1981).

However, not all sub-processes at the purchase stage are of equal relevance for this dissertation. This is because the dissertation focuses on the banking sector and, in the banking

business, the aspects of channel selection, offered services and products as well as business processing are the primary focus areas.

2.4.1.3 Post-Purchasing Behaviour

The post-purchase stage includes customer interactions with the brand and its environment and covers aspects such as usage and consumption, post-purchase engagement and service requests (Lemon & Verhoef, 2016). Since bank products very often have a long product lifecycle (e.g. mortgages, investment products), this stage is characterised by the continued use of services/products at deterministic times (Frambach et al., 2007), including interest rate adjustment, the release of collateral, repayment adjustment or disinvestment. This sub-process also includes the complaint behaviours post-purchase (Foscht et al., 2017). Customers most often use the distribution channel they find to be the most comfortable (Frambach et al., 2007). All services and experiences the customers have had up to this point are relevant for the post-purchase evaluation, and these either strengthen the customers' purchase decisions for the company's products or channels or cause them to change their attitude towards them (Blackwell et al., 2006). Finally, the assessment of subjectively perceived performance in relation to expectations, as previously described in section 2.2, result in either satisfaction or dissatisfaction and may lead to loyal customer behaviour or a renewed product comparison, as done in the pre-purchasing stage (Foscht et al., 2017; Lemon & Verhoef, 2016).

2.4.2 Consumer Behaviour and Financial Services

Financial services do not fit into the usual classification of consumer and industrial goods and, according to their typical description in product marketing, are not a product at all (Ehrlich & Fanelli, 2012). The European Commission defines financial services as any service relating to banking, credit, insurance, pension, investment or payment nature, and they are, therefore, generic in scope (Directive 2002/65/EC of the European Parliament and of the Council, 2002) (Menrad & Varga, 2020). Financial services are concerned with the finances of individuals and organisations, i.e. the services specifically directed at the customers' intangible assets (i.e. money/wealth). They are first and foremost services that differ from physical goods (Ennew & Waite, 2007). Zeithaml et al. (1985) describe services based on three assumptions. First, services that differ from goods. Second, service providers are confronted with problems that goods marketers don't possess. Third, services marketing requires independent services offering marketing solutions. Although services and goods are not completely diametrically opposed, *intangibility, inseparability, heterogeneity* and *perishability* are characteristics that

dominate services and also create problems in the marketing of products (McKechnie, 1992; Zeithaml et al., 1985). Services are essentially processes and experiences, whose possession is not feasible. Furthermore, services cannot be stored and patented, and pricing is often not easy, which leads, in total, to goods and services being viewed differently (Bowen & Schneider, 1988; McKechnie, 1992; Shostack, 1977; Zeithaml et al., 1985). Customers cannot own, for example, a bank account like they can own a car, a computer or a food bag; a bank account merely represents the customers' right to avail various financial transactions on behalf of the account provider (Ennew & Waite, 2007). Customers associated services with the high credence qualities of the adviser according to the advice or product recommendations they received (McKechnie, 1992; Zeithaml, 1981). The other distinguishing features between services and goods include the *inseparability* of services, the direct *interaction* of customers and service providers as well as individual service deliveries (Zeithaml et al., 1985). Another differentiating feature is *perishability*, which results from the limited storage capacity and heterogeneity of services that have limited standardisation possibilities, and also limited quality control (Zeithaml et al., 1985). In addition, financial services are characterised by their *fiduciary responsibility*, strict and unconditional regulatory requirements and a unique *two-way information flow* between the bank and the customer with the help of further key differentiating features (McKechnie, 1992). Financial services, according to Lovelock and Yip (1996), are information-based services, i.e. services that deal with the creation of value through the collection, management and transmission of information. Other characteristics of differentiation include the *lack of a special product identity*, the geographical *spread of branch networks*, growth and risk, which are closely correlated, possible default rates up with the total amount, a high degree of risk *monitoring*, high *fluctuations in customer demand*, high *personnel* and *capital input* (Meidan, 1996).

Overall, financial services intend to provide customers with a mix of functional and psychological benefits and generate long-term customer satisfaction (Ennew & Waite, 2007). However, this requires specific service marketing (Camp & Thomson, 2018; Ehrlich & Fanelli, 2012; Ennew & Waite, 2007).

While services for bank customers in the pre-purchase stage are difficult to evaluate as ratings would be low in terms of search qualities, which is why they can hardly be considered as tangible attributes at that point; customers, in the purchase and post-purchase stages, can evaluate very well these attributes owing to their extensive experiences (McKechnie, 1992).

Purchasing decisions of bank customers are primarily based on formerly gained experience on credibility for their bank and its employees (McKechnie, 1992; Zeithaml, 1981). In the literature, customer decisions and their complex behaviour have been grouped into cognitive, emotional, activating and reactive processes (Kroeber-Riel & Gröppel-Klein, 2013). Kempe (2011) provides an overview of these different processes. Extensive and limited purchasing decisions are more cognitively controlled, whereas habitual decisions and impulse purchases are less cognitive (Blackwell et al., 2006; Kroeber-Riel & Gröppel-Klein, 2013). Extensive purchase decisions are characterised by rational control of purchase decisions, information collection and subsequent processing (Kroeber-Riel & Gröppel-Klein, 2013). These decisions tend to take longer than others as customers often want to minimise purchase risks by taking in as much information as possible (Blackwell et al., 2006). Experience leads to a reduction in uncertainties and an increase in the speed of processing for follow-up transactions (Levy et al., 2019). In the case of limited purchasing decisions, the consumer possesses purchasing experience without clearly preferring a particular alternative but invests only limited time and effort (Foscht et al., 2017; Levy et al., 2019). Purchase decisions are based on proven decision criteria and limited comparison of offers (Foscht et al., 2017). Extended and limited purchasing decisions, as is often the case with many financial services, are often associated with financial risk (Levy et al., 2019), and require intensive customer advice (Foxall & Pallister, 1998). Habitual purchase decisions, where the search for information is scarcely carried out and which insist on solidified behaviour patterns (Blackwell et al., 2006; Levy et al., 2019), as well as impulsive purchase decisions, are of minor importance in the banking business and are, therefore, less in the focus of this dissertation.

2.4.3 Categories of Financial Services, their Purchasing Process in an Omni-Channel Environment

The possible spectrum of financial services is highly heterogeneous in nature due to the banks' different specialisations, along with strongly differing process requirements and services potentials (Dümmler & Steinhoff, 2015b). Retails banks, in the sense of this dissertation, are institutions that have an integrated and networked omni-channel, including an extensive branch network, and they participate in the national clearing system. Beyond that, albeit without neglecting the above-mentioned points, these banks can also serve other key areas such as business and corporate clients, assume commercial banking activities or operate in investment banking. According to Meidan (1996), banks offer five main categories of services:

- *Cash accessibility* (e.g. credit card payments and transaction services);
- *Asset security* (e.g. deposits, custody services, lockers and others);
- *Money transfer* (national and international payments)
- *Deferred payment* (all types of loans, bank bonds and guarantees)
- *Financial advice* (e.g. advice on investments, wills, taxes, leasing, projects, asset management, insurance services and others) and its *implementation* (including brokerage).

Although these classifications were made years ago, they are still relevant.

While standard services require autonomous banking processes, which demand low bank-customer integration and interaction, complex products are associated with an intensive and personal integration of the customer into the bank's service processes (Dümmler & Steinhoff, 2015b). Autonomous services are considered as standard processes in accomplishing day-to-day needs, such as the preparation of bank statements, cash withdrawals, online transfers, standing orders, among others. On the other hand, complex services include mortgage financing, pension advice, portfolio auditing, savings, asset management and others, which are, thus, the services that require providing high-level information to the customer (Cortiñas et al., 2010; Dümmler & Steinhoff, 2015b).

While standard services are transaction-driven and, therefore, are relevant to the processes of the purchase and post-purchase stages of financial services, more complex products, with more intensive customer integration, are characterised by cognitive decisions due to the need for information, the higher degree of uncertainty and risk associated with making purchase decisions (Berger & Messerschmidt, 2009), which is why the pre-purchase stage is also of particular importance here (Lee & Cho, 2005; Perry & Morris, 2005). As this dissertation considers the entire financial process, complex products are of special interest.

Although channel barriers diminish in the omni-channel, as described in section 2.1, customers may have different preferences in channel selection at different purchase stages, depending on the situation and perceived convenience, service level and service complexity, as mentioned above, as well as personal preferences for aspects such as online experiences, knowledge of channel and privacy (Frambach et al., 2007; Jaume, 2007; Laukkanen, 2007b).

The omni-channel, which merges the digital and the analogue worlds through networking, provides new ways of customer interaction (Leimeister & Glauner, 2008). Today,

bank customers have not only the choice between the branch and a digital channel but also can choose from different types of digital channels (Laukkanen, 2007a, 2007b). Levin et al. (2003) point out that customers have developed different channel usage patterns in the purchasing processes by combining digital and analogue channels. Customers have already developed channel-hopping behaviours by acting partly sequentially and partly parallel between various distribution channels and, thus, do not interact in a purely digital or analogue manner, but rather in an increasingly hybrid way, which is also the aim of an omni-channel approach (Heinemann, 2013). While Frambach et al. (2007) reveal in their study that bank customers prefer an analogue channel for mortgages, Berger and Messerschmidt (2009) point out that customers are increasingly using information from digital channels, especially in the information stage for financial services.

2.4.4 Channel Usage Preferences of Bank Customers

Bank branches have always played a central role in the banking business and have considerably influenced the interaction between banks and customers (Zhou et al., 2017). However, this distribution channel no longer has a special position in the banking business as bank customers have become accustomed to using a combination of channels (hybrid) (Cortiñas et al., 2010; Liao & Cheung, 2002; Lin, 2011; Sathye, 1999). Based on an empirical study, Cortiñas et al. (2010) show that almost all bank customers access more than one bank channel and very often use digital channels, in addition to the stationary/analogue channel and the ATM. However, it should be noted that, in the literature, inaccurate definitions of multi-channel customers have been applied as customers are often referred to as the ones who make a purchase in more than one channel during an observed time period (Kumar & Venkatesan, 2005; Mcgoldrick & Collins, 2007; Venkatesan et al., 2007). Customers who inform themselves in the pre-purchase stage in other channels or switch to other channels in the post-purchase stage, but always make the purchase on the same channel, are by this definition not included in these studies; instead, they are assigned to the single-channel user category or considered loyal to a single-channel (Ansari et al., 2008; Ehrlich, 2011; Fleer, 2016). For this reason, such a definition of financial transactions is too imprecise as it one-dimensionally refers to the purchase of financial services but not to the choice of channel (Cortiñas et al., 2010; Ehrlich, 2011). That is why a more precise and comprehensively worded definition indicates that bank customers use more than one channel (in information, purchase or post-purchase stage) *within a single purchasing process* (Balasubramanian et al., 2005; Ehrlich, 2011; Verhoef et al., 2007).

In the literature, this type of customer is referred to as a *multichannel consumer* or *research shopper*. Yet, Ehrlich (2011) points out that, in many studies, the exact differentiation of this essential fact has not been made.

In this dissertation, this aspect is very relevant as bank customers within an omni-channel environment were interviewed about their respective cognitively influenced decisions in a multi-stage buying process while accessing different channels. For this reason, this study follows the definition of the multi-channel consumer or research shopper who accesses multiple networked channels for a purchasing process.

2.5 Existing Literature Related to the Omni-Channel Environment in Banking

The previous chapter of this dissertation revealed that customer satisfaction and loyalty in the banking business, but also in general, are important research areas that have received a high level of attention from scholars, bank managers and practitioners alike. Nevertheless, Saghiri et al. (2017) note that the developments regarding the omni-channel approach are still in the initial stage. This chapter concludes with a literature review of the current state of research, identifies gaps in the research, and highlights the need for this study.

2.5.1 State of Research

As described above, the banks' distribution channel management is undergoing major changes, although there are regional and temporal differences. The implementation of an omni-channel approach is well-advanced due to high consumer demand for the use of new media as well as increasing digitalisation,[4] along with the banks' own interest in optimisation (Menrad, 2020). Verhoef et al. (2015) point to three research directions in omni-channel management and classifies it as follows: first, the influence of channels on performance, second, cross-channel customer behaviour and, finally, the cross-channel retail mix. Verhoef et al. (2015) point out, in particular, that the behaviour across channels has not yet been investigated deeply; nevertheless, they assume that future studies will address the drivers of the channel choice. Lazaris and Vrechopoulos (2014) and Manser Payne et al. (2017) have called for further research on the omni-channel approach. Moreover, journals such as the International Journal of Physical Distribution and Logistics Management and the Journal of Operations Management

[4] See e.g. in Lembke (2015).

have called for papers to accelerate academic research in this field. Omni-channel approach and management can be considered from a supplier point of view and, if implemented, from the customer's point of view; the existing literature initially prioritised the supplier's point of view due to implementation challenges (Beck & Rygl, 2015; Chen et al., 2018; Huebner et al., 2016). For example, Picot-Coupey et al. (2016), described the significance of channel design in enriching customers' shopping experiences; on the other hand, Vasiliev and Serov (2019) analysed the economic components of an omni-channel distribution management system from the bank's point of view.

In this study, the distribution channel was investigated based on an omni-channel approach in the banking business primarily for private customers from the customer's point of view. Therefore, the following types of previous studies related to the *banking business* are of interest:

- Distribution channel studies, ideally in an omni-channel environment investigating customers' purchasing processes;
- Studies examining the integration of the bank channels;
- Studies examining customer satisfaction or closely related concepts, ideally combined with customer loyalty.

The present author does not yet know of any research work on the purchasing process of bank customers in an omni-channel environment, although the purchasing process in the distribution channel, essentially in a multi-channel environment, has been the subject of several scientific investigations.

Herein, the customer *purchasing process in banking* has been presented based on a multi-channel and a cross-channel approach as the omni-channel environment has not previously been investigated in this context.

McKechnie (1992) discuss the differences between financial products and goods and identified the characteristics of services and their impact on purchasing behaviour. In this descriptive study, she addressed the Engel-Kollat-Blackwell (EKB) model and set the basis for a conceptual framework related to financial services. A literature review summarised previous works and showed the primary characteristics of customers in the financial business (e.g. confidence, trust, location, ease of transaction). These characteristics would also be relevant for the distribution channel approaches that have been developed later. Due to the lack of digital

channels in 1992, McKechnie considered the advisor-customer relationship and highlighted the importance of interaction in the face-to-face channel.

Beckett et al. (2000) analysed this aspect more extensively by classifying customer behaviour in the banking business in terms of consumer confidence and involvement. Although the purchasing process was considered only indirectly in this study, consumer behaviour was assigned to delivery channels (e.g. ATM, telephone, the Internet, advisor) according to the customer's level of involvement and confidence, and a product reference as well as a repurchase reference were modelled. However, this theoretical model, discussed on the basis of focus groups, would probably be considered outdated today due to the significant expansion of the channel size and a change in customer behaviour.

Verhoef et al. (2007) analysed the purchasing process of customers by examining different product/service categories such as bank loans for understanding the research-shopper phenomenon (subsection 2.4.4). These researchers presented a conceptual model in a multi-channel environment that covers both the pre-purchase and purchase stages. In addition, they presented a few channel attributes considering the benefits and costs pertaining to pre-purchase and purchase stages and a combination of both, which explain research shopping, along with the lack of channel lock-in and cross-channel synergies. Verhoef et al. (2007) identified three strategies for managing research shopping through channel integration and influencing customers' channel behaviour to ensure that customers use the same channel for making a purchase as they previously did in the pre-purchase stage. The empirical results confirmed the research shopping behaviour of customers.

The empirical studies of Jaume (2007) reveal that the perceived convenience, social relationships, the knowledge of channel and privacy influence the channel selection behaviour of bank customers in a multi-channel environment with the channel's counter/branch, ATM and the Internet. Although he did not consider the purchasing process, he designed a model in such a way that future researchers could generally make use of this causal model in a slightly modified way with a consideration of the variables for the analysis of a purchasing process. He did so bearing in mind that the distribution channel environment has become much more extensive, complex and digital and that the perception of convenience and customer knowledge has probably changed considerably.

Frambach et al. (2007) investigated the preferences and drivers of consumers in channel usage intention of complex financial services (such as home mortgages) through three purchase

stages (pre-purchase, purchase and post-purchase stages) in a multi-channel environment. Within the scope of that study, the researchers examined the offline channel (limited to personal advisory) vs. the online channel (limited to Internet banking), and he observed that, in all the stages, bank customers generally preferred the offline channel over the online channel and that the intention to use a channel is influenced by experience (here Internet experience). In addition, they pointed out that the drivers of channel preference in the purchasing stages differ according to the desired channel benefits and offered capabilities. Functional (accessibility, ease of use, usefulness (convenience), social presence (trust, confidence)) and psychosocial (emotions) benefits were distinguished drivers for channel selection. The objective of these researchers was to investigate online and offline consumer choices across the purchase stages and the role of Internet experience herein. The scholars found that Internet experience is the primary driver of online channel preference in the pre-purchase and post-purchase stages, while other attributes are stage-specific (Frambach et al., 2007).

Referring to Frambach et al. (2007), Gensler et al. (2012) expanded the drivers of channel preference of bank customers related to channel attributes and customer experience using the spillover effects that occur when the likelihood of using a channel affects the likelihood of choosing the same channel in another stage. An innovative element of this approach was the simultaneous investigation of determinants, not an isolated observation. The study was limited to two products, namely checking and brokerage accounts. All three stages of the purchasing process were examined. Channel attributes such as quality, price, convenience (the perceived ease of use, speed) and risk were considered, as well as the assumption that different parameters are relevant depending on the purchase stage and customer objective. The channels, branch, the Internet, call-centres and self-service terminals were examined for the two services – checking and brokerage accounts. The results of the studies confirmed the notion that the relative importance of channel attributes differs across the purchasing stages; moreover, some of the most significant channel attributes are more important than experience effects generated from previous purchasing processes. Additionally, the study further revealed that the spillover effects are less important than the gained experience.

Other studies, such as Berger & Messerschmidt (2009) intended to study the entire purchasing process. However, they had to concentrate on individual stages due to the low number of customer cases. They analysed the influence of online communities on the purchase decisions of bank customers in the pre-purchase stage. They found that virtual communities have a strong influence (comparable to brand communities) on the pre-purchase stage; however,

this influence particularly depends on the perceived ease of use and sense of the community (personal involvement). Other factors such as age, employment status, financial knowledge and social influence are significantly less important.

Ehrlich (2011) examined the planned channel selection of customers, including bank customers, on the basis of the Stimulus-Organism-Response (SOR) framework in the pre-purchase, purchase and post-purchase stages. Channel-specific attributes (the quality of the service offered, convenience, risk and costs of use), situational characteristics concerning the purchase (purchase process, product/branch, socio-demographic data of the consumers) as well as the experience gained from using the channel (satisfaction) are aggregated and, subsequently, evaluated by the customer. Channel attractiveness, as individually perceived by the customer, determines their intended future channel selection. In this model, Ehrlich identified the stage-dependent significance of customers using a channel. Although several channels are generally used in the pre-purchase stage, Ehrlich (2011) noted that, at the time of the study, a majority of customers also used the preferred information channel in the purchase stage (Ehrlich, 2011).

The following interim conclusion can, therefore, be drawn from the experiences in the purchasing process in the financial business:

The intensive analysis of the purchasing process provides important insights into the intended concept of this study and, so far, points out that the intention to use and the use of channels were the focus of the researchers. In most studies, scholars have examined channels separately or analysed only one channel, unlike this study. Omni-channel approach indicates a holistic view of channels instead of an isolated view. In addition, the channel-switching behaviours of customers and their indulgence in research shopping are accepted as given facts and are, therefore, not investigated further. In this study, the object of examination was an omni-channel environment of a bank, not a multi-channel approach as in previous studies. This dissertation identified the drivers that satisfy bank customers in an omni-channel environment and lead to customer loyalty for the distribution environment and to the bank in order to sustainably retain the customer in the bank's environment throughout the entire purchase process (including the post-purchase stage), preventing the loss of customers to a competitor at any purchase stage.

Complementary to above mentioned studies, Saghiri et al. (2017) developed a conceptual framework for an omni-channel system in retail. This framework explains how a system can be set up, operated and monitored. A three-dimensional concept considers the key

aspects of integration and visibility as the main enablers of an omni-channel approach, according to these scholars. Integration is covered by the dimensions of the channel stage (purchase process), channel types and channel agents, while visibility is covered by an integrated customer service and an integrated product information process. Although the framework is quite general, the focus on retail makes it less suitable for financial business as the underlying case studies of the concept were retail studies only. Furthermore, the concept is not designed for customer satisfaction and loyalty research.

As described in point 2.1.4, a key element of an omni-channel environment in financial business is the *integration of the distribution channels*; therefore, the state of research on distribution channel integration has been reviewed below. The integration of distribution channels is considered from the perspectives of both the supplier and the customer.

Several researchers such as Beck and Rygl (2015), Picot-Coupey et al. (2016), Huebner et al. (2016), Hossain et al. (2017), Saghiri et al. (2017) and Chen et al. (2018) have conceptually discussed the challenges of implementing an omni-channel approach and the integration of channels from the provider's perspective. A theoretical generic review and call for papers were forwarded by Lazaris and Vrechopoulos (2014), Verhoef et al. (2015), Manser Payne et al. (2017).

Juaneda-Ayensa et al. (2016), Shen et al. (2018), Zhang et al. (2018) and Hamouda (2019) considered perceived integration in an omni-channel environment from the customer's perspective, which was also considered in this dissertation. While Juaneda-Ayensa et al. (2016) and Zhang et al. (2018) researched the purchase intensity of customers, Shen et al. (2018) and Hamouda (2019) proceeded to interview customers on their experiences with an omni-channel service.

On the basis of the Unified Theory of Acceptance and Use of Technology (UTAUT2) model (Venkatesh et al., 2012) extended factors such as performance expectancy, effort expectancy, social influence, habit, hedonic motivation using factors such as personal innovativeness and perceived security; Juaneda-Ayensa et al. (2016) noted a weak influence of this set of hypotheses, which was probably the low experience of customers with the omni-channel approach, channel integration as well as the question that is limited to the intention to purchase. Performance expectancy, effort expectancy and personal innovativeness proved to be positively confirmed.

Zhang et al. (2018) investigated the relationship between channel integration and purchase intensity considering a major omni-channel retailer in China. This marked the first time that customer satisfaction was related to customer trust in an omni-channel environment. The SOR-based model (see above) explains this relation through customer empowerment, which, according to the researchers, constitutes the control of one's own shopping process. The positive relationship between channel integration and purchase intention was identified and confirmed through this study. However, the purchasing process, which is essential for this dissertation, was not examined. Furthermore, the purchasing intention, instead of the experience gained in the purchasing process, was examined.

Shen et al. (2018) researched the drivers of omni-channel service usage (e.g. usage intensity and usage scope) using behavioural supplies and behaviour-based traits in the catering industry. Integration quality (content consistency and process consistency) and object-based supplies (channel choice breadth and channel service transparency) influence behavioural supplies in this model. A generalisation of the statements cannot be made due to the focus on specific industries; however, this study also confirms the importance of channel integration in an omni-channel environment.

Hamouda (2019) studied the relationship between channel integration, perceived value, customer satisfaction and customer loyalty in an omni-channel banking environment and interviewed the sample comprising a few bank customers in Tunisia. With this, the researcher could establish a positive interrelation between these factors; in his opinion, it was for the first time that something like this was possible. Nevertheless, there might be concerns whether a highly complex omni-channel environment has already been introduced in Tunisia. The question of whether an omni-channel environment is available was left to the customers by the researcher, who asked for information pertaining to their experience. The complex requirements for an omni-channel, as previously described in this paper, were not challenged and only the introduction of a mobile channel was considered, along with the fact that this is a prerequisite for an omni-channel environment. Furthermore, this study does not focus on the highly important purchase process in order to find out how customer satisfaction develops in that process so as to draw conclusions for the omni-channel approach and customer loyalty.

The constructs – customer satisfaction and customer loyalty – in a distribution channel environment have been researched not only by the scholars mentioned above but also by numerous other researchers, including Schramm-Klein (2003a), Larivière et al. (2011), Hsieh

et al. (2012), Carlson et al. (2015), Fleer (2016) and Bapat (2017). In summary, one of the following facts can be concluded: an omni-channel system does not exist; only individual channels were compared; other sectors were considered; satisfaction drivers were not examined or the purchasing process was not researched. Mostly, it is a combination of the aforementioned points.

This dissertation analysed the drivers that lead to loyal behaviour towards an omni-channel system or the bank operating that omni-channel system while considering the buying process to better understand customer behaviour. Comparatively, few studies investigate this approach. Wong et al. (2019) examined the factors that influence customer loyalty; however, the factors of customer satisfaction and the purchase process were not considered in that study. Although Belás et al. (2015) and Belás and Gabčová (2014, 2016) intensively investigated customer satisfaction and customer loyalty, they did not address the distribution channels approach and the purchasing process. Although Ieva and Ziliani (2019) researched the different touchpoints in banking, they did not consider the purchasing process, which was an essential aspect of this dissertation.

2.5.2 Research Gaps

The above-presented results demonstrate the need to analyse a differentiated purchasing process in order to better understand the behaviours of bank customers, particularly considering the increasingly complicated banking environment and changing customer demands, and to adjust to this process with a consideration of the bank to avoid losing customers to competitors. It is extremely surprising to perceive the small number of publications researching this aspect. The present author is not aware of any publication investigating this aspect, in addition to customer satisfaction and customer loyalty, in an omni-channel financial environment. The evolutionary step towards an omni-channel system in the financial business necessitates a more detailed investigation, which is so far still lacking in the context of customer satisfaction and loyalty. This dissertation researched this aspect from the customer's point of view and considered the distribution channels as a holistic approach. Therefore, integration will be an essential component of research in understanding customer satisfaction and, consequently, customer loyalty in the different purchase stages. Several previous papers have analysed individual channels, which, in the opinion of the present author, was not beneficial since satisfaction is a subjective, theoretical and hypothetical construct (subsection 2.2.1) and must, therefore, be considered holistically. Dynamic developments in digitisation and, consequently,

in distribution channel design enabled an omni-channel approach in the financial business. As a result, an investigation based on this technical infrastructure from the customer's point of view is necessary to better understand and adapt to customer behaviour. A previous work examined the multi-channel. However, due to the dynamics of mobile channels and the deep networking of channels, it is now considered to be technically outdated. Further research is necessary to meet the dynamics of customer demand, market environment, technical possibilities and competitive pressure in the banking sector.

2.5.3 Added Value of This Study

The omni-channel concept is still nascent (Saghiri et al., 2017) The implementation requirements are so numerous and engaging that it is impossible to directly evolve from a multi-channel-siloed strategy to an omni-channel strategy without any transition (Picot-Coupey et al., 2016). This dissertation not only enhanced the existing knowledge pertaining to customer behaviour in a new, very demanding and networked banking environment but also gave banks an opportunity to optimise their processes to ensure that customers perceive and use these processes and are satisfied and loyal to the bank. The aim of this dissertation was to identify the drivers of customer satisfaction within the omni-channel environment of a bank in the different purchase processes. A crucial success factor of an omni-channel environment is the channel integration, which needs to be set up to be perceived by customers, as this is likely to increase customer satisfaction. This dissertation examined the satisfaction of bank customers and its effect on their loyalty from the customer's perspective in an omni-channel financial environment. A consideration of customer satisfaction in a bank's omni-channel environment, taking into account the customer's buying processes, provides a significant innovation potential for academic research as well as a business practice. With this dissertation, the dynamics of consumer behaviour, the development of touchpoints and the networking of channels (Ehrlich, 2011) was addressed. Although a high level of knowledge pertaining to the multi-channel approach has now been researched (Neslin et al., 2006), this knowledge is becoming increasingly obsolete as banks would, in the future, no longer use a multi-channel environment. The gap resulting from the limited knowledge due to the lack of empirical evidence on omni-channel environments could be partially closed by this dissertation.

Banks are currently in the introduction phase of omni-channel systems (Menrad, 2020), which is why this study can provide significant inputs regarding the optimal implementation of such systems in order to address customer needs.

3 Customer Satisfaction and Loyalty in an Omni-Channel Banking Environment, Considering the Purchasing Process

As pointed out in the previous chapter, a theoretical framework in omni-channel research on customer satisfaction and loyalty, considering the purchasing process of bank customers, is not yet available. Overall, there are surprisingly few studies that have investigated previous distribution channel approaches (multi-channel, cross-channel) with regard to customer satisfaction while accounting for customers' purchasing processes. Consequently, in this dissertation, exploratory research was conducted in this context to establish a conceptual framework for the banking business that integrates the purchasing process, examines customer satisfaction and loyalty as well as identifies the determinants of satisfaction. Following the considerations of Saghiri et al. (2017), an inductive, exploratory approach in this complex context paves the way for an aspired theory, allowing it to be empirically tested and verified. To capture the omni-channel approach in its entirety, as already described in the previous chapters of this dissertation, overall satisfaction and channel integration are central. In particular, a more in-depth analysis of overall customer satisfaction is essential as the purchasing process involves different aspects of satisfaction. As Montoya-Weiss et al. (2003) pointed out for the banking business, customers may experience overall (dis)satisfaction with the bank, simultaneously or subsequently, they may disagree with a specific activity, such as loan applications, balance inquiries, or transfer. For example, customers may be satisfied with advice on real-estate financing and dissatisfied with the disbursement of loan tranches, but ultimately express their general satisfaction with the bank. To capture these aspects conceptually for omni-channel management, relevant parameters for customer satisfaction, channel integration and customer loyalty were compiled and condensed in the following. This model forms the basis for starting the operationalisation of a concept and the performance of an empirical study.

3.1 Developmental Steps to the Causal Model

Structural causal models enable the analysis of complex dependency structures while considering the fact that many theoretically interesting hypothetical constructs such as customer satisfaction and customer loyalty are not directly measurable (Homburg & Klarmann, 2006). Causal models have the status of theories or hypotheses and represent the causal structure and,

consequently, cause-effect relationships (Hagmayer, 2000). The causal analysis combines structural equation models (SEMs) from econometrics for the analysis of complex dependency structures between directly measurable variables, on the one hand, and factor analysis from psychometrics for the measurement of not directly observable constructs, on the other hand (Homburg & Klarmann, 2006). Causal models are widely used in many different areas of business administration such as marketing since hypothetical constructs are often predominant here (Baumgartner & Homburg, 1996; Homburg & Klarmann, 2006). In business management research, a multi-level approach was established to analyse and measure reflective constructs (Boyd et al., 2005; Homburg & Giering, 1996; Homburg & Klarmann, 2006; Ping, 2004). As the first task, a detailed definition of the construct in terms of object, attribute and the rater entity is required to develop a conceptual framework, and correspondingly a hypothetical construct (Rossiter, 2002). Subsequently, the conceptual framework can be validated and, finally, operationalised by exploring its enablers (Saghiri et al., 2017). Afterwards, the model allows for calculation using (empirical) data, the evaluation of the approach and, finally, the interpretation of the results. Figure 9 summarises the process.

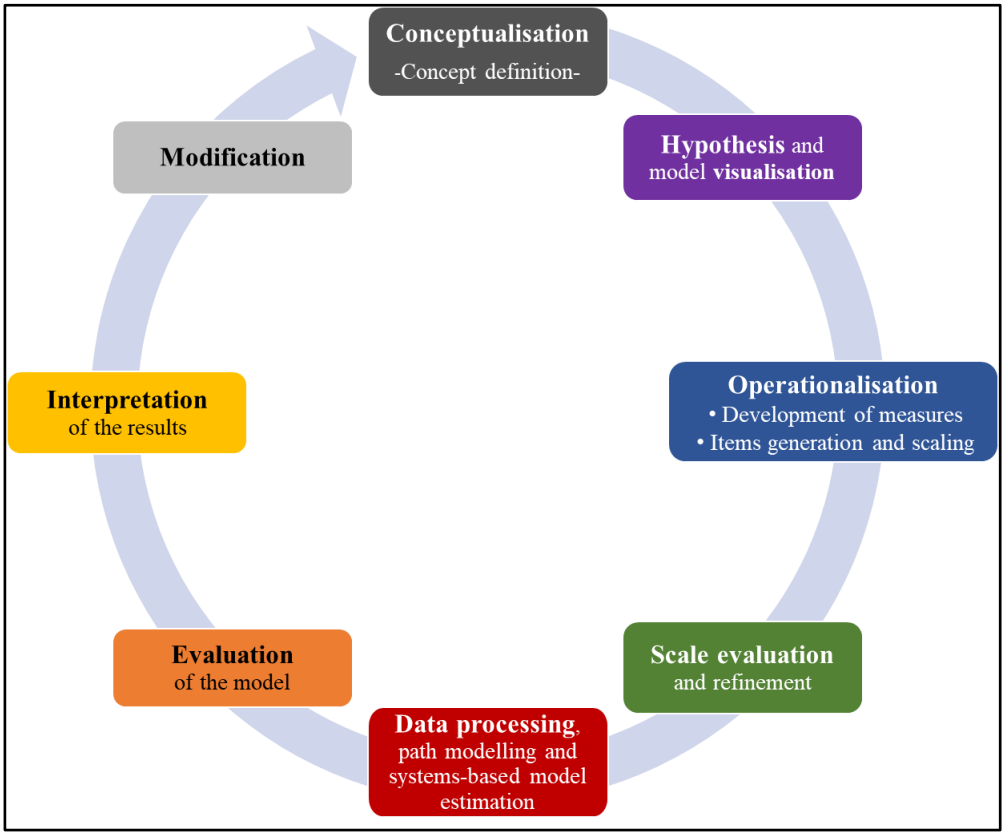

Figure 9: The Workflow of the SEM

Source: Author's elaboration, adapted from Weiber & Mühlhaus (2014)

3.2 Preliminary Considerations for the Concept

Following the C-OAR-SE[5] method for scale development in marketing, an initial construct definition in the form of an object, attribute and the rater entity was drafted first (Rossiter, 2002).

On the *object* level, it was defined as something to be evaluated and, thus, the carrier of evaluation (Weiber & Mühlhaus, 2014). The object, in this case, was the omni-channel system of the bank, considering the explanations of Diamantopoulos (2005) – the *concrete object*, which has been described in section 2.1. The person who evaluates the construct (target population) is the *subject* (Weiber & Mühlhaus, 2014), about whom the question is defined. Thus, bank customers and prospects are the subjects of this concept as they are the ones who evaluate their satisfaction with the bank operating an omni-channel system. To define the hypothetical construct *attributively*, it is necessary to provide a precise description of the construct's characteristics (property characteristics). The structural definition was formed by hypothesising and establishing a causal model (Bagozzi, 1984; Weiber & Mühlhaus, 2014).

For the exact definition of the construct at the attribute level, a differentiation according to dimensionality (*dispositive definition*) and the relationship structure (*functional definition*) is appropriate (Weiber & Mühlhaus, 2014). *Dispositive* aspects, thus, determine from which and from how many (*single-item vs. multiple-item scales*) dimensions an aspect can be explained and determined (MacKenzie et al., 2011; Rossiter, 2002; Weiber & Mühlhaus, 2014). *Multi-dimensional* constructs consist of various latent variables (factors, dimensions, components), which themselves might be further scalable (Homburg & Giering, 1996). Whether one- or multi-dimensional constructs are involved depends on intentions and objectives as well as intended differentiations (MacKenzie et al., 2005; Weiber & Mühlhaus, 2014). *Functional* differentiation according to a *reflective* or *formative* construct is required only in the presence of multi-dimensionality (Weiber & Mühlhaus, 2014). *Reflectively, constructs* are defined where latent variables are the effects of the considered construct. In this case, a Confirmatory Factor Analysis (CFA) of the second or higher-order (sometimes called SFA) with a factor structure of two or more orders are available in which the latent second-order construct is the cause of the covariation of the latent first-order construct (reflective model) (Bojuwon & Bojuwon,

[5] C-OAR-SE is an acronym for Construct definition, Object classification, Attribute classification, Rater identification, Scale formation, and Enumeration and reporting.

2015; Rindskopf & Rose, 1988; Weiber & Mühlhaus, 2014). In the case of *formative constructs*, the latent variable is the parameter of the construct that determines the latent endogenous variables (this requires Structural Equation Modeling [SEM]) (Weiber & Mühlhaus, 2014).

In the context of the operationalisation of the construct (methodology) and the (then developed) causal model, these aspects have been further described in relation to the concrete proceeding. However, the key constructs of this work, i.e. customer satisfaction and customer loyalty have been first conceptualised after which hypotheses were established.

3.3 Conceptualisation of Customer Satisfaction with the Omni-Channel Bank

Subject of the satisfaction evaluation within the scope of this research project are bank customers, selectively prospective customers, whose banks manage an omni-channel and, considering the entire purchase process, give a satisfaction statement about the omni-channel approach and the perceived processes. To define customer satisfaction in a less generic format, the reference levels and dimensions of satisfaction were differentiated. The details regarding this are included in the following section.

3.3.1 Satisfaction Reference Levels

With regard to customer satisfaction and based on the scientifically established EDT (in point 2.2.4), the result of the customer evaluation process must be differentiated on a *factual level* (static approach) and *time level* (dynamic approach) to classify the satisfaction assessment (Fleer, 2016; Korte, 1995; Siefke, 1998; Stauss, 1999).

With regard to the *factual* level, it has to be clarified to which performance the satisfaction refers to as different levels of aggregation may be relevant at this point (Fleer, 2016; Korte, 1995; Meffert & Bruhn, 1999; Stauss, 1999). Renoux (1973, p. 55) distinguished between "*Micro-Marketing System (Dis)satisfaction*" which refers to company-specific aspects and "*Macro-Marketing System (Dis)satisfaction*" covering general aspects of market business activities. Czepiel et al. (1974, p. 120) classified satisfaction even further into "*System Satisfaction*" (which is comparable to Renoux's *Marco-Marketing System (Dis)satisfaction*), "*Enterprise Satisfaction*" (which categorises satisfaction with the totality of all services provided by the company) and "*Product/Service Satisfaction*" (considering the utility of the services) (Fleer, 2016). According to Meffert and Bruhn (1999), consumer satisfaction may be

hierarchically structured and measured at different levels. They distinguished between the marketing system (mostly macro-consumer satisfaction) and the different kinds of micro-consumer satisfaction at the levels of (i) the company, (ii) the service sector (group view), (iii) the services and, finally, (iv) the service characteristics (Meffert & Bruhn, 1999). Thus, by creating hierarchies in the level of customer satisfaction, explicit partial satisfaction levels are created among customers with corresponding interdependent relationships (Korte, 1995). Table 2 shows the different approaches to customer satisfaction on a factual level. This dissertation analyses customer satisfaction on the micro-level. This dissertation analyses customer satisfaction on the micro-level.

Table 2: Reference Levels of Customer Satisfaction (factual level)
Source: Author's illustration, according to Fleer (2016)

Authors (year of publication)	**Renoux (1973)**	**Czepiel/Rosenberg/ Akerle (1974)**	**Meffert/Bruhn (1981)**
Structured levels of reference for consumer satisfaction			Satisfaction with the:
	Macro-Marketing System (Dis)satisfaction	System Satisfaction	Marketing system
	Micro-Marketing System (Dis)satisfaction	Enterprise Satisfaction	Company
		Product/Service Satisfaction	Service sector (group view)
			Level of service
			Service characteristics

A further differentiation, particularly decisive for this dissertation, concerns the time level (Fleer, 2016; Stauss, 1999). Renoux (1973) already considered this aspect decades ago by not only attributing satisfaction on the micro level in an isolated and static way to the supply performance in the purchase decision, but by differentiating the perceived performance and considering it as a dynamic process during the whole purchase process with the result to define different forms of satisfaction. Advisory services that are provided before the purchase decision leads to a distinguishable form of customer satisfaction (Korte, 1995). By differentiating the dissatisfaction forms of shopping, buying and consuming dissatisfaction, Renoux (1973) laid the basis for subsequent research approaches (Fleer, 2016).

Burmann (1991) transformed the basic ideas of Renoux (1973) and adapted them to the buying process and the application of a (long term) consumption process in form of car use. Burmann distinguished between shopping satisfaction in the pre-purchase stage, buying satisfaction in the purchase stage, and consuming satisfaction in the post-purchase stage.

Burmann (1991) used a causal analysis to investigate the influence of satisfaction (purchase, customer service, product) in these different stages on supplier and brand loyalty. One of the objectives of the empirical study was to separately measure customer satisfaction with the product, customer service and the entire purchase process (Burmann, 1991).

Korte (1995) followed up on the work in Burmann's studies and conducted a customer satisfaction analysis in the automotive industry. His study also assumed different levels of satisfaction, which he differentiated into the pre-purchase, purchase and post-purchase stages as well as product satisfaction. The study examined in particular the structure and dynamics of the influence of customer satisfaction on customer loyalty, which he differentiated into brand and supplier loyalty. Korte's research showed that object-oriented approaches for measuring customer satisfaction, such as sales, turnover, market share, repurchase rates, are insufficient and that standardised and written customer surveys, customer interviews and the measurement of customer complaints are much more suitable (Korte, 1995).

Siefke (1998) also differentiated the different forms of customer satisfaction and considered an event-oriented, time-dependent and dynamic view in the assessment of satisfaction to be necessary, particularly in the case of services, due to their process character. This dynamic approach was not in contradiction to the static approach, but according to Siefke, was merely viewed from a different perspective. According to his explanations, customer expectations and perceptions are not static but rather dynamic and are considered holistically for an overall satisfaction evaluation. Besides, Siefke discussed that a distinction could be drawn between relationship-specific (concerning several transactions) and transaction-specific (single transaction) satisfaction dynamics. Siefke's study examined customer satisfaction on the basis of individual transactions in the transport services sector on a micro-level and on the basis of a dynamic view of customer satisfaction. In this context, he differentiated customer satisfaction with transport services within the pre-trip, travel, transfer and post-trip stage.

Bloemer and Lemmink (1992) distinguished satisfaction for the purchase and post-purchase stages of cars.

Schütze (1992) also analysed satisfaction in two-time stages when examining industrial markets and differentiated between a pre-purchase stage and a post-purchase stage.

Fleer (2016) differentiated the stage of information satisfaction (pre-purchase stage), purchase satisfaction (purchase stage) and post-purchase satisfaction (post-purchase stage). In

her study, she analysed the first two customer satisfaction evaluations only. Fleer studied customer satisfaction and customer loyalty in a multi-channel retail system and examined the stationary channel as well as the online channel at the micro level with transaction-specific information on electrical goods and outdoor products.

Table 3 summarises different approaches to customer satisfaction research regarding its event-oriented, time-dependent and dynamic aspects.

Table 3: Systematization of Customer Satisfaction by Stages of Purchase
Source: Author's illustration, according to Fleer (2016), Korte (1995)

Renoux (1973)	**Burmann (1971)**		**Bloemer/ Lemmink (1991)**	**Schütze (1992)**	**Korte (1995)**	**Siefke (1998)**	**Fleer (2016)**
Shopping (Dis)satisfaction	Shopping satisfaction		Consumer satisfaction during the …	Satisfaction in pre-sales phase	Satisfaction in pre-sales phase	Satisfaction in pre-travel phase	Information satisfaction
Buying (Dis)satisfaction	Buying satisfaction		… sales process		Satisfaction in sales phase	Satisfaction in travel phase Satisfaction in connection phase	Buying satisfaction
Consuming (Dis)satisfaction	Consuming satisfaction Pruduct satisfaction	Service satisfaction	… after-sales process	Satisfaction in after-sales phase	Service satisfaction	Satisfaction in post-travel phase	

The concepts, considerations and studies by Burmann (1991), Korte (1995), Siefke (1998) and Fleer (2016), are of significance for this dissertation, though other objects and other attributes were also relevant. Due to their model logic and concept, all these studies have been verified by causal and structural equation modelling. All four studies analysed the effects of satisfaction on customer loyalty to the supplier and, in addition, systematised customer satisfaction with regard to the pre-purchase, purchase and post-purchase stages. Fleer based her concept on all three stages, but she finally examined only the pre-purchase and purchase stage.

3.3.2 Attributes for Measuring Customer Satisfaction in Banking

Progressing to the conceptualisation of the latent variables in the sense of Rossiter (2002) and Weiber and Mühlhaus (2014), the attributes for measuring customer satisfaction in the banking business were collected, structured, categorised and summarised. Subsequently, these factors were consolidated, as far as possible, to reduce complexity and assigned to the stages of the purchase process (Fleer, 2016). Chapter 2 of this dissertation has already described the considerable significance of bank customer satisfaction including its importance as a crucial factor for customer loyalty. However, existing literature lacks not only a precise definition of satisfaction with an omni-channel bank but also an identification of the relevant factors to make

customer satisfaction with an omni-channel approach measurable. Consequently, existing research on face-to-face banking (primarily branch satisfaction attributes) and face-to-screen banking interaction (largely Internet banking- and mobile banking-focused satisfaction attributes) were analysed to derive determinants of customer satisfaction with an omni-channel bank while considering the purchasing process of bank customers. Selectively, certain other channels such as ATMs, telephone banking/call centres were also included, but these are deemed slightly less relevant for this dissertation due to its focus on complex financial services (as explained in Subsection 2.1.1). Since the omni-channel approach is to offer a seamless and consistent interaction between customers and their financial institutions across multiple channels, it is not one/more singular channels that is/are in focus, but the holistic channel where a customer can move seamlessly (Tang & Ofori-Boateng, 2014).

3.3.2.1 Customer Satisfaction with Face-to-Face Banking

New technologies such as mobile banking and Internet banking have fundamentally changed the way bank customers interact with their banks (Patrício et al., 2003). Different initial conditions and technological focuses of the bank channels mean that individual channel specifics develop differently and complexity increases further (Hamouda, 2019). Diverse studies have compared bank channel specifics and respective customer requirements to determine the characteristics of the channels in the context of customer satisfaction. First, the bank branch (i.e. face-to-face banking) has been examined in greater detail in the following section and relevant satisfaction criteria have been identified.

Bloemer et al. (1998) investigated how image, perceived service quality and satisfaction determined loyalty in the banking business well before digital channels were expanded. Therefore, in this research, the attributes primarily applied to face-to-face banking. Bloemer et al. (1998) addressed the subtle differences between service quality and satisfaction; however, they ultimately noted that service quality can be seen as a determinant of satisfaction. Based on factor analysis for the quality items, the overall pattern of rotated factor loadings suggested a seven-dimensional solution, accounting for 58,7 per cent of variance extracted. The relevant factors involved are reliability, empathy, efficiency, interest rates, procedures, expertise and access to money. The underlying items are based on the existing service quality literature, e.g. Parasuraman et al. (1988), with adjustments for the banking setting (Bloemer et al., 1998).

Bahia & Nantel (2000) provided a related analysis, developing a scale to measure the perceived service quality of banking services. In this respect, they developed a scale covering the following six dimensions: effectiveness and assurance; access; price; tangibles; services portfolio and reliability. Again, the choice of items is based on the existing literature, mainly on service quality and on the opinions of banking experts (Bahia & Nantel, 2000).

With a stronger focus on customer satisfaction, Mihelis et al. (2001) interviewed bank customers about their perception of satisfaction using a multi-criteria analysis. Figure 10 shows the dimensions used in their study. An important finding of this study by Mihelis et al. (2001) was that overall customer satisfaction consists of various factors, and it results from distinctive preferences and expectations of the customers at any stage of the customer service process.

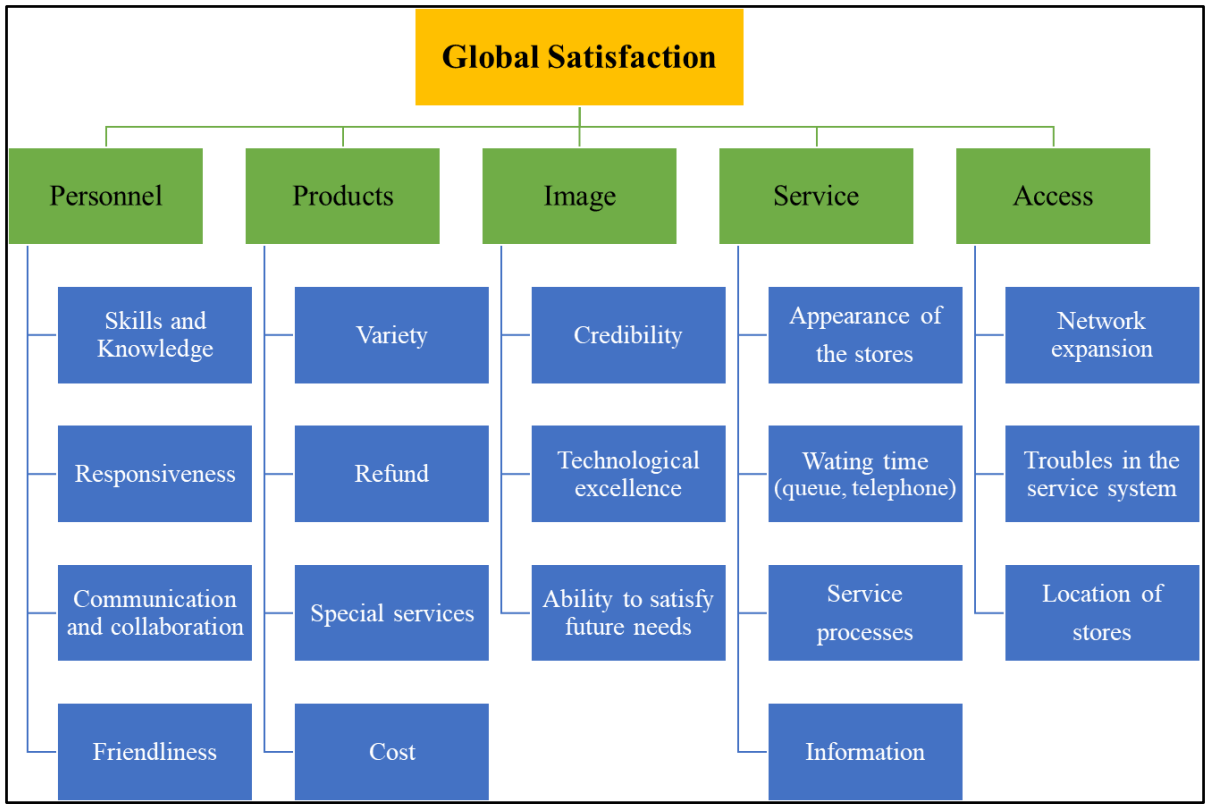

Figure 10: Hierarchical Structure of Customers' Satisfaction Dimensions

Source: Author's illustration, according to Mihelis et al. (2001)

Patrício et al. (2003) conducted a channel-specific allocation of advantages and disadvantages by analysing Internet banking, bank branches, telephone banking and ATMs and determined that customers use different channels in a complementary way. Methodologically, the study is based on interviews with bank customers and bank staff. According to the study, the advantages in favour of the bank branch, which are considered to be highly significant for

customers, were: mutual knowledge, individualised attention, professional knowledge, empathy and courtesy, ability to solve, clarify and decide and completeness of functionalities. The advantages in favour of telephone banking which were related to branch banking in terms of direct communication to the customer were mentioned to be: human contact, convenience, accessibility, ability to answer questions and courtesy (Patrício et al., 2003). The disadvantages of a branch office and telephone banking were found to be the advantages in the case of Internet banking and ATMs, and these advantages were the following: accessibility, time saving, ease of use, information capabilities, feedback control, usefulness, convenience and autonomy. This study demonstrated what is to be achieved by an omni-channel approach, namely that customer satisfaction must be achieved through the interaction of channel services and that individual channel attributes should complement each other (Patrício et al., 2003).

Chavan & Ahmad (2013) published a further study in this area in which they identified nine different factors that determine transaction-specific overall customer satisfaction. They focused on tangibility, convenience and availability, accuracy, responsiveness, empathy, promptness, personal assistance, but also on e-fulfilment.

Overall, the abovementioned individual studies revealed that total customer satisfaction depends on different factors, which can be allocated (albeit not always disjunctly) to different stages (pre-purchase, purchase, post-purchase) in the purchasing process.

The aforementioned studies by Renoux (1973), Burmann (1991) and Korte (1995) referred to factors that are directly related to the stages of the purchasing process; however, the sector (car market) examined in these studies differ significantly from the banking sector. Therefore, some of these factors are less appropriate for banking, while others are more pronounced. Renoux (1973) identified the oversupply and undersupply in the supplier's product range as a dissatisfaction factor as time and efficiency are wasted in selecting the inadequate services. Insufficient information and consulting services were, additionally, defined as relevant dissatisfaction factors in the pre-purchase stage as an incorrect selection of services may occur. According to Renoux, in both the pre-purchase stage and purchase stage, excessively long waiting times at the counter and long delivery times after the conclusion of a contract are key factors determining satisfaction (Renoux, 1973, p. 61).

Burmann associates customer satisfaction in the pre-sales stage with the availability of the supplier and the information offered. At the purchase stage, customer satisfaction is derived

from the purchase experiences gained. In the post-purchase stage, it is gained from the user experiences and the services received (Burmann, 1991, p. 254).

Korte (1995) operationalised pre-purchase satisfaction with the satisfaction of the surroundings/neighbourhood, the location, the external appearance, the showrooms, the seating and waiting facilities and the parking facilities. In addition, he combined purchase satisfaction with politeness, helpfulness, product knowledge, availability of brochure material, acquaintance with service personnel, product explanations, reliability of agreements, contact after delivery, overall impressions of the salesperson, condition of the product. Finally, he associated with post-purchase satisfaction, among other things, willingness for guarantees, speed and efficiency, high-quality and reliable warranty services, willingness to help and knowledge of the staff and their efforts to solve problems.

In summary, based on the above aspects, *face-to-face banking* is often associated with customer *access*, *convenience*, *empathy* and *impressions* of staff, *price*, *reliability*, *quality* and *range of services* offered, as well as *tangibles* for measuring customer satisfaction in the literature. The key factors for customer satisfaction in banking are presented in **Appendix 1** of this dissertation, and these are differentiated by research concept and purchase stage (where appropriate), including the relevant researchers using the items.

3.3.2.2 Customer Satisfaction with Digital Banking

Many customers are initially indifferent to channel selection. They have no predefined or preferred channel in the banking business but have, instead, become users of several channels (Cortiñas et al., 2010; Liao & Cheung, 2002; Sathye, 1999). From a banking perspective, Aladwani (2001) identified the reasons or the driving forces behind the adoption of Internet banking. These include the provision of faster, easier and more reliable customer service, improvement of a bank's competitive position and image, the satisfaction of customer demand, creation of new markets and, finally, reduction of costs. Yiu et al. (2007) cites easy access to banking and *user-friendly technology* as key advantages as the Internet does not limit banks to physical locations or historical-geographical areas. Mobility is, even more, one of the key factors behind the success of mobile banking as mobile technologies and devices enable bank users to provide banking services anywhere and at any time (Gu et al., 2009). Albashrawi and Motiwalla (2020) also mentioned convenience, social influence, flexibility as further aspects favouring digital channels at the expense of bank branches and ATMs.

Grönroos et al. (2000), Cox and Dale (2001), Zeithaml et al. (2002) and Falk (2007) have provided significant conceptual contributions to electronic service quality.

Grönroos et al. (2000) provided initial considerations for electronic services by means of their NetOffer model. Grönroos et al. (2000) considered the internet offer as a service. Finally, the quality of the service depends on the perceived quality of the process and the perceived quality of the results. According to Grönroos et al. (2000), electronic services could be classified into core services, facilitating services and supporting services, which is similar to the branch business that is supplemented by the user interface area which covers the functionality, design and handling of the website.

Cox and Dale (2001) extended beyond the general considerations by Grönroos et al. (2000) and investigated the applicability of classical concepts such as SERVQUAL to services related to e-commerce. Thereby, they stated that competence, courtesy, cleanliness, comfort and friendliness, helpfulness, care, commitment, flexibility are not particularly relevant in e-commerce, but accessibility, communication, credibility, understanding, appearance, and availability are equally applicable to e-commerce as they are in physical services. The decisive critical success factor for the online presence is the first experience with the website (Cox & Dale, 2001).

Zeithaml et al. (2002) regarded e-service quality (e-SQ) as the quality measure for purchasing over the Internet. They identified information availability and content, ease of use or usability, privacy and security, graphic style, as well as fulfilment or reliability as criteria for evaluating internet activities. Furthermore, the researchers determined the gaps for a negative quality perception by the customers. Information gaps occur with insufficient information about the desired online features from customers to the digital channels by suppliers/banks. Design gaps result from an insufficient design of the website. Communication gaps arise from a lack of know-how of the marketing staff. A combination of these three strategic gaps leads to a fulfilment gap according to Zeithaml et al. (2002).

Falk (2007) identified 29 items that influence the quality of electronic services. With the quality of potential, process and results, Falk's developed model comprises three superordinate quality dimensions, which are each represented by different quality factors. Potential quality includes the factors related to access (availability, functionality, stable traffic), design (professional, visually appealing, premium graphics) and information quality (relevant,

timely and understandable information). All these primarily relate to the website. Process quality includes the factors related to efficiency (convenience, speed), support (personalisation, navigation support) and entertainment (fun, experience), which refer to the interaction between the service provider and the customer. Finally, result quality refers to the output of the electronic service and, in this context, to fulfilment (punctuality, availability, benefit creation), security (data protection) and after-sales support (comprehensive customer care after the launch) (Falk, 2007).

In addition to these conceptual approaches, a large number of empirical studies on measuring e-service quality and the customer's online (shop) satisfaction are available in the literature. Falk (2007, pp. 59–62) has provided an overview. Relevant findings of the significant studies related to the Internet and mobile banking business and selected additional key studies on e-service quality and customer online satisfaction are described further.

Bauer et al. (2005) analysed the dimensions that determine customers' assessment of service quality of a financial services portal. They validated a model measuring the construct of web portal quality based on the following dimensions: security and trust, basic services quality, cross-buying services quality, added-values, transaction support and responsiveness (Figure 11). They classified the identified dimensions into the following three service categories: core services, additional services and problem-solving services (Bauer et al., 2005).

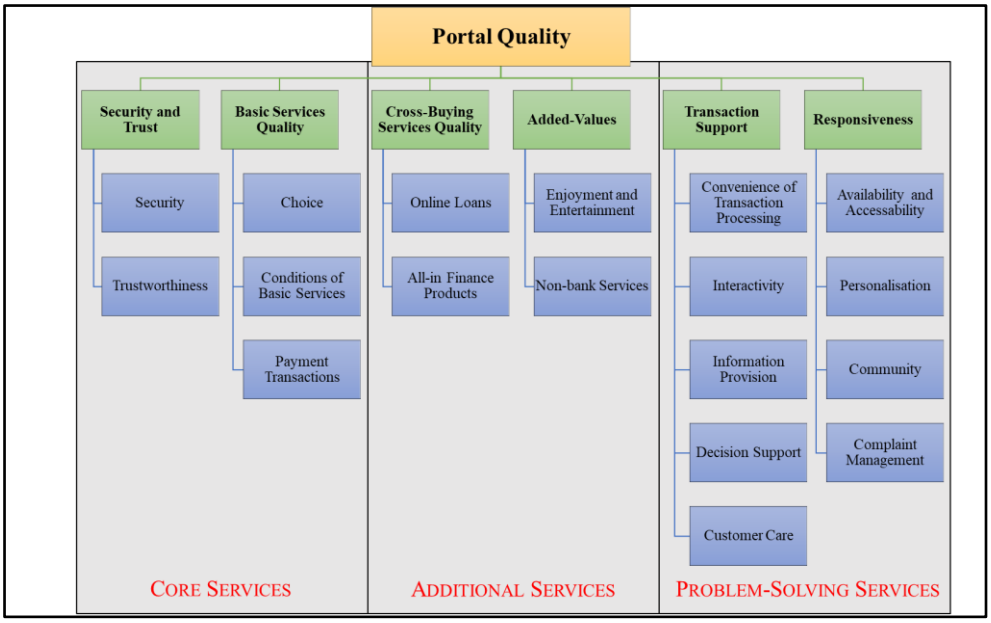

Figure 11: The Validated Measurement Model of Portal Quality
Source: Author's illustration, according to Bauer et al. (2005)

Based on their study of e-SQ (Zeithaml et al., 2002), Parasuraman et al. (2005) constructed two scales for measuring e-SQ. The first scale is E-S-QUAL. It measures service quality delivered by websites on which customers shop online, via the quality factors of efficiency (ease and speed of accessing and using the site), fulfilment (the extent to which the site's promises about order delivery and item availability are fulfilled), system availability (correct technical functioning of the site), and privacy (the degree to which the site is safe and protects customer information). The second scale is the e-recovery service quality scale (E-RecS-QUAL) for non-routine encounters, which include the factors of responsiveness (effective handling of problems and returns through the site), compensation (the degree to which the site compensates customers for problems), and contact (availability of assistance through telephone or online representatives). Finally, Bauer et al. (2006, p. 868) have pointed out that these scales, which were originally set up separately, should be combined as customers already pay attention to the quality of post-purchase services before using electronic services, and thus, the separation of these two processes is redundant.

Bauer et al. (2006) developed a transaction process-based scale for measuring service quality (eTransQual) as they found the existing e-service quality scales to be mainly focused on goal-oriented e-shopping behaviour excluding hedonic quality aspects. By means of exploratory and confirmatory factor analysis, they identified five discriminatory quality dimensions, namely functionality/design (efficiency of navigation, accessibility of relevant content, clarity of the website, the relevance of information, timeliness of information, visual appeal, professional website design), enjoyment (personalisation of information and offerings, the fun of using the website, excitement when shopping online, entertainment provided by the website), process (availability of the website, stability of data transmission, the efficiency of online order processing, waiting time), reliability (timeliness of order delivery, the accuracy of order delivery, product availability, breadth and depth of product range, the encoding of personal information, confidentiality) and responsiveness (availability of alternative communication channels, return policy, availability of service personnel, promptness of reactions to requests) (Bauer et al., 2006, p. 870). The extracted quality dimensions of the study revealed a strong significant influence on the overall assessment of service quality and explained 61% of the variance, indicating a strong external validity of the service quality model. Four of the five quality dimensions showed a strong positive effect on customer satisfaction. Reliability and functionality/design were the most important satisfaction drivers with beta

weights of 0,41 and 0,20. Responsiveness and process revealed beta weights of 0,15 and 0,14. Enjoyment could only reach 0,07. Overall, the quality factors explained 65% of the variance in customer satisfaction (Bauer et al., 2006, p. 873). The assignment of quality items to a four-phase transaction process for e-services (gained through a literature review and semi-structured interviews) is particularly important for this dissertation. Figure 12 gives an overview in this regard.

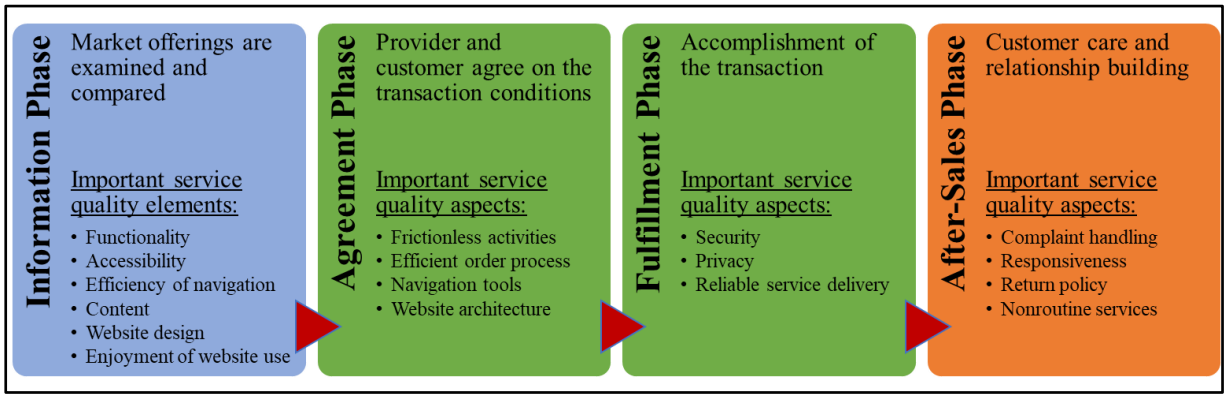

Figure 12: Generated Item Pool Covering the Four Transaction Stages
Source: Author's illustration, according to Bauer et al. (2006)

Al-Hawari and Ward (2006) researched the automated service quality of banks, meaning the excellence and quality of e-services offerings in the virtual marketplace. Their research covered Internet banking, telephone banking and ATM service quality. They investigated customer satisfaction as a mediator in the relationship between automated service quality and financial performance. Internet banking as one of the further independent variables was examined by the item's availability of information, easy to use, secure, error-free transactions, attractive website. accurate interface and up-to-date information. Although Al-Hawari and Ward (2006) were able to confirm the positive relationship between customer satisfaction and financial performance and automated service quality as an intermediary in this relationship, curiously enough, they were unable to deduce a significant relationship between the quality of Internet services and customer satisfaction, which is probably due to the timing of the study (early days of Internet banking).

Matzler et al. (2006) analysed customer satisfaction based on dimension price not only for a bank's e-services but also for the banking business in general, whereby they derived price satisfaction as a multi-dimensional construct from the dimensions of price transparency (search-stage), price-quality ratio and relative price (evaluation stage), price confidence (decision stage)

and price reliability (service use) (price confidence and price reliability were merged into one factor within their study) and price fairness (repurchase stage), and they assigned price problems to different time stages. Based on their empirical study, they argued that these dimensions can influence general price satisfaction, word-of-mouth propaganda and switching intentions. However, their study was conducted using a sample of 160 students. This restricted sample size limited the study's generalisability (Matzler et al., 2006).

Rod et al. (2009) analysed the relationship of service quality with the overall Internet banking service quality and its impact on customer satisfaction. They concluded that service quality is affected by online customer service quality, online information system quality and banking service product quality. Further, the study found online customer service quality to be related to such dimensions as tangibles, reliability, responsiveness, empathy, online information system quality ease of use, accuracy, security/privacy, contents, timeliness and aesthetics. This study is particularly relevant to the subject of this dissertation because it confirmed that even in the absence of face-to-face interaction, reliability, responsiveness, tangibles and empathy are key dimensions for enhancing overall Internet banking service quality and, finally, for overall customer satisfaction with the bank. Additionally, the study showed that in the absence of direct interaction with the bank staff, ease of use, accuracy, security, timeliness, content and aesthetics are critical to improving customer perception of the overall quality of Internet banking.

Liébana-Cabanillas et al. (2013) investigated the construct of customer satisfaction from the perspective of users of electronic banking services by analysing the most important determinants of user experience with the services of a financial institution. Customer perspective and direct examination of customer satisfaction provided interesting aspects for e-banking as it was possible to confirm that accessibility, ease of use, trust and usefulness significantly influence customer satisfaction with e-banking. Within the study, the authors summarize confidence and security using the dimension of trust.

More recent studies by Hamzah et al. (2017) and Zeng and Wu (2020) also included the trust and security aspects in their studies on this subject. Hamzah et al. (2017) examined service quality in the banking sector based on how the factors of tangibility, empathy, reliability and security, convenience and access to Internet banking relate to customer satisfaction, trust and a bank's reputation. Zeng and Wu (2020) analysed the quality of the Bank of China's online banking service and determined the degree of customer satisfaction with this service through

the lenses of tangibility, reliability, responsiveness, assurance (knowledge and ability of the staff, information quality and ease of use of the website), empathy and security.

Laukkanen (2007a) examined the differences in customer value perception between Internet banking and mobile banking and found significant differences. So, these aspects will be examined more closely even though the scope of his study is limited as he focused on the services related to the settlement of payments. His study's results revealed that the perception of customer value in banking transactions differs between the Internet and mobile channels in terms of efficiency (perceived benefits in relation to sacrifice/costs), convenience (including cognitive appraisals and hedonic emotions) and security. Using qualitative in-depth interviewing, he identified differences in the location-independent access to service and display of the device. Location and time-independent access, and thus, the ability to take immediate action which corresponded with saving time were cited as central advantages of the mobile device, while the device's keyboard and display were cited as disadvantages. The study pointed out that technological development will have a positive influence on mobile banking in the future.

Mobile banking adoption was addressed by Al-Jabri and Sohail (2012) using the theory of "Diffusion of Innovation" to investigate the behaviour of mobile banking customers. As per their study, relative advantage, compatibility, and observability play supporting roles in the use of mobile banking technology. Their study also found that trialability and complexity have no significant effect on mobile banking adoption. Nevertheless, it pointed out that mobile banking will change the banking business and will probably have a much wider impact on customer behaviour. A similar conclusion was reached by Susanto et al. (2016) whose study examined perceived security, perceived usefulness, trust and user satisfaction in the context of smartphone banking services and their utilisation. While perceived security affects trust, perceived usefulness affects not just trust but also user satisfaction and the intention of continued use. While trust influences satisfaction, user satisfaction and self-efficacy significantly influence the intention for continuous use according to Susanto et al. (2016).

More recent studies such as those by Arcand et al. (2017) have investigated the quality of mobile banking services quantitatively by taking into account the dimensions of security/privacy, practicality, design/aesthetics, enjoyment and sociality. Quality dimensions of mobile banking services influence customer trust and satisfaction, even though trust is directly associated with utilitarian factors (such as security/privacy and practicality), while satisfaction

is driven by enjoyment and sociality (which are, by nature, rather hedonic dimensions) as well as trust (Arcand et al., 2017).

Foroughi et al. (2019) examined the long-term success of mobile banking and the determinants of the intention to continue using this service. Their study pointed out that customer satisfaction itself along with attitude, perceived usefulness, self-efficacy (ability to independently act a purposeful behaviour) and the importance of the channel (channel preferences) are the key drivers for the intention to continue using mobile banking. Their study explained 67,1% of the variance in continuance intention.

3.3.2.3 Customer Satisfaction with Personal/Digital banking

In their study mentioned above, Hamzah et al. (2017) also examined telephone banking as an independent variable for determining customer satisfaction. The researchers ended up identifying access (quantity and waiting time), convenience and ease of use (background music, clear instructions, reliability, options) as aspects that were relevant for customer satisfaction. Thus, though knowledge and courteousness were also mentioned as relevant, essentially, this study confirmed the findings of Patrício et al. (2003).

The general task of call centres/telephone banking is to build, maintain and manage customer relationships by conducting transactions, providing information, answering questions, solving problems and resolving complaints quickly and less expensively than face-to-face contact can (Feinberg et al., 2002). Nevertheless, Feinberg's study revealed that telephone banking makes only a small contribution to customer satisfaction, whereas, in other industries, call centres can very well generate more customer satisfaction (Feinberg et al., 2002).

Despite this, Chavan and Ahmad (2013) referred to telephone banking and even stress that it is a necessary condition for increasing customer satisfaction as concluded from the findings of their study examining the accuracy of the customer satisfaction dimension.

Likewise, Hamzah et al. (2017) referred to telephone banking in relation to reliability and security as well as easy access to the bank as aspects that, in addition to numerous other aspects, also influence the quality of service in the banking business.

Telephone banking as well as chats and social media interactions, though a part of an omni-channel, are of secondary importance and examined less further in the present study as the focus of this study is on complex products and advice-intensive business.

3.3.2.4 Summary of the Observations

Appendix 1 provides a tabular overview of studies that have examined customer satisfaction, service quality, loyalty and customer behaviour in banking the banking sector (key studies are referred to earlier above) and categorises them. The overview in this subsection includes those studies that have examined face-to-face banking, digital/face-to-screen banking, mixed/hybrid forms of banking (also known as personal/digital banking) and the studies that have examined the distribution channel holistically. Wherever possible, recognisable and sensible, the processes were divided into individual stages of the purchasing process. The studies were categorised and clustered, and the items used were assigned to provide a basis for deriving customer satisfaction of bank customers in an omni-channel environment within the respective stages of the purchasing process. The method adopted referred to the approaches used by Deppisch (1997, p. 105) and Fleer (2016, p. 100). Appendix 1 provides the basis for the operationalisation of the constructs which have been discussed in the next chapter. It is to be noted that the studies considered differed in terms of the constructs they examined, methodologies they used and measurement models they implemented.

It has been mentioned in point 3.3.2.1 how the attributes access, convenience, empathy and impressions of staff, price, reliability, quality, range of services offered and tangibles, are of particular importance in face-to-face banking where individuals interact directly. Further, it has been mentioned in point 3.3.2.2 that competence, courtesy, cleanliness, comfort and friendliness, helpfulness, care, commitment and flexibility are less or not at all relevant for face-to-screen banking (Cox & Dale, 2001) despite the identification of several overlaps of these with the channel-specific characteristics mentioned above. Further channel-specific aspects are in particular, the security and privacy aspects as well as enjoyment. Table 4 provides an overview of the categories formed by displaying the different dimensions of each category. **Appendix 1** provides an even more detailed overview including the items used in the different studies.

Due to a large number of dimensions that surfaced when the various dimensions used in different studies were considered, an abstraction of these attributes at the level of the omni-channel became necessary as all the channels are relevant to this study. The use of more abstract attributes has been observed in several multi-channel and cross-channel studies (Fleer, 2016). Thus, categories, such as convenience and ease of use, security and data protection and service quality and empathy, were combined due to their proximity in terms of content. Occasionally,

service quality and empathy/staff attitude or behaviour have been examined separately in the studies reviewed, but for this study, these categories were aggregated as this researcher believes that a high degree of empathy is necessary for a high degree of quality.

Table 4: Customer Satisfaction Attributes Relevant for the Omni-Channel Environment

Category:	**Access**	**Convenience/Ease of use**	**Price**	**Reliability**
Dimensions	Approachability	Effectivness	Conditions	Accuracy
	Availability	Efficiency	Courtesy	Benefitability
	Ease of contact	Flexibility	Price confidence and reliability	Credibility
	Functionality	Practicity	Price-quality ratio and fairness	Fulfilment
	Mobility	Speed	Pricing and rates	Functionality
	Responsiveness	Usability		Honesty
	Stable data traffic	Usefulness		Punctuality
		User friendly technology		Service delivery
				Trustworthiness
				Willingness
Category:	**Security/Privacy**	**Scope of service**	**Quality of service/Empathy**	**Tangibles/Enjoyment/Image**
Dimensions	Confidentality	Assurance	Attractivity	Aesthetics
	Data protection	Choices	Competence and know-how	Design
	Reputation	Communication	Friendliness and politeness	Entertainment
	Trust	Complaint Management	Nonroutine services	Equipment
		Service depth	Personalization	Fun of use
		Support during all stages	Quantity of staff	Graphic style
			Relevance	Physical evidence of service
			Understandability	Social influence
			Understanding (knowing the customer; customer's needs)	

3.3.3 Definition of Customer Satisfaction with the Bank

As stated in section 2.4 of this dissertation and as concluded in subsection 3.3.1, based on the review of the available literature, the customer satisfaction generated during the purchase stage may be only partial at different points in time, and these partial satisfactions subsequently aggregate to form an overall satisfaction (Korte, 1995, p. 43). Empirical studies have enabled scholars to measure customer satisfaction in the pre-purchase, purchase and post-purchase stages and to measure their effect on overall satisfaction as stated in subsection 3.3.1. Burmann (1991) and Korte (1995) have investigated a three-step purchasing process for the automotive sector. A comparable purchasing process also exists in the banking business for complex banking services where customers pass through all three stages of the purchasing process. Customers, for example, obtain information about a loan, sign the loan and usually repay it over a considerable period of time until the contract is due, and then, if a bullet still exists, they agree on a new contract. Similarly, for example, investments that are initially advised in the

information stage are subsequently purchased and held until maturity after purchase. Even for simple banking services (e.g. credit card services, savings accounts, rent deposits), these three purchase stages are often relevant as customers have a long-term relationship with the banks, and the services have a long life cycle. That being said, there are also simple banking services, such as currency exchange, payment transactions or cash withdrawals, with a substantially shorter purchasing process, often with a brief or non-existent information stage and without a subsequent post-purchase stage. Hence, to assess customer satisfaction with a bank's omni-channel environment, it is the complex banking services recently used by customers that have been examined for this dissertation. Customer satisfaction is judged by the customer on a transaction-specific and stage-specific basis. A review of literature for the present study revealed that the EDT was widely accepted and acknowledged by the scholars (Homburg & Stock-Homburg, 2016; Nerdinger & Neumann, 2007; Yüksel & Yüksel, 2008) on this subject. Selectively, researchers have used complementary concepts. The most important of these concepts have been presented earlier in this dissertation. In summary, and based on these observations, customer satisfaction of bank customers who receive services in a bank's omni-channel environment may be defined as follows:

Customer satisfaction is the result of a cognitive comparison of perceived performance with customer expectations. Since customer purchase decisions for complex services in the banking business extend over different time stages, the result of the cognitive process for customer satisfaction is initially a partial result which can also be further influenced by the emotional parameters of a customer. On a factual level, customers determine their satisfaction on a micro-level and are, therefore, transaction-specific in their assessment of complex services in a bank's omni-channel where all the stages of the purchase process are relevant, and the customer can act across all available distribution channels. Partial satisfaction ratings are, thus, formed by customers in the pre-purchase, purchase stage and post-purchase stages, and all such partial ratings affect the overall satisfaction of a bank's customer. The overall satisfaction of a customer usually varies because of their partial satisfaction evaluations. Further, partial satisfaction evaluations can also influence the loyalty of bank customers.

3.3.4 Hypotheses Regarding Customer Satisfaction with the Omni-Channel Bank

The research findings stated in subsection 3.3.1 have revealed that customer satisfaction is a dynamic process and that there can be partial satisfaction periods at different stages of a purchasing process. Traditional EDT considers customer satisfaction primarily as a post-purchase phenomenon, while the process-oriented approach assumes a dynamic development and considers overall customer satisfaction as a function of separate processes with partial satisfaction levels over time (Siefke, 1998; Walker, 1995). There exists a consensus among the scientific researchers on this subject that purchase stages of individual transactions are influenced by the previous satisfaction judgements about the transactions (if any), and the overall satisfaction on both transactional and global levels is composed of the satisfactions during each of the individual stages, though their intensity and direction effect may be subjective and different (Danaher & Mattsson, 1994; Parasuraman et al., 1994; Stauss & Seidel, 1998). Based on this consideration, Siefke (1998, p. 80) analysed micro satisfaction of rail travellers and distinguished between pre-travel satisfaction, travel satisfaction and post-travel satisfaction, which, individually, influenced the overall satisfaction and also the subsequent process steps. Stauss (1999, p. 11) describes this dynamic process as transaction-specific satisfaction dynamics during the service consumption process wherein an extended customer experience with a multitude of episodes and contact points dominates. Figure 13 illustrates this process.

Overall satisfaction is influenced by the different purchase stages. Each of these stages influences the subsequent stage. Thus, the pre-purchase stage influences the purchase stage and the purchase stage influences the post-purchase stage. Subjectively and selectively, perceived customer performance is of particular importance because objectively identical stimuli can be perceived differently (Bauer, 2000). Distortion effects and spillover effects can selectively influence customer perception the in form of stereotyping (dominant features influence others), halo effects (solidified judgements influence others), irradiation (irrational analogies) and primacy and recency (dominance of first or last impression) effects (Bauer, 2000; Schütze, 1992).

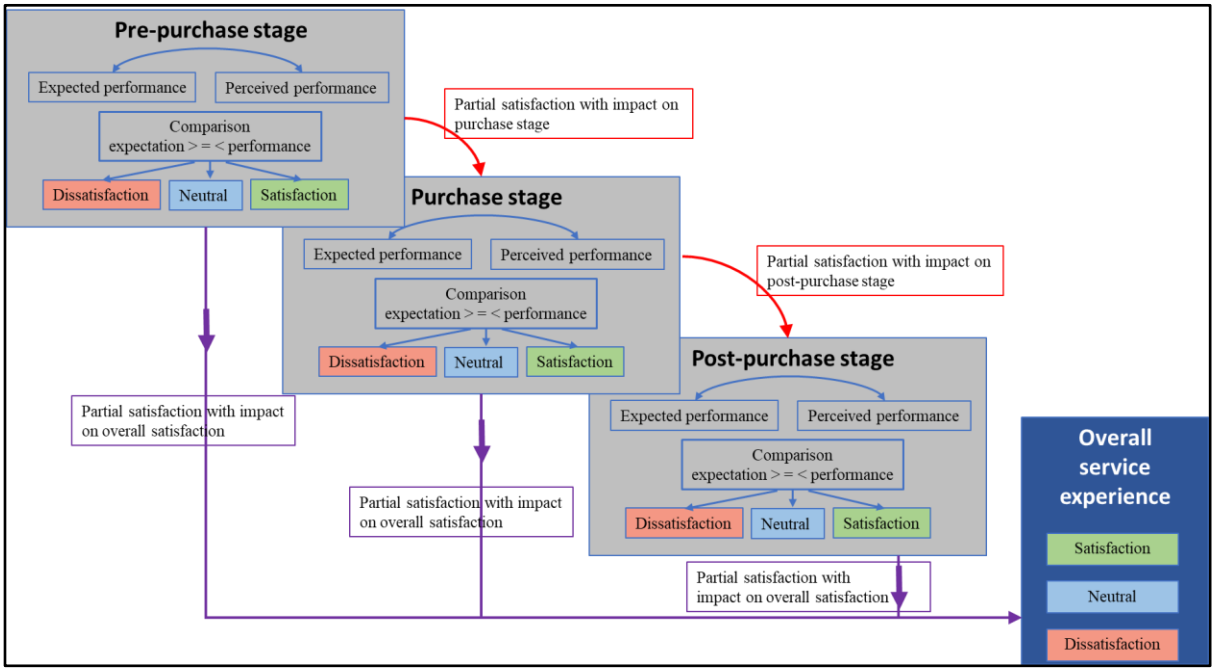

Figure 13: Transaction-specific Satisfaction Dynamic

Source: Author's elaboration, adapted from Walker (1995, p. 8), Siefke (1998, p. 82)

Based on all these considerations. the following initial hypotheses for measuring overall satisfaction in an omni-channel environment of a bank were formed for this dissertation:

Hypothesis (H1): Pre-purchase customer satisfaction has a positive impact on customer overall satisfaction with an omni-channel bank.

Hypothesis (H2): Purchase customer satisfaction has a positive impact on customer overall satisfaction with an omni-channel bank.

Hypothesis (H3): Post-purchase customer satisfaction has a positive impact on customer overall satisfaction with an omni-channel bank.

Hypothesis (H4): Pre-purchase customer satisfaction has a positive impact on purchase customer satisfaction with an omni-channel bank.

Hypothesis (H5): Purchase customer satisfaction has a positive impact on post-purchase customer satisfaction with an omni-channel bank.

3.3.5 Preliminary Conceptual Considerations for Measuring Customer Satisfaction

Various methods of measuring customer satisfaction have been discussed in the relevant literature. These methods can be categorised as *objective* and *subjective* approaches to make the differences between the two more obvious (Fürst, 2016; Schütze, 1992).

Objective approaches are apparent and are based on objective indicators and, thus, on factual data that are observable and cannot be subjectively influenced by perception. These include, inter alia, sales, market share, repurchase rate, recovery rate and churn rate (Schütze, 1992). Although a high correlation with satisfaction is generically attributed to these indicators, the use of these indicators to measure customer satisfaction is, however, problematic due to the lack of data or delays in data availability of data as well as the influence of additional factors (e.g. business cycle) in data compilation (Fürst, 2016, p. 128).

Subjective approaches measure customer satisfaction based on subjectively perceived satisfaction ratings and can be distinguished into event-related and feature-based approaches (Fürst, 2016, p. 129). *Event-related approaches* consider the customer contact events perceived by the customers as special and decisive, e.g. new installation of a device, use of a service, recent contact with the supplier (Fürst, 2016, p. 130; Stauss, 1999, p. 12). *Feature-based approaches*, on the other hand, are more widely related and include impulses over a longer period, which relate to services, product features or multiple interactions (Fürst, 2016, p. 130). A more in-depth explanatory differentiation of the feature-based approach can be made due to the directness of the measurement into *implicit* and *explicit methods*. Schütze (1992, p. 185) described implicit methods as an indicator-based procedure that indirectly measures customer satisfaction responses and allows a regression to the true satisfaction of the customer. This includes, in his opinion, the systematic registration of complaints, identification of further behavioural effects of satisfaction, representative surveys of problems, but also surveys of employees of the company with customer contact (Schütze, 1992). Fürst (2016, p. 130) described this method of measuring customer satisfaction as problematic as its procedures require that customers reveal their dissatisfaction and complain, which, according to empirical studies (Homburg & Fürst, 2007), is rarely the case in reality. In contrast, explicit methods that involve direct questioning of the customer and use survey instruments are, in his opinion, more effective, although a distinction must be made here between *multi-attributive* and *one-dimensional approaches* (Fürst, 2016, p. 130). While the one-dimensional method measures

customer satisfaction on the basis of the dimension of content or, even more restrictively, on the basis of a single indicator, the multi-dimensional method is broader in scope as it uses a multitude of individual aspects (p.131). Customer satisfaction with the research and assessment objects is measured by the means of a structured questionnaire using theoretically deduced, potentially relevant characteristics that are based on a subjective selection and weighting of the items on rating scales either globally (overall satisfaction) or related to individual characteristic dimensions (Fleer, 2016, p. 115; Korte, 1995, p. 53; Schütze, 1992, p. 187). Multi-attributive approaches involve, on the one hand, methods that initially assess an *ex-ante expectation* with the *ex-post evaluation* of performance fulfilment to assess satisfaction, and, on the other hand, methods that *exclusively* conduct an *ex-post measurement of satisfaction* (Fürst, 2016, p. 131; Siefke, 1998, p. 109). Ex-ante/ex-post approach also applies to the SERVQUAL approach (Parasuraman et al., 1988) to measuring service quality and are therefore criticised (Cronin & Taylor, 1992) for the same reasons, namely the double use of the same measurement scale by many respondents and the often consistent response behaviour of the customers/interviewees (Fleer, 2016, p. 115; Fürst, 2016, p. 131). The determined difference value between perception and performance can lead to a different new value that deviates from the real satisfaction, and moreover, an ex-ante collection of the expectations can lead to a requirements inflation, which in turn influences and distorts the satisfaction rating (Wunderlich, 2005, p. 76). Ex-post (i.e. avoiding the ex-ante determination of expectations) satisfaction measurement is considered the most valid form of satisfaction measurement and dominates the methods used in research and practice in this regard (Fürst, 2016; Giering, 2000; Stauss, 1999).

Therefore, for the present dissertation, the approach that was pursued subjectively explored perceived satisfaction using a multi-attributive method, which directly interviews customers and, thus, follows an explicit method using a variety of individual aspects to interview customers ex-post about their satisfaction. Conceptually, customer satisfaction is measured by the extremes of satisfaction and dissatisfaction (Westbrook & Reilly, 1983), and the measurement tool refers to all touchpoints between a bank and its customers throughout the entire purchasing process in an omni-channel banking environment. Customer satisfaction refers to the omni-channel environment of the bank operating an omni-channel system. Figure 14 shows the different approaches to measuring customer satisfaction as they have been applied in this dissertation as well (arrow refers to directions).

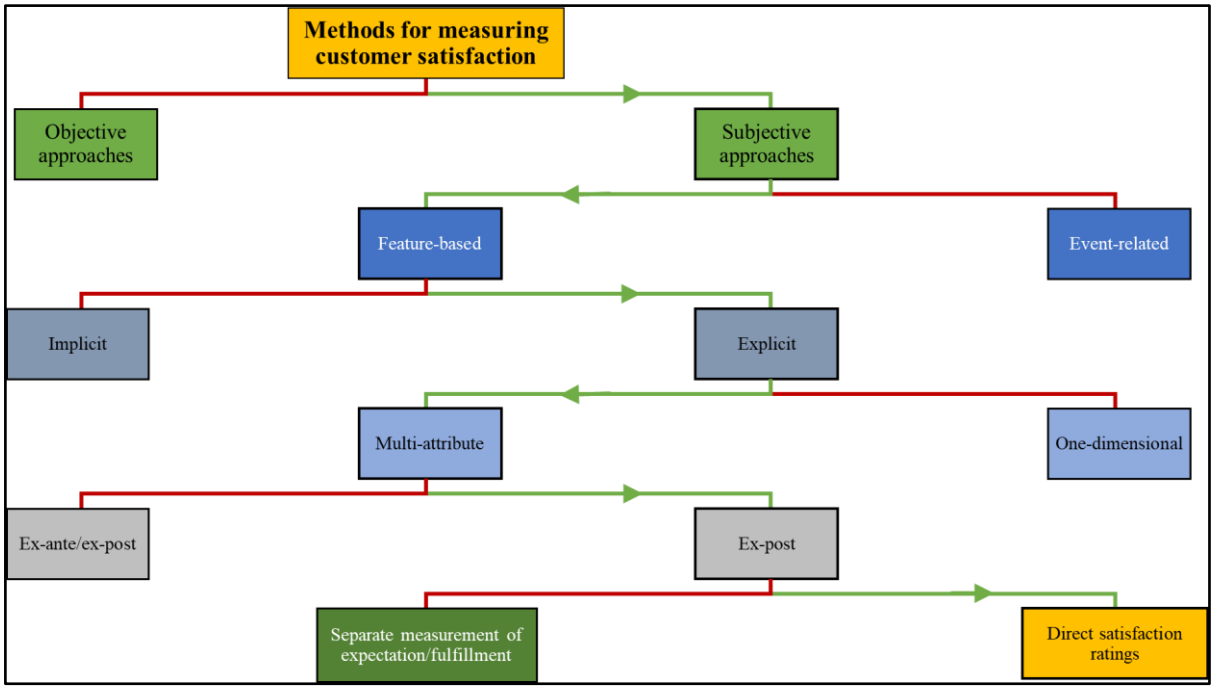

Figure 14: Systematization of Approaches to Measure Customer Satisfaction

Source: Author's elaboration, adapted from Fürst (2016, p. 129)

3.4 Conceptualisation of Perceived Channel Integration

Perception regarding the integration of distribution channels by a bank's customers is a key consideration in a bank's implementation of an omni-channel environment as it makes the banking experiences tangible for a customer and allows mutual benefits of this significant investment to be realised for the bank provided that customer satisfaction also improves. As outlined in subsections 2.1.4 and 2.5.1, the key element of an omni-channel environment is the implementation of channel integration as a unified whole from a customer's perspective.

3.4.1 Reference Levels for Perceived Channel Integration

In evaluating distribution channel integration too, a distinction exists between *factual* (integration in terms of form and content) and *time level* (Schramm-Klein, 2003a), which is similar to the satisfaction assessment mentioned in subsection 3.3.1 of this dissertation. It is for this reason that Saghiri et al. (2017), as mentioned earlier, distinguished omni-channel integration using the dimensions of *channel stage* (Emrich et al., 2015), *channel type* (Neslin & Shankar, 2009; Verhoef et al., 2015) and *channel agent* (Herhausen et al., 2015). Conceptually Saghiri et al. (2017) postulated that channel integration needs to be implemented for all agents involved, all the channel types, across the entire purchasing process and, thus,

beyond all touchpoints to deal with a customer in a networked, information-consistent and efficient manner. On a *factual* level, agents and channel types need to be statically networked so that all interactions are available in real-time, and functions (related to the tasks and distribution of tasks of the channels) as well as instruments (content-related connection of the channels) are interlocked to enable horizontal and/or vertical integration and formally interact together (Schramm-Klein, 2003a). Even more challenging, as it is even more complex, is the networking of the data across the channel stage. Saghiri et al. (2017) stated that without complete integration of channels, an omni-channel approach would never evolve. Thus, the service providers should invest in effective channel integration rather than in the performance of each channel, according to Mehn and Wirtz (2018). Channel integration, whose implementation is also perceived as such by customers, leads to a complementary distribution channel setup (e.g. online transaction outside the opening hours of a branch). This certainly increases complexity for the bank, but it also results in higher customer satisfaction and customer loyalty (Mehn & Wirtz, 2018; Pantano & Viassone, 2015) and increased turnover (Herhausen et al., 2015). However, each institution has to set up an individual channel service mix through its strategic planning and in consideration of its current and planned service ranges (Bang et al., 2013). Ultimately, however, it is crucial that customers perceive a value in channel integration, which according to Zeithaml (1988) is based on their perception of what customers receive and what they are given. However, consumer value is subjective. It relates to services, a trade-off between benefits and costs and a preference that is at the heart of the consumer experience (Hsiao et al., 2012). When applied to a distribution channel approach, the perceived value of customer service results from assessing the benefits to the customer with regard to the costs and sacrifices they have experienced using the channel environment (Kabadayi et al., 2017).

Further, this dissertation presents the findings from key studies on channel integration, particularly those that have assessed an omni-channel approach but even those that have assessed approaches that are complementary to a multi-channel approach and those that have processed customer perception of distribution channel integration.

3.4.2 Attributes for Measuring Customer Perceived Channel Integration

In view of the advent of digital channels, Burke (2002) conducted a study of consumer intended channel behaviour for online and offline channels regarding durables (including major

appliances, furniture, consumer electronics) and consumer goods (including clothing, food) in the US. The study clarified the question of what customers in stores and in online channels regard as *must have* and *good to have*. Burke (2002) analysed, among other things, clicks-and-mortar integration including online information on local stores inventory and product pickup at local retail stores (p. 416), which in a similar form (same product range at channel types and networked channel agents) is also relevant in the banking sector and much more today than in the past in terms of an omni-channel environment as distribution channels developed only recently. Indeed, channel integration at that time was mostly rated as *should have* and not as *must-have*, which is probably due to the emergence of online channels. Presumably, such a study would probably have a completely different outcome today as channel integration enjoys a much higher priority among customers (Zhang et al., 2018).

Goersch (2002) analysed channel integration for retailers based on a multi-channel system, which included physical stores, web sites (including e-mail), catalogues, terminals, mobile devices and call centres. This study examined possible consumer buying and consumption activities (pre-purchase and post-purchase activities) for possible benefits that customers might gain through multi-channel integration. Channel synergies through integration were identified by increased customer awareness, increased trust, reduced risk, increased convenience, increased perceived control, enhanced support, and ubiquitous personalisation, according to Goersch (2002, p. 751). The requirements of multi-channel integration in terms of the customer interface are integrated branding, mutual channel cross-promotions, consistency, integrated logistics, exploiting channel-specific capabilities and integrated information management (p.753). Integrated branding means using the same brand name, logos, slogans, and colours and conveying the same image across channels. Channel cross-promotions comprise the provision of information on other channels and financial incentives for using them, whereas the researcher considers under consistency, the possibility for customers to use multiple channels for their purchasing activities. This leads to greater comfort and control and less risk for the customers. Integration of logistics means a networked flow of merchandise (e.g. collection and return in another channel), where customers can continue to use the channel-specific capabilities to meet their final requirements. Finally, personalised customer information can be offered using integrated information management (Goersch, 2002).

Schramm-Klein (2003a) analysed the perception of integration levels within the retail sector based on a multi-channel environment. Schramm-Klein (2003a, p. 83) differentiated

between the perception of how channels belonging together which she attributed to factors such as assortment, prices, communication, salesroom design and service policy (p. 206), and perception of the interaction of the channels by means of an integration of process and function (p. 86). For her, process-related and functional integration is enabled not only by cross-channel customer interaction but also by ensuring the validity of product and price information across all channels as well as by enabling customers to navigate through the distribution channels using a range of products and services that are familiar to them (p. 207), according to the researcher. Schramm-Klein analysed different combinations of distribution channels and observed that customer attitudes to the distribution channel system have a positive effect once customers perceive the integration of the channels. Integration of information processes and the perceived orientation possibilities of customers were identified as particularly relevant by this study (p.330).

On the basis of her study, Schramm-Klein (2003b) developed general principles in the context of distribution channel integration for the configuration of a multi-channel system. She again emphasised the positive effect that channel integration has on overall system evaluation, customer attitude, customer trust, usage behaviour and customer loyalty. Further, according to her, the more the channels that are integrated and the more the similarities that the customers recognise in the configuration of the marketing mix instruments across the distribution channels, the more positive is the customers' assessment of the distribution system and the higher is the customer confidence and attitude towards the overall (Schramm-Klein, 2003b).

The influence of perceived channel integration on customer loyalty was confirmed (indirectly) by Schramm-Klein et al. (2011) in another related study, again in a multi-channel environment, covering retail outlets, traditional catalogues, and Internet shops. The researchers found a significant impact of perceived integration on the image, customer trust and, further, indirectly, on customer loyalty (Schramm-Klein et al., 2011, p. 507).

Bendoly et al. (2005) analysed the lack of product availability in one channel and the search for an alternative in an affiliated channel rather than through a competing company. Although these researchers examined a multi-channel approach, their study pointed to the relevance of channel integration in the event of unavailability in the offer, which is highly relevant today in the context of an omni-channel system and the targeted routing of customers to specific channels (e.g. online channel for mass business in transaction banking). Here, the researchers revealed that a perceived channel integration between the branch and online channel

leads to more loyalty or greater "stickiness" of the customers to the companies if the services are not available in one channel, and therefore, customers switch to other company channels (Bendoly et al., 2005, p. 323). Transparency of channel integration towards the customer is particularly important and becomes perceptible to the customer through the possibility of acting, delivering and returning across channels as well as through references and information contained in the channels (p. 317).

Sousa and Voss (2006) developed a framework for conceptualizing multi-channel service quality where integration quality is a key important component. As channel integration is extremely difficult to achieve, it therefore holds great potential for competitive advantage, as customers can be inspired, according to the authors. Based on the dimensions channel-service configuration and integrated interactions the authors declared integration quality. Here, breadth of channel choice (range of alternative and preferred channels) and transparency (awareness of available channels and their different service attributes) determine channel service configuration, content consistency (same response to a request placed through different channels; interaction through one channel which takes into account previous interactions on other channels) and process consistency (e.g. service's feel, image, waiting times, employee discretion levels), determine the integrated interactions.

Bauer and Eckardt (2010) examined the determinants and consequences of perceived integration deficits from the customer's point of view, which occur due to a lack of coordination in the distribution channels. These researchers concluded that differences in assortment, price, brands, the information on the perception of integration in addition to a lack of integration of the merchandise processes in the purchase and post-purchase stages can lead to integration deficits. Separate information processes in the pre-purchase stage, isolated settlement and return processes in the post-purchase stage and differences in the brands of the individual distribution channels generate a high perceived integration deficit (Bauer & Eckardt, 2010, p. 115).

Hsiao et al. (2012) researched consumer value hierarchy from the perspective of means-end theory in a multi-channel system context to evaluate how customers think and proceed in this channel environment. The results of this study confirmed the utilitarian value of a multi-channel system for customers. However, it also found that shopping novices pay more attention than experts to the hedonic value of a multi-channel system. Multi-channel novices desire to obtain more experiences from the process of a channel system, whereas multi-channel experts are more goal-oriented in a utilitarian manner, according to the researchers (p. 328). In addition,

this study showed that customer value can be achieved, above all, through pragmatism on part of all the users, which is determined by money and time savings (location convenience) and effort reduction (facilitating decisions), among other things, but these points are, above all, the reason why customers use a multi-channel system (Hsiao et al., 2012, p. 330). In this context, it should be noted that channel integration quality has a positive impact on the perceived customer value to the multi-channel system resp. the customers' channel usage intention (Gentile et al., 2007; Hamouda, 2019; Wu & Chang, 2016; Yu et al., 2011).

Seck and Philippe (2013) examined service quality and customer satisfaction in the context of multi-channel distribution of services on the level of the traditional physical channel and the online channel of a retail bank. The results of their study showed that the quality of multi-channel integration has a positive influence on the overall satisfaction of the multi-channel customer. Following the work of Sousa and Voss (2006), these researchers identified multi-channel integration quality to be based on channel-service configuration, on the one hand, and on integrated interactions, on the other.

Herhausen et al. (2015) examined the integration of the channels as the distribution channels, especially physical stores and digital channels, had not often been harmonised and the collaboration that obtained was not coherent. Their examination was carried out on the basis of technology adoption research and diffusion theory using a theoretical model that included perceived service quality, perceived risk, and customers' Internet shopping experience. In addition, the researchers analysed the indirect, conditional effects of channel integration on customers' search intentions, purchase intentions and propensity to pay. The researchers demonstrated that integration leads to competitive advantage and channel synergies rather than channel cannibalisation. Integration has been considered by various studies in terms of an online search function for physical shops (including availability check and reservation of products in the shop) and the possibility to return products purchased online at any physical shop (Herhausen et al., 2015, p. 314).

Emrich et al. (2015) analysed channel integration and distinguished between full, asymmetrical and no integration. Asymmetrical integration was defined by the idea (Zhang et al., 2010) that one channel carries all the items of the other channel as well as additional merchandise (e.g. the online channel carries a larger assortment than the physical channel). Full channel integration was achieved by keeping the same items in the online shop as in the retailer's physical store. In this case, without any integration, the channels carried disjointed

articles (Emrich et al., 2015, p. 330). These researchers also referred to the perceived shopping benefits of variety, convenience, and reduced risk in a multi-channel environment. Further, they examined the effects of substitutive, complementary and independent assortment relationships on the supplier. Their study noted that full integration dominates no integration, and asymmetrical integration can have a detrimental impact on substitutive relations when compared with no integration. Nevertheless, asymmetrical integration may (even) be more advantageous for independent relations (items that are neither highly similar nor highly compatible with regard to their intended usage) than full integration, while the results are less different for complementary relationships (Emrich et al., 2015).

Picot-Coupey et al. (2016) addressed the challenges of successfully implementing an omni-channel strategy from an ethnographic perspective in which they observed the evolution of a retail company's decisions and processes. The process initially identified strategic challenges that encompassed the organisation, culture, management, marketing and resources. This was followed by development-related issues that are more noticeable to the customer such as retail mix, information systems and customer relationship management (Picot-Coupey et al., 2016).

Table 5: Strategy and Development-related Channel Integration Challenges
Source: Author's illustration, according to Picot-Coupey et al. (2016)

Strategy-related challenges	
Organisational:	• Implementing cross-functional and transversal management • Blurring channels into a unique one with various touch points
Cultural:	• Moving from a web culture to a web/physical culture • Encouraging more flexibility and cooperation • Breaking silos and barriers between touch points • Developing a shared internal culture that is common to any touchpoint • Focussing on one goal: the success of the brand
Managerial:	• Holistic Management (Controlling how the staff implements decisions) • Willingness to make prompt and direct decisions • Convincing the workforce of the common objectives • Mutualising operational modes • Favouring mutual understanding • Developing new methods of evaluation • Finding salespersons support
Marketing:	• Defining the level of flexibility of the retailing mix across channels and touch points
Financial:	• Leveraging financial resources to support the operations necessary to overcome the challenges

Continuation Table 5:

Development-related challenges	
Retailing mix:	• Homogenising the brand • Homogenising the price in coherence with the brand positioning • Implementing a flexible replication of assortment and coordinating purchasing • Implementing a flexible replication of the physical and electronic stores' layouts' • Implementing a flexible replication of services • Finding promotion complementarity
Information systems:	• Developing bridges • Synchronisation across channels • Allowing persistent customer basket
Customer relationship-management (CRM):	• Multiplying touch points • Understanding consumer journeys • Allowing flowing consumer journeys • Developing a holistic CRM

Based on an omni-channel system, Bernon et al. (2016) researched again the retail sector and the return processes of goods due to the integration of the distribution channels. They observed that while the response rates in online retailing are significantly higher than in traditional in-store sales, the response rates for considered purchases are comparable (Bernon et al., 2016). Considered purchases are the standard in the banking business. Moreover, the problems regarding return logistics for services in the banking business are disproportionately less than for products in the retail trade. So, this aspect will assume a disorderly role in the further propositions of this dissertation.

Fleer (2016) researched a multi-channel system for the retail channel and examined perceived channel integration and its implications for overall customer satisfaction and loyalty to the merchant. Fleer's empirical study in the context of channel integration referred to the work of Schramm-Klein (2003a) and Bauer and Eckardt (2010). In her study, questions on channel integration, e.g. on price and assortment differences in the distribution channels, were not answered by the respondents, presumably due to a lack of experience, which is why the researcher used a reflective measurement model and based her choice of items (Fleer, 2016, p. 180) entirely going by the suggestions of Bauer and Eckardt (2010). The results of Fleer's study about a multi-channel retail environment confirmed the positive impact of perceived channel integration on overall customer satisfaction with the merchant, but they did not confirm a significant impact of perceived channel integration on customer loyalty to the merchant (Fleer, 2016, p. 210).

Saghiri et al. (2017) developed a framework for omni-channel systems on the basis on empirical and secondary data and presented evidence from their literature review and interviews with experts that integration and visibility are the two essential enablers of omni-channel systems. Complete integration must therefore be performed across all stages, channel types and channel agents, including the dimensions of integrated promotions, transactions, pricing, order fulfilment, reverse logistics and customer services (p. 61). The visibility of the integration is as important as integration itself so that the customer can perceive the system and its advantages Saghiri et al. (2017, p. 62).

Kabadayi et al. (2017) investigated this context of consumer perception by analyzing the perceived value of multi-channel retail banking services and developing and testing a model in which the quality of multi-channel integration is a central parameter for the value perception of the multi-channel system and the perception of the overall value of the bank by the customer. They concluded that the more complex the distribution channel system, the greater the influence of the quality of channel integration on the perceived value for the customer (Kabadayi et al., 2017). As factors to measure channel integration, these researchers used customer perceived consistency of quality in the use of different channels, perception of seamless channel switching and easy availability of information in case of channel switching and same perceived quality of service and availability of services regardless of the channel (Kabadayi et al., 2017, p. 8).

Zhang et al. (2018) examined an omni-channel environment and investigated consumer responses to determine perceived trust and satisfaction and influences on the intention to purchase. By relying on the SOR framework, these researchers collected data from a major omni-channel retailer in China, which has operated an online shopping website since 2005 (p. 184). This study's results for this sector indicated a significant effect of consumer perception of channel integration on consumer empowerment. In addition, this study pointed to a high significance of consumer empowerment on satisfaction and trust as well as on patronage intention. The integration of promotion, product and price, transaction information, information access, order fulfilment and customer service were used as relevant factors to measure the perception of integration by the customer and the most significant values were identified for customer service and order fulfilment. Moreover, Zhang et al. (2018, p. 190) referred in her study to the work of Zhang et al. (2010), which had already identified pricing, promotion, inventory management, fulfilment, and return policies for each channel in a multi-channel

environment along with the degree of coordination on these decisions across channels as the key retail mix-related decisions for all multi-channel retailers.

Shen et al. (2018) also researched integration and, in particular, customer behaviour in cross-channel customer operations by examining the drivers of customer use of omni-channel services. With regard to integration, this study was based on the conceptual framework of Sousa and Voss (2006) for the quality of channel integration, which included the quality of the configuration of the channel service and the integrated interaction quality (p. 63). Through an online survey of omni-channel users, these researchers demonstrated that the quality of channel integration significantly affects the perceived fluency across different channels (Shen et al., 2018).

Hamouda (2019) researched channel integration quality and perceived omni-channel customer value in Tunisia's banking sector as drivers of customer satisfaction and loyalty. In this context, the researcher again referred to Sousa and Voss with regard to channel integration quality and the contribution of Zeithaml (1988) with regard to perceived value. Hamouda (2019) was able to identify that a high degree of channel integration in the banking business can increase the value of omni-channel as perceived by the customer. He also identified a positive relationship between perceived value and customer satisfaction and loyalty. Furthermore, he was able to derive a positive relationship between integration quality and satisfaction, but its relationship with loyalty was not supported by his study. With regard to the factors that measure channel integration, Hamouda (2019) referred exclusively to the work of Kabadayi et al. (2017).

3.4.3 Summary of Observations on Channel Integration

Appendix 2 provides a tabular overview of key studies that examined channel integration, customer perception of integration and perceived value in the context of distribution channel environments. As already stated in point 3.3.2.4, these studies were categorised and clustered and the respective researchers and items applied by these studies were assigned to them. Appendix 2 also provides the basis for the operationalisation of the construct, which will be detailed in the next chapter. Table 6, provides an overview of the categories formed and presents the different dimensions under each category.

Table 6: Factors Determining Channel Integration

Category:	Strategic considerations	Promotion	Product and price	Order placement and fulfilment
Dimensions	Channel cooperation	Advertising	Consistent product category	Access
	Convergence process	Channel references	Consistent product description	Awareness
	Financial resources	Contact information	Consistent price	Encouraging purchases
	Holistic approach	Cross-promotion	Consistent quality	Networked functions
	Retail mix management	Design/layout	Consistent responses	Personal approach
		Encouragement		Transaction integration
Category:	Transaction information	Information access	Customer service	Integration deficits
Dimensions	Chanceability	Availability	Access to customer service	Complications
	Communication	Provision of information	Consistent service standards	High internal competition
	Purchase history	Search options	Consistent courtesy	No Complement
	Recommendations		Convenience	No support
	Traceability		Customer value creation	
	Tractability		Delivery/pickup process	
			Financial advice	
			Knowledge	
			Quality of service	

3.4.4 Definition of Perceived Channel Integration

Based on the above considerations and the details in Appendix 2, a definition of channel integration can be derived for this dissertation from the perspective of an omni-channel environment.

Bendoly et al. (2005, p. 314) described channel integration as mutual support for the channels and as a semi interchangeable alternative in the retail segment. This perspective is based on the multi-channel approach. Shortly afterwards, Sousa and Voss (2006) described the quality of integration for a multi-channel approach "*as the ability to provide customers with a seamless service experience across multiple channels*" (Sousa & Voss, 2006, p. 365).

By identifying channel integration on the basis of integration deficits from the customer's point of view, Bauer and Eckardt (2010, p. 107) took a somewhat different perspective, which they recognised to be applicable in those cases where the distribution channels were not aligned.

Herhausen et al. (2015, p. 310) defined channel integration from the perspective an upstream channel as, on the one hand, from the perspective of the branch to the online channel and, on the other hand, from the perspective of the online channel to the branch. Here, the researchers understand integration as providing access to other channels, and knowledge about other channels.

Seck and Philippe (2013) examined the multi-channel integration in the retail banking business of a bank and defined channel integration "*as simultaneous and consistent use by service firm of websites and physical storefront office, possibly in addition to other channels, so that customers have a seamless experience when they switch from one channel to another during their interaction with the service*" (Seck & Philippe, 2013, p. 569), and, thus, followed the approach of Goersch (2002).

Hamouda (2019) examined the banking business in Tunisia and, assuming an omni-channel environment in the banking business, defined the quality of channel integration using the definitions of Sousa and Voss (2006) and Zhang et al. (2018). According to these definitions, the quality of integration is determined by "*the degree to which a retailer coordinates its multiple channels to create synergy for the firm and offer a seamless shopping experience to its customers*" (Hamouda, 2019, p. 611).

Saghiri et al. (2017, p. 60) provided a comprehensive and precise definition of integration in relation to a retail omni-channel environment by referring to the dimensions of stages, types and agents, and as the purchasing process, and hence, the time factor is integrated, the sales platform with all channels is included and finally the participants and touchpoints are part of the definition. The explanations under subsection 2.1.4 of this dissertation may be referred to in this regard. Finally, the definition of Saghiri et al. (2017) of channel integration clarifies that it is about the options available to customers in an omni-channel environment which enables them to connect and interact with any touchpoint in time, function and in space. However, this definition underlines the requirement for very high data capacities and other resources on the supply side.

Following previous definitions, this study considers channel integration from a customer perspective and in relation to the banking business as follows:

"Channel integration enables bank customers to move forward and backward transparently and traceably over time as well as cross-channel throughout the entire purchasing process of the banking service, i.e. in the pre-purchase stage*, the purchase* stage *and the post-purchase* stage*. With a fully coordinated set of banking functions and processes, banking customers can seamlessly take advantage of the respective benefits of the synchronised channels, while knowing that the touchpoint agents also have synchronised data and provide identical content and information. This makes customer transactions and decisions transparent,*

accessible, traceable, observable, usable and changeable for the bank and the customer both in terms of time and location."

3.4.5 Hypotheses on Perceived Channel Integration

Various studies have addressed the impact of channel integration and customer satisfaction both in the banking business and in other sectors. In the banking business, in particular, the influence of channel integration on customer satisfaction is in an area of conflict as, in the past, banks have directed customers to channels (e.g. working towards processing payment transactions using the online channels rather than the branch), but on the other hand, customers require seamless channel access by means of channel integration, and presumably, for this reason, price, customer satisfaction and other factors control the available bank resources.

Montoya-Weiss et al. (2003) explored the services of a financial service provider and a university through two large-scale studies in a multi-channel environment. By means of global customer evaluations of the service provider, they investigated the extent to which the evaluation of alternative distribution channels influences the use of the online channel, on the one hand, and overall satisfaction, on the other. The researchers demonstrated that "*cross-channel coordination can increase overall customer satisfaction in a relational, cross-channel service environment*" (Montoya-Weiss et al., 2003, p. 456).

Seck and Philippe (2013) have also researched the influence of multi-channel integration quality, in addition to physical service quality and virtual service quality, on the customer satisfaction of the customers of a French bank with their institution. This study identified a positive influence of the quality of multi-channel integration on the overall satisfaction of the multi-channel customer (Seck & Philippe, 2013, p. 575).

In addition, Hamouda (2019) researched customer omni-channel satisfaction and customer loyalty of bank customers in Tunisia using the dimensions of omni-channel perceived value and omni-channel integration quality. A positive impact of integration quality and perceived value on customer satisfaction could be observed. In addition, a positive effect of perceived value on customer loyalty was also demonstrated, but any impact of integration quality on loyalty could not be supported.

Other studies have also conducted research in this context but in other sectors. Bauer and Eckardt (2010) analysed integration deficits in a multi-channel retail environment and their impact on customer satisfaction and repurchase intentions. Integration deficits are caused by separations in the pre-purchase stage (differences in information in the channels), in the post-purchase stage (disjunctive processes in the case of replacement and complaints) and by different promotion in the channels. These deficits have a negative impact on both customer satisfaction and repurchase intentions (Bauer & Eckardt, 2010, p. 114).

Fleer (2016) examined the influence of perceived channel integration on overall satisfaction with the multi-channel retailer and loyalty to the latter. The results of this study confirmed that perceived channel integration has a positive impact on the overall satisfaction with the multi-channel retailer, but any positive effect on loyalty to the retailer could not be confirmed positively (Fleer, 2016, p. 210).

An additional hypothesis was thus derived for this dissertion which is as follows:

Hypothesis (H6): Perceived omni-channel integration has a positive impact on customer overall satisfaction with an omni-channel bank.

The causal link between perceived channel integration and customer loyalty to the supplier is obvious. This is why Bauer and Eckardt (2010), Fleer (2016), Hamouda (2019) also investigated this aspect. Bauer and Eckardt (2010, p. 117) discuss more about this conclusion by identifying channel integration as an important component of customer loyalty in practice.

Schramm-Klein (2003a) studied this research area and demonstrated that integrated multi-channel retail systems are superior to separate channels. By means of data analysis across different retailers, she was able to reveal the positive interrelation between the perceived degree of channel integration and the assessment of the interaction of the channels on the attitude (as an antecedent of customer loyalty) of the customer (Schramm-Klein, 2003a, p. 255, p.263, p. 331).

In related research, Schramm-Klein et al. (2011) analysed channel integration in a multi-channel environment and yet again identified the positive influence of customer loyalty as measured by the customer's intention to recommend the product (p. 509). The relation of channel integration to customer loyalty was measured indirectly by the image of the retailer and trust in the retailer (p. 502).

Bendoly et al. (2005) also investigated channel integration and customer retention through their study and noted that in the event of unavailability of products in a channel, customers are more loyal to a multi-channel retailer if a strong channel integration is available instead of a weak distinctive channel integration (p. 323).

Consequently, the following hypothesis got added to this dissertation:

Hypothesis (H7): Perceived omni-channel integration has a positive impact on customer loyalty to an omni-channel bank.

3.5 Impact of Satisfaction on Customer Loyalty to the Bank Operating an Omni-Channel System

Further to the details covered in the second chapter of this dissertation, different concepts are described here which explain customer loyalty in relation to customer satisfaction. A customer's gained experiences in loyalty formation are crucial as some of the approaches include these experiences in loyalty formation, whereas some other approaches consider the gained experiences to be irrelevant. This aspect is relevant to be discussed here because the concept of customer loyalty that is valid for this dissertation has been discussed further, and from this discussion, some other hypotheses and causal relationships have been derived for this dissertation.

3.5.1 Behaviouristic Approaches and Neo-behaviouristic Approaches in Loyalty Research

Customer satisfaction and customer loyalty reveal a close relationship (Giering, 2000; Hallowell, 1996; Homburg et al., 2013; Homburg, 2017; Homburg & Bucerius, 2016; Oliver, 1999). The available literature in this regard distinguishes between *behaviourist* and *neo-behaviourist* perspectives to systematise the loyalty concepts involved (Foscht et al., 2017, p. 241). While the behaviouristic approaches relate to the measures such as buying intensity, affection, loyalty, customer penetration rate, length of time since the last purchase, or contact density (Diller, 1996, p. 86) and can, thus, be assigned to actual purchasing behaviour, the neo-behaviouristic approaches are directed towards the future and consider behavioural intention (Foscht et al., 2017, p. 241). The explanations included in subsection 2.3.1 of this dissertation are also relevant in this regard.

Behaviouristic approaches have been criticised in the relevant literature for being lacking in terms of a conceptual basis. The factors underlying behaviour cannot, therefore, be identified, which is why, for example, repurchase behaviour can also be attributed to situational factors, and low repurchase rates can also be attributed to changed purchasing habits or the desire for variety (Dick & Basu, 1994, p. 100). Behaviouristic approaches consider ex-post data and processes that can be related to actual observed purchasing behaviour (Fleer, 2016, p. 124; Foscht et al., 2017, p. 241). The advantage of this approach is its relatively simple operationalisation and the easy availability of data according to Foscht et al. (2017, p. 241). In their opinion, this approach is based on the hypothesis that past loyal behaviour also determines future loyal behaviour (Foscht et al., 2017). Meanwhile, there is a general consensus (Foscht et al., 2017, p. 242) resp. a majority opinion that an isolated view of behaviour in the past provides a limited explanation for loyalty behaviour in the future (Dick & Basu, 1994; Han & Back, 2008).

A different approach is taken by neo-behaviouristic approaches, which pursue a concept of loyalty based on an ex-ante perspective and, thus, measures the intention to behave (Foscht et al., 2017, p. 242). This approach is followed by more recent and international studies in which customers are considered to be loyal if they repeatedly purchase out of their own conviction and intend to continue to purchase in the future (Giering, 2000). Consequently, neo-behaviouristic approaches do not refer to the measures that are directly and immediately observable but rather, among other things, to the repurchase and recommendation intentions to exclude unconscious and random repurchase behaviour (Giering, 2000, p. 16).

Some researchers, such as Oly (2007), Homburg and Bucerius (2016) and Belás et al. (2015), investigated loyalty in relation to previous purchasing behaviour and recommendation to third parties, thereby pursuing behaviourist approaches.

Oly (2007) examined the effects of the relationship marketing strategy on customer loyalty in a study in which the factors of trust, commitment, communication and conflict management were examined as relevant to bank customer loyalty. The study assumed that banks can create, strengthen and maintain customer loyalty through marketing plans aimed at building trust, demonstrating a commitment to service, communicating with customers in a timely, reliable and proactive manner and managing conflict efficiently. So this study surveyed bank customers regarding their experiences, and a regression analysis was used to derive the effects on customer loyalty.

Khan and Fasih (2014, p. 334) examined the relationship between service quality and bank customer satisfaction as well as bank customer loyalty. Their study was based on those assumptions regarding customer loyalty that include post-purchase behaviour.

Belás et al. (2015, p. 180) studied the relationship between gender and the main attributes of satisfaction and loyalty of bank customers. Their investigation found that when women save money, they are more likely to invest it in their bank and that women are more likely to recommend their bank to their friends.

Homburg and Bucerius (2016) considered the construct of customer loyalty in the dimensions of repurchase behaviour of the same product, cross-buying of other products and recommendation behaviour towards others. These researchers highlighted the different perspectives involved by providing a cross-industry literature review of empirical studies that have examined the relationship between customer satisfaction and customer loyalty, which also provide information on whether the researchers have investigated the behavioural intention, previous behaviour or a mix of both (Homburg & Bucerius, 2016, p. 58).

There are some other approaches that consider customer loyalty from an ex-ante perspective and, thus, pursue the Fishbein and Ajzen (1975, p. 368) perspective on behavioural intent. These two had suggested that the most effective way to explore the intensity of customer behaviour is to ask customers about their intentions.

Bloemer et al. (1998, p. 279) carried out a study to investigate how image, perceived service quality and satisfaction determine loyalty in a retail bank. To prove bank loyalty, a commitment scale was used together with the chance (intention) to visit the same bank again.

Giering (2000, p. 18) also followed this approach and defined customer loyalty as a behavioural intention with the objective of re-purchasing the supplier's products, recommending them to others and even expanding purchases from the supplier. Thus, the intention and the ex-ante analysis was the focus of this particular investigation.

Casaló et al. (2008, p. 402) examined customer loyalty and positive word-of-mouth advertising among bank customers and referred to attitudinal loyalty in their study because it reflects customers' intentions to remain with the bank and to commit to it as their behavioural dimension is the manifestation of that affective state.

Bapat (2017, p. 177) examined antecedents of loyalty in the context of multi-channel banking and considered customer loyalty to be the intention or predisposition of a bank customer to purchase from the same bank again. This researcher described current behaviour and future intentions as the essential characteristics of customer loyalty.

The conceptualisation of Foscht et al. (2017) pointed out the ex-post and ex-ante connections between previous loyal customer behaviour, on the one hand, and loyal customer attitude, on the other, as a two-dimensional construct of the business relationship. As explained by these researchers, loyalty may well refer to different objects. Customer loyalty (related to a business relationship), brand loyalty (related to a brand), item loyalty (related to a product, package size, or service), and store loyalty (related to a store/shop) were mentioned in this context (p. 241).

This dissertation analyses the loyal behaviour of customers to a bank operating an omni-channel system. Furthermore, it analyses behavioural intentions of bank customers in terms of loyalty and focuses on repurchase intention, additional purchase intention and recommendation intention in terms of loyalty (Fleer, 2016, p. 129; Giering, 2000, p. 161; Reith, 2007, p. 152). Following neo-behaviour approaches, ex-post behaviour was abstained from as the current satisfaction and overall satisfaction with the bank and customer loyalty to the bank were examined. Current customer satisfaction cannot affect past loyalty (Fleer, 2016, p. 127), but it can impact future intentions. Hence, the bank customers were asked directly about their intended behaviour within the omni-channel environment (Giering, 2000, p. 17).

3.5.2 Definition of Customer Loyalty with the Bank

To further specify and clarify customer loyalty, Fleer (2016) distinguished between loyal customer behaviour towards the supplier and individual channels in a multi-channel environment. She distinguished between loyal behaviour to a certain channel of a supplier, loyal behaviour to the supplier if the customer uses different channels of the supplier and loyal behaviour to the supplier where the customer can use different channels during different stages of the purchasing process but still remains loyal to the supplier (p. 128). For Fleer (2016) the same understanding applies with regard to the customer's intention. To reduce complexity, avoid misinterpretations and inaccuracies in customer surveys, and to take into account and assume a high level of channel integration, Fleer (2016, p. 128) recommended differentiating

in terms of customer intent vis-a-vis loyalty to the supplier in general and not vis-a-vis loyalty to the specific channel.

Since channel integration in an omni-channel environment takes on an even greater significance (Saghiri et al., 2017), customers are perceiving the channel environment holistically, and from the customer's point of view the distribution channels are becoming intermixed. Given this, such an approach is comprehensible and should be strived for in a study that examines the omni-channel approach.

Following the perspective of Giering (2000, p. 16) and Fleer (2016, p. 128), this dissertation defines customer loyalty as:

Customer loyalty to a bank operating an omni-channel system refers to the intention to use the bank's services again in one of the bank's channels, and/or to recommend the bank's services to family, friends and/or acquaintances and/or to make additional purchases from the bank. The customer, thus, intends to expand his business relationship and/or advises his family, friends and/or acquaintances to expand or establish the business relationship with that bank. In doing so, the bank's client expresses the intention to be loyal to the omni-channel bank as described above.

3.5.3 Hypotheses on Customer Loyalty to the Omni-Channel Bank

As described above, the connection between customer satisfaction and customer loyalty does exist (Giering, 2000; Hallowell, 1996), though not necessarily in all cases. Dissatisfied customers almost always tend to swich their bank, but there are also customers who are dissatisfied but do not change due to lack of alternatives or other aspects (Mittal & Lassar, 1998). Moreover, according to Mittal and Lassar (1998), there are satisfied customers who change the supplier to become even more satisfied or to profit from price advantages. With respect to the purchasing process, customers, who may be quite satisfied, may use one channel, e.g. in the information stage, but then change the supplier as they get to know of other advantages offered by a competitor (Fleer, 2016). Mittal and Lassar (1998) highlighted the importance of dividing customer retention into two steps: (1) achieving customer satisfaction; and (2) achieving loyalty beyond satisfaction (p. 188).

Increasing customer satisfaction and increasing customer loyalty in the banking business has been detailed in the studies of Kumar et al. (2013), Kaura et al. (2015), Bapat (2017) and Hamouda (2019) among others.

In this regard, an additional hypothesis regarding overall satisfaction was derived for this dissertation, which is the following:

Hypothesis (H8): Customer overall satisfaction has a positive impact on customer loyalty to an omni-channel bank.

Additionally, the studies by (Burmann, 1991, p. 253) and Korte (1995, p. 225) investigated and revealed the relationship between satisfaction during the stages of the purchasing process and customer loyalty concerning the automotive industry, and the study by Fleer did the same concerning retail trade.

To examine these aspects concerning the banking business, the following three additional hypotheses were formulated:

Hypothesis (H9): Pre-purchase customer satisfaction has a positive impact on customer loyalty to an omni-channel bank.

Hypothesis (H10): Purchase customer satisfaction has a positive impact on customer loyalty to an omni-channel bank.

Hypothesis (H11): Post-purchase customer satisfaction has a positive impact on customer loyalty to an omni-channel bank.

3.6 Summary of the Hypotheses and Description as well as Visualisation of the Causal Model

In this subsection, the hypotheses for this dissertation, on the whole, are summarised (Table 7), and a reference is made to the researchers who have already tested comparable hypotheses in their studies and have, thus, provided a basic reference for this dissertation about the banking sector that aims to study the omni-channel systems in this sector.

Table 7: Summary of hypotheses

Hypothesis (H):	**H(1): Pre-purchase** customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank. Korte (1995); Siefke (1998); Fleer (2016)
	H(2): Purchase customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank. Korte (1995); Siefke (1998); Fleer (2016)
	H(3): Post-purchase customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank. Korte (1995); Siefke (1998)
	H(4): Pre-purchase customer **satisfaction** has a **positive** impact on **purchase** customer **satisfaction** with an omni-channel bank. Burmann (1991); Korte (1995); Siefke (1998); Fleer (2016)
	H(5): Purchase customer **satisfaction** has a **positive** impact on **post-purchase** customer **satisfaction** with an omni-channel bank. Burmann (1991); Korte (1995); Siefke (1998)
	H(6): Perceived omni-channel **integration** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank. Montoya-Weiss et al. (2003); Bauer&Eckardt (2010); Seck&Philippe (2013); Fleer (2016)
	H(7): Perceived omni-channel **integration** has a **positive** impact on customer **loyalty** to an omni-channel bank. Schramm-Klein (2003); Bendoly et al. (2005); Bauer&Eckardt (2010); Fleer (2016); Hamouda (2019)
	H(8): Customer **overall satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank. Kumar et al (2013); Kaura et al. (2015); Bapat (2017); Hamouda (2019)
	H(9): Pre-purchase customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank. Burmann (1991); Korte (1995); Fleer (2016)
	H(10): Purchase customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank. Burmann (1991); Korte (1995); Fleer (2016)
	H(11): Post-purchase customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank. Burmann (1991); Korte (1995)

Table 7 lists the hypotheses as verbally formulated for this dissertation, whereas Figure 15 provides the graphical overview for the model of this research. Here, the relationship between the overall satisfaction of bank customers in the omni-channel environment is illustrated in the context of partial customer satisfaction in the purchasing process and from customer perceived channel integration, which assumes a very high priority in the omni-channel system. The purchasing process will be examined through the pre-purchase stage, the purchase stage and the post-purchase stage as well as the effect of a sub-stage of customer satisfaction on the following sub-stage. The objective of this research effort is to investigate the causes of partial satisfaction in the purchasing process and, then, to follow up on the effects of these satisfaction levels. Finally, the effects of customer satisfaction on customer loyalty to the bank operating an omni-channel system have also been analysed. The hypotheses have been formulated using positive statements. So, a + is marked next to the depiction of each hypothesis in the illustration of the research model that is presented below.

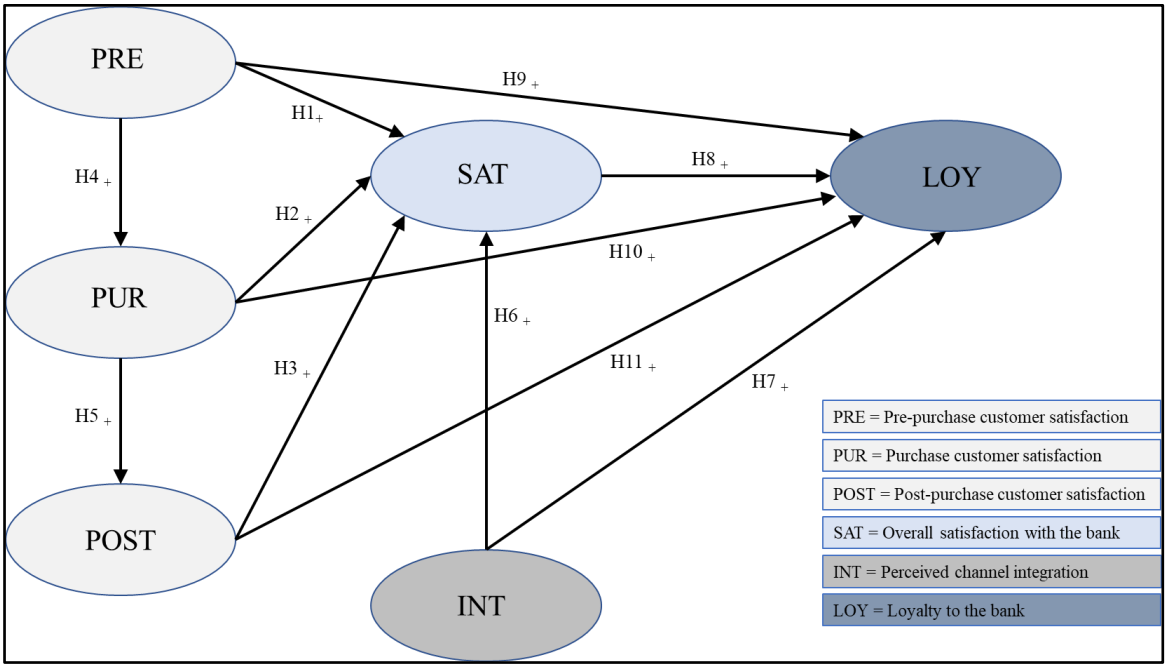

Figure 15: Research Model

4 Methodology

This chapter explains the empirical quantitative study conducted for this dissertation and describes the research strategy and design adopted to fulfil the research objectives. In order to explain the motives and rationale behind the research design, the underlying philosophy is first explained, followed by an explanation of the research approach; finally, the methodological choice and research strategy, which comprises the research methods, the operationalisation of the construct and the data collection process, the sampling strategy and the data analysis are explained.

4.1 Research Philosophy

Research philosophy, according to Saunders et al. (2016, p. 124), refers to a system of beliefs and assumptions about the development of knowledge, whereby knowledge development involves the solution of specific problems present in an organisation. Easterby-Smith et al. (2015) describes that most of the central debates among philosophers concern ontology and epistemology. Saunders et al. (2016, p. 129) differentiates between ontology, which is concerned with questions about the nature of reality and what the world is like, and epistemology, which clarifies the questions about we know what we know, what is considered acceptable knowledge, what constitutes good-quality data and what types of contribution to knowledge can be made. In addition, they also differentiate axiology, which discusses questions about what is the role of values in research and how should we treat our own values when we carry out research. Table 8 provides an overview of the five major philosophies in business and management. The hypotheses to be investigated in this dissertation are based on a causal relationship for customer satisfaction along the purchasing process of banking services, combined with the question of the influence on overall satisfaction as well as customer loyalty, which are probably also influenced by the perceived channel integration in an omni-channel system. Positivism, which is the most powerful way to study human and social behaviour, emerged in response to metaphysical assumptions (Aiken, 1956, cited in Saunders et al. (2016, p. 51). As illustrated in Table 8, positivism is associated with characteristics that are appropriate to evaluate this study's hypotheses and clarify the research questions. Quantitative research entails a deductive approach to the relationship between theory and research, where the emphasis is on the testing of theories; it incorporated the practices and norms of the natural

scientific model and positivism, in particular, and assumed social reality as an external, objective reality (Bell et al., 2019, p. 35).

Table 8 Comparison of Research Philosophies in Business and Management Research

Source: Author's illustration, according to Saunders et al. (2016, p. 136)

	Positivism	Critical realism	Interpretivism	Postmodernism	Pragmatism
Ontology	• Real, external, independent • One true reality (universalism) • Granular (things) • Ordered	• Stratified/layered (the empirical, the actual and the real) • External, independent Intransient • Objective structures • Causal mechanisms	• Complex, rich • Socially constructed through culture and language • Multiple meanings, interpretations, realities • Flux of processes, experiences, practices	• Nominal • Complex, rich • Socially constructed through power relations • Some meanings, interpretations, realities are dominated and silenced by others • Flux of processes, experiences, practices	• Complex, rich, external • 'Reality' is the practical consequences of ideas • Flux of processes, experiences and practices
Epistemology	• Scientific method • Observable and measurable facts • Law-like generalisations Numbers • Causal explanation and prediction as contribution	• Epistemological relativism • Knowledge historically situated and transient • Facts are social constructions • Historical causal explanation as contribution	• Theories and concepts too simplistic • Focus on narratives, stories, perceptions an interpretations • New understandings and worldviews as contribution	• What counts as 'truth' and 'knowledge' is decided by dominant ideologies • Focus on absences, silences and oppressed/ repressed meanings, interpretations and voices • Exposure of power relations and challenge of dominant views as contribution	• Practical meaning of knowledge in specific contexts • 'True' theories and knowledge are those that enable successful action • Focus on problems, practices and relevance Problem solving and informed future practice as contribution
Axiology	• Value-free research • Researcher is detached, neutral and independent of what is researched • Researcher maintains objective stance	• Value-laden research • Researcher acknowledges bias by world views, cultural experience and upbringing • Researcher tries to minimise bias and errors • Researcher is as objective as possible	• Value-bound research • Researchers are part of what is rese-arched, subjective • Researcher interpretations key to contribution • Researcher reflexive	• Value-constituted research • Researcher and research embedded in power relations • Some research narratives are repressed and silenced at the expense of others • Researcher radically reflexive	• Value-driven research • Research initiated and sustained by researcher's doubts and beliefs • Researcher reflexive
Typical methods	• Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analysed	• Retroductive, in-depth historically situated analysis of pre-existing structures and emerging agency. • Range of methods and data types to fit subject matter	• Typically inductive. Small samples, indepth investigations, qualitative methods of analysis, but a range of data can be interpreted	• Typically deconstructive –reading texts and realities against themselves. • In-depth investigations of anomalies, silences and absences. • Range of data types, typically qualitative methods of analysis	• Following research problem and research question. • Range of methods: mixed, multiple, qualitative, quantitative, action research. • Emphasis on practical solutions and outcomes

This researcher of this study asked independent, external and real customers about their granular experiences. Research questions and hypotheses form the basis for the causal model. The hypotheses were developed, and the research model was established through the process of conceptualisation. A large number of empirical and theoretical approaches provide the basis for this research. The study is value-free, and the researcher is neutral and independent wanting to conduct a representative comprehensive and objective study. Therefore, positivism was selected as an approach for this study. The criteria for positivism provided by Saunders et al. (2016) was considered to be applicable.

4.2 Deductive Approach of this Study

Choosing a particular theory requires certain assumptions to be made about the nature of the reality being researched and how that reality needs to be researched as suggested by Bell et al. (2019, p. 17). This decision also impacts the relationship between theory and research or the logic of the investigation, which is why deductive and inductive approaches have to be distinguished (Bell et al., 2019). A deductive approach requires that theory, concept and derived hypotheses come first and then guide the process of data collection (p. 20). This dissertation mainly follows a deductive approach that is based on the research objectives (as detailed in section 1.4 of this dissertation), the existing theories on customer satisfaction, customer loyalty and the purchasing process, and the hypotheses built on them for the banking business in an omni-channel environment of a bank.

4.3 Methodological Choice and Research Strategy

Research designs can assume different approaches and be designed to serve an exploratory, descriptive, explanatory or evaluative purpose, or a combination of these according to Saunders et al. (2016, p. 174). The rationale for the application of a quantitative study has been detailed in the previous chapter that covers the developed causal model and the hypotheses proposed. This dissertation examines causal relationships between variables and is, thus, pursuing explanatory research as defined by Saunders et al. (2016, p. 176).

Bell et al. (2019) describe quantitative research as a research strategy that emphasises quantification in the collection and analysis of data. It takes a deductive approach to the relationship between theory and research with an emphasis on testing theories. Quantitative

research also incorporates the practices and norms of the scientific model along with positivism, in particular. Finally, it considers social reality to be an external, objective reality (p. 35).

The research model established in this dissertation examines presumed causal relationships between subjective, theoretical and hypothetical constructs as described in chapter 2 of this dissertation, and these can be analysed using quantitative methods (Backhaus et al., 2018, p. 559; Weiber & Mühlhaus, 2014, p. 7). In other words, this dissertation takes a quantitative approach to the investigation of the research objectives.

4.3.1 Research Method

A central strategy for the implementation of quantitative research includes research surveys, which, in addition to structured interviews and structured observations, are usually carried out using questionnaires (Saunders et al., 2016, p. 168). The reason for scholars to measure is that the focus of quantitative research reflects the underlying ontological assumption that there is an objective external reality and the epistemological assumption that to develop knowledge about reality, we have to be able to objectively engage with the phenomena we study (Bell et al., 2019, p. 168). Furthermore, Bell et al. (2019) argued that measurement can delineate fine differences, provide a consistent device for making such distinctions, and provide the basis for more precise estimates of the degree of relationships between concepts.

4.3.1.1 Process of Operationalisation

As described in section 3.1., customer satisfaction and loyalty are hypothetical constructs and, thus, latent variables which cannot be observed directly but have to be assessed by manifest measures which are observable (Diamantopoulos et al., 2008; Weiber & Mühlhaus, 2014). Described in section 3.1., customer satisfaction and loyalty are hypothetical constructs and, thus, latent variables which cannot be observed directly but have to be assessed by manifest measures which are observable (Bollen, 2002; Fleer, 2016; Hackl & Westlund, 2000; Homburg & Klarmann, 2006). While measurement models describe the relationships between a construct and its measures (items, indicators), the structural model specifies the relationships between different constructs as maintained by Diamantopoulos et al. (2008). To measure latent variables, first, the conceptualisation followed by the concept-operationalisation is necessary (Weiber & Mühlhaus, 2014). Construct measurement, meaning the construct's operationalisation, intends to specify the relationships between observable variables and the respective construct, thus, making the construct observable and measurable (Homburg & Giering, 1996; Weiber &

Mühlhaus, 2014). The formulation of the measurement models for the latent exogenous and endogenous variables corresponds to the operationalisation of the construct in SEM (Weiber & Mühlhaus, 2014). In this case too, the literature recommends a comparison, as far as possible, of the established scales and measuring instruments to avoid construct flooding and to make studies comparable (Weiber & Mühlhaus, 2014, p. 105).

For the process of operationalisation, Homburg and Giering (1996, p. 12) recommended, first, establishing a basic understanding of the construct and developing an initial set of indicators, followed by pre-testing to improve and reduce the indicator set. Weiber and Mühlhaus (2014, p. 106) advised to first identify as many facts as possible that are relevant for the description of the construct through a qualitative study or by the content or document analysis. Moreover, they proposed expert interviews with different types of participants for pre-tests on item consolidations to determine their point of view. Subsequently, data collection and finally data analysis can be accomplished (Homburg & Giering, 1996). With the definition of the measurement concept, the decision whether to use formative or reflective measurement models is also determined (Diamantopoulos & Winklhofer, 2001, p. 269; MacKenzie et al., 2005, p. 710; Weiber & Mühlhaus, 2014, p. 106). In *reflective measurement* models, the indicators, adjusted by systematic and random errors, cover the latent variable (Jarvis et al., 2003, p. 201). The latent variable η represents the common cause of all items x_i. Together they reflect the construct with each item corresponding to a linear function of the underlying construct plus the measurement error (Diamantopoulos et al., 2008, p. 1204):

$$x_i = \lambda_i \eta + \varepsilon_i$$

where: x_i is the *i*th indicator of the latent variable η, ε_i is the measurement error for the *i*th indicator, and λ_i is a coefficient (loading) capturing the effect of η on x_i. Measurement errors are assumed to be independent (i.e., $\text{cov}(\varepsilon_i, \varepsilon_j) = 0$, for $i \neq j$) and unrelated to the latent variable (i.e., $\text{cov}(\eta, \varepsilon_i)=0$, for all *i*) (Diamantopoulos et al., 2008, p. 1204).

In *formative measurement models*, however, the latent variable is regressed on its indicators. In contrast to reflective measurement methods, latent variables for formative measurement models are not conceived as determinants of measurements, but are a summary of these measurements (Borsboom et al., 2003, p. 208).

Thus, the causality of formative measurement models is fundamentally different, as the indicators form the latent variable, and each individual indicator measures a specific facet of

the latent construct, and the characteristic and value of the construct changes when an underlying indicator is changed (Götz et al., 2010). The formative measurement model can be expressed as follows (Diamantopoulos et al., 2008, p. 1205):

$$\eta = \sum_{i=1}^{n} \gamma_i x_i + \zeta$$

where: γ_i is a coefficient capturing the effect of indicator x_i on the latent variable η, and ζ is a disturbance term. The latter comprises all remaining causes of the construct which are not represented in the indicators and are not correlated to it, thus, following the assumption that $\text{cov}(x_i, \zeta) = 0$ (Diamantopoulos et al., 2008, p. 1205).

To illustrate this different causal approach, Figure 16 depicts these processes graphically.

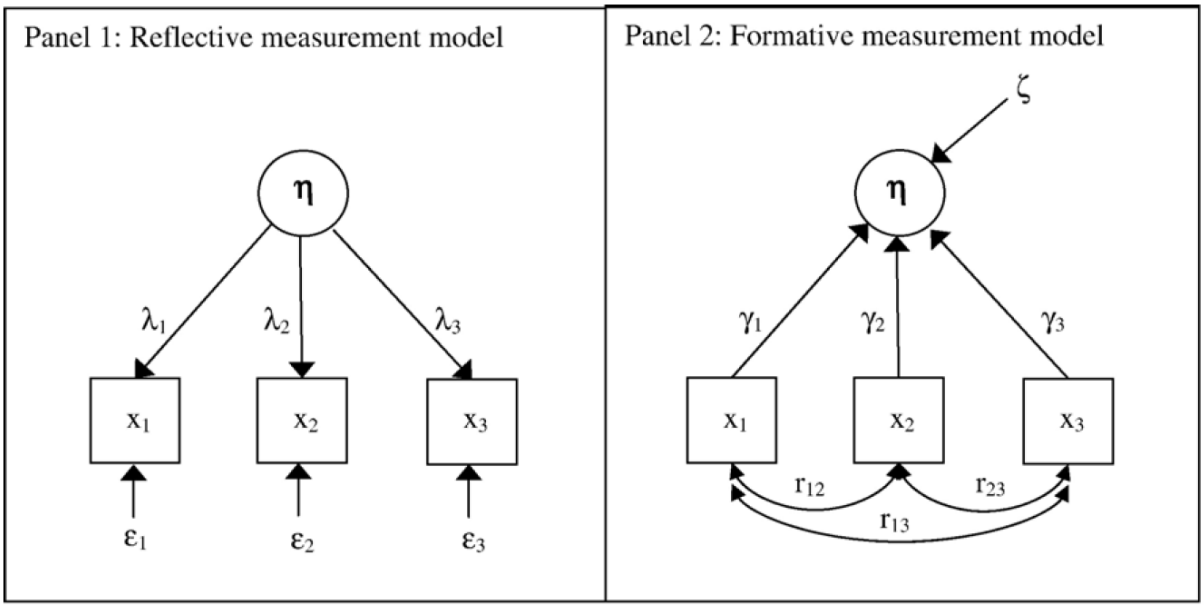

Figure 16: Alternative Measurement Models
Source: Diamantopoulos et al. (2008, p. 1205)

While formative models are multiple regression equations, reflective models have the latent variable as the dependent variable and the indicators as the explanatory variables (Diamantopoulos et al., 2008, p. 1205). The general consensus is that reflective indicators should have a positive and high correlation and, thus, have to be formulated in such a way that they point in the same direction (Bollen & Lennox, 1991, p. 307; Fassot, 2006, p. 83). Formative indicators may also possess a positive and high correlation, but this is not essential (Jarvis et al., 2003, p. 201).

The differentiation of the measurement method is therefore very important for this present study as testing the *reliability* and *validity* of the measurement model is very *different for the two approaches*. While reliability refers to the replication and consistency of a model, considering the replicability of a research design and the results obtained, validity refers to the appropriateness of the measures used, the accuracy of the analysis of the results and the generalisability of the results (Saunders et al., 2016, p. 202). A measurement instrument is considered reliable if consistent results can be drawn from similar observations or conclusions by other researchers, or if it can be verified by other researchers that reasonable conclusions have been drawn from the raw data (Saunders et al., 2016, p. 726). A factor is reliably measured by the indicators if a substantial part of its variance is explained by the associations with the factor, and thus, the influence of measurement error variables is limited (Homburg & Giering, 1996, p. 6; Peter, 1979, p. 7). The validity, however, is the extent to which data collection methods accurately measure what they were intended to measure (Saunders et al., 2016, p. 730). Validity describes the conceptual correctness of a measurement (Homburg & Giering, 1996, p. 7). Differences in the observed results reflect only real differences in the characteristics and nothing else (Churchill, 1979, p. 65).

Whether and how intensively a construct should be specified formatively or reflectively is not conclusively clarified (Fleer, 2016, p. 160). Bollen and Diamantopoulos (2017) considered both types of indicators to be important and appropriate for science. While some researchers controversially discussed possible mis-specifications and the validation of formative measurement models (Edwards, 2011, p. 383; Hardin & Marcoulides, 2011, p. 761; Lee et al., 2013, p. 12), Bollen and Diamantopoulos (2017, p. 582) differentiated between *composite-formative* and *causal-formative indicators.* Causal-formative indicators are differentiated according to the principle that a) the indicators are assumed to be a conceptual unit, b) they act as measures of a latent variable, (c) the latent variable is influenced by a disturbance term, and, finally d) that the indicator coefficients are estimated empirically (Bollen & Diamantopoulos, 2017, p. 583). However, compositive-formative indicators are a) a set of observed variables, which are not assumed to have conceptual unity, b) form an exact weighted linear composite, with (c) weights that are typically estimated empirically (Bollen & Diamantopoulos, 2017, p. 584).

In this dissertation, the indicators that have been determined define the facets and characteristics of the construct. The specific influence of the indicators on the latent variable is generally not known. Direction and strength of the indicators on the satisfaction in the pre-

purchase stage, purchase stage and post-purchase stage are empirically surveyed at the level of the bank customer and subsequently determined (Diamantopoulos & Riefler, 2008, 1189).

This dissertation is therefore conceptually related to the definition of a *causal-formative indicator*. In *addition*, this dissertation uses *reflective indicators* to measure partial satisfaction, to measure the perceived integration of distribution channels and to measure overall satisfaction and customer loyalty.

The use of formative and reflective indicators in the satisfaction research is beneficial, according to Fassot (2006, p. 84), when there are comprehensively formulated indicators as a reflective measurement model and formative measurement models for partial satisfaction. If theory tests are to be carried out based on covariance-based SEMs, Fassot suggests that the indicators should be formulated reflectively. That said, formatively formulated indicators are more suitable in cases where concrete criteria for influencing the latent variable are to be tested (Fassot, 2006, p. 84).

4.3.1.2 Method of Measurement

Survey strategies which are mostly used in deductive research are, particularly, common, widespread and accepted in business and management research (Raithel, 2008, p. 65; Saunders et al., 2016, p. 181). Data collection requires a survey instrument. The researcher either develops one for the research project or applies one of the existing instruments to query and collect the values and judgements of the respondents (Raithel, 2008, p. 65). Survey strategies using questionnaires make it possible to collect standardised data from a large population in an economical way and allow easy comparison and analysis of the data using descriptive and inferential statistics (Saunders et al., 2016, p. 181).

As pointed out previously in section 3.2 of this dissertation, the object of this study is the bank's omni-channel system, and the bank's customers and the prospects who evaluate the construct are the research subject. The research subjects are asked to evaluate their satisfaction during the purchase process of banking services in the pre-purchase, purchase and post-purchase stages, in the banking channels, which necessarily must be an omni-channel system due to the research object. Thus, the bank customer survey is an ex-post assessment of satisfaction, which is the standard in satisfaction research, and as mentioned in subsection 3.3.5 of this dissertation, it is also considered the most valid way of measuring satisfaction (Fürst, 2016; Giering, 2000; Stauss, 1999). Since the complete purchase process of banking services from the pre-purchase stage to the post-purchase stage is relevant for this study, the research

subjects were requested to consider their experiences going back to a maximum of 12 months.[6] This period was made applicable as banking services often require a high level of information (see the details in subsection 2.4.3 of this dissertation) and with regard to the expected duration of post-purchase services. The focus of this dissertation, as already mentioned, is on complex banking products as the information requirements of bank customers are particularly pronounced for these services, and the purchasing process is completely covered.

The object of this investigation, namely an operated omni-channel system in the banking business, is of crucial importance for this study on the whole because of which only those banks that operate an omni-channel system were included. This statement applies to the German Volksbanken and Raiffeisenbanken (VR banks), as the cooperative financial group that decided to implement an omni-channel system in a large measure as early as in 2018 (BVR, Bundesverband der Deutschen Volksbanken und Raiffeisenbanken, 2018a, 2018b, 2018c, 2020). Consequently, the Deutsche Zentral-Genossenschaftsbank (DZ Bank), as the central institute of the Volksbanken Raiffeisenbanken, was invited to support this research project with regard to a customer survey along with individual regional cooperative banks representing the cooperative network. A suitable example of this cooperation is the Volksbank Hameln-Stadthagen which linked the survey to its homepage (as shown in Appendix 5) and actively administered the survey to its customers. The Wiesbadener Volksbank, invited company managers and wealthy customers to participate.

In order to ensure that only those bank customers were administered the survey who are very likely to be able to handle digital banking (see subsection 2.1.1. of this dissertation) in the purchasing process, an Internet questionnaire, which was supported by e-mails from banks, was selected as the survey method. An e-mail-supported form of questioning increases the confidence with which the contacted and suitable person answers and the probability of contamination or distortion of the answers (which may be a risk for interviewer-completed questionnaires) is reduced in an Internet survey (Saunders et al., 2016, p. 440). Internet questionnaires are common and widespread forms of a survey in distribution channel surveys (Fleer, 2016; Hamouda, 2019; Hetzel, 2009; Schramm-Klein, 2003a).

[6] Comparable time periods are tolerated in other studies, such as Hetzel (2009, p. 187).

4.3.2 Operationalisation of the Construct

This study pursues a data collection on the basis of primary data from bank customers, which are collected using a questionnaire. The data collection and sampling strategy are described below.

4.3.2.1 Questionnaire and Data Collection Process

Self-administered (i.e. self-completion) questionnaires are those that are answered independently by the persons who are given those questionnaires. Several formats of responses are possible and common, such as by e-mail, postal questionnaire, online formats or direct surveys, though e-mail and online formats have become much more common (Bell et al., 2019, p. 232). Questionnaires are particularly suitable for surveys involving large homogeneous groups as they can be sent by e-mail or by providing a link. Compared to other forms of surveys, the questionnaire requires a high degree of standardisation of the questions in advance, but it does prevent the interviewer from intervening in a controlling manner (Steiner & Benesch, 2018, p. 49). Quantitative survey methods enable accurate predictions regarding the relationships between market factors and consumer behaviour, enable the relationships and differences to be understood, and allow existing relationships to be reviewed and validated(Hair et al., 2003, p. 256). Quantitative surveys offer some key advantages over other methods. They allow large sample sizes at a relatively low cost and, thus, geographical flexibility in research, enable generalised inductive and probabilistic conclusions to be drawn about the defined target population, raw data can be analysed in many different ways depending on the variety of variables, and an analysis of several variables can also be performed (Hair et al., 2003, p. 256). However, questionnaires also have drawbacks compared to structured interviews, as, among other things, the respondent cannot be helped if there is a lack of clarity in any of the questions, the response rate may be lower for various reasons, complex questions may be difficult to generate, additional/supplementary questions are not feasible, and the risk of missing data is elevated (Bell et al., 2019, p. 234).

Following the guidelines of Hair et al. (2003, p. 53), the questionnaire in this research project is designed for the self-administration, as customers are supposed to answer the written questions in privacy and without being influenced by the presence of an interviewer. The questions used were tested in the run-up to the study by means of a convenience sample with the aim of excluding possible irritations, giving clear instructions, improving the questioning if ambiguities are recognisable and to estimate the administrative time dimensions. The

questionnaire was designed with the intention of it being self-administered, thus, avoiding the costs associated with interviews and potential errors. Response scales were included that the customer-respondents were to use to answer the questions correctly. These responses scales were according to the standard guidelines for such scales in the design of questionnaires. The questionnaire was prepared by drawing on the literature analysis regarding the concepts covered in this dissertation that have been detailed in the previous chapter, and the selection of suitable items, which are listed in **Appendixes 1 and 2**. A qualitative customer survey to determine relevant indicators was dispensed with as the detailed literature evaluation helped identify relevant indicators, which also provided the rationale for the sub-models. In consideration of the cost, time and cooperation aspects, a pre-test methodology for predicting the performance of measurements is necessary in order to provide efficient access to the respondents and a meaningful empirical evaluation of construct validity (Anderson & Gerbing, 1991). Adopting questionnaire applications that have already been used without reflection could be problematic in terms of objectivity, reliability and validity, resulting in the instruments being unusable (Steiner & Benesch, 2018). To achieve a suitable item selection and substantive validity of the items for the validation of the measurement models of the pre-purchase, purchase and post-purchase stages, a pre-test item sorting task, as proposed by Anderson and Gerbing (1991), was conducted. In order to be representative of the later study and the targeted customers, a total of 21 bank customers of a VR bank, including 5 Ph.D. students and 9 bank employees of a cooperative bank were selected to assign indicators to the measurement models in the pre-test sample. Using several modifications and changed wording, randomly selected items were assigned to the concept labels by the pre-test subjects, each of which was accompanied by a short definition. Such methodology, according to Anderson and Gerbing (1991), ensures a suitable selection of the items and provides the basis for the subsequent questionnaire.

The preliminary questionnaire was initially designed in German, as the subjects in Germany were to be interviewed. The questionnaire was subsequently translated into English for this dissertation. The translated questionnaire has been included in **Appendix 3**. The questionnaire is structured over eight thematic sectors (A–H), which investigate different sub-areas (Table 9). Quality controls and filter questions were consciously inserted to, precisely, capture the research topic. The research project examined the purchase process in omni-channel environments of VR banks, which is why customers who completed their purchase at another bank outside the VR Group and thus left the omni-channel environment studied were excluded from the survey. This aspect was explained in the introduction to the questionnaire (sub-area A

of the questionnaire) and was elaborated and subsequently examined in sub-area D (sub-area D1 of the questionnaire) (Table 9). The structure of the questionnaire rationally follows the underlying research model and, thus, the purchasing process and addresses the implication of perceived channel integration on the overall satisfaction and loyalty of the bank's customers.

Table 9: Structure and Logics of the Questionnaire

Sub-area	Classification	Context	Items	**Additional information**
A	A	Condition for participation: Introduction	Relationship with a VR Bank	
			Introduction to the topic	
B	B1_1–B2_12	General section	Used touchpoints in the last 12 months	
C	C1	Pre-purchase stage	Selection of one financial service	
	C2_1–C2_12		Selected touchpoints in the pre-purchase stage	
	C3_1–C3_3		Intensity of information research	Control question
	C4_1–C4_5		Information sources beyond the bank	
	C5_1–C5_8		Formative questions to assess pre-purchase satisfaction	
	C6_1–C6_3		Reflective questions to assess pre-purchase satisfaction	
D	D1	Purchase stage	Selection of the banking group for the final purchase of the financial service	
Da	Da1_1–Da1_3		Reasons for changing the bank	Insofar as a bank change occurred
	Da2		Selection of the touchpoint for the final purchase at the bank	Then to the sub-area H
Db	Db1		Selection of the touchpoint for the final purchase at VR Bank	In the absence of a bank change
	Db2_1–Db2_8		Formative questions to assess purchase satisfaction	
	Db3_1–Db3_3		Reflective questions to assess purchase satisfaction	
	Db4_1–Db4_6		Reasons for purchasing from VR Bank	
E	E1_1–E1_8	Post-purchase stage	Formative questions to assess post-purchase satisfaction	
	E2_1–E2_3		Reflective questions to assess post-purchase satisfaction	
F	F1_1–F1_5	Channel integration	Formative questions to assess channel integration	
	F2_1–F2_3		Reflective questions to assess channel integration	
G	G1_1–G1_2	Overall satisfaction	Reflective questions to assess total satisfaction	
	G2_1–G2_5	Loyalty	Reflective questions to assess loyalty	
H	H1	Closing questions	Total number of bank relationships	
	H2		Professional activity	
	H3		Age	
	H4		Gender	
	H5		Household size	
	H6		Education	
	H7		Net budgetary income	
I	I	Closing	Acknowledgement for participation	

After the general introduction and the statement that a banking relationship with a VR bank is necessary for this survey, it was pointed out that the questions of the survey refer exclusively to the last 12 months. Subsequently, the touchpoints of the VR bank in the last 12 months were requested, and the bank customer had to select one financial service where they had an interest in information and had obtained information on this from the VR bank. For this information stage, the customer had to specify the touchpoints used. The key questions in the sub-areas C to E revolved around satisfaction in the respective stage of the purchase. Subsequently, in sub-area F, the perceived channel integration by the customer was evaluated, followed by an assessment of the overall satisfaction and customer loyalty about the intended future purchasing behaviour, in sub-area G. Finally, sociography and concluding questions regarding the customer were covered. Depending on the complexity of the questions and variability of the answer patterns, different answer formats were used for the items. A unipolar scale from "do not agree at all" with a score of 1 to "strongly agree" with a score of 5 was chosen for the assessment scale. Thus, a five-level scale of values between 1 and 5 (Weiber & Mühlhaus, 2014, p. 117) was included. The formative questions on customer satisfaction were also graded with a five-point scale from "completely dissatisfied" = 1, to "completely satisfied"" = 5. Free answers and multiple choice answers with multiple answer options were, particularly, used to comprehensively capture customer behaviour.

The questionnaire covered a large number of questions, in addition to many time-consuming evaluations required on the part of the customers responding to it. This, no doubt, demanded a high readiness on the part of the customer to participate in participating in the survey. This risk is deliberately taken in order to attain the research objectives given the complex nature of the research questions. A personal letter of invitation was used to motivate customers to participate and to reduce dropout rates. A translated version of this personal letter into English can be found in **Appendix 4**.

4.3.2.2 Operationalisation of the Indicators for the Latent Variables

The formative and reflective indicators (Table 9) for measuring partial satisfaction and perceived integration and the reflective indicators for measuring overall satisfaction and loyalty are described in greater detail below. This determines the exogenous and endogenous variables for the structural model, and, thus also for the latent variables.

The following indicators are used to measure partial satisfaction and perceived integration. Formative indicators that were of particular interest as the influencing factors for

the latent variables within this dissertation were identified. The formative character was determined by the fact that the individual indicators defined the latent variable and that the change in an indicator elicited a change in the construct (Herrmann et al., 2006, p. 47). The basis and reference material for the selection of indicators that were used to measure the partial satisfaction of bank customers was the extensive item collection contained in Appendix 1. Table 10 provides the relevant formative indicators that measure bank customers' satisfaction with the omni-channel system in the pre-purchase, purchase, and post-purchase stages. In addition, the classification in the questionnaire and a selection of key researchers who have also used these indicators for similar measurements are also provided in this Table.

Table 10: Formative Indicators to Measure Partial Satisfaction

Classification	**Context**	**Items**	**Source (selection)**
C5_1–C5_8	Pre-purchase stage	***In detail, how satisfied were you with …***	
C5_1		the **availability** and **quantity** of information.	Al-Harari/Ward (2006); Chavan/Ahmad (2013); Verhoef/Neslin/Vrommen (2007)
C5_2		the content **quality** and **visual design** of the information.	Rod/Ashill/Shao/Carruthers (2009); Karatepe/Yavas/Babakus (2005)
C5_3		the convenience of **access** to the information.	Al-Hawari/Ward (2006); Zeng/Wu (2020); Montoya-Weiss et al. (2003)
C5_4		the scope of the **product range**.	Hamzah/Lee/Moghavvemi (2017)
C5_5		the professional **competence,** the competence impression of the employees.	Rubogora (2017); Karatepe/Yavas/Babakus (2005)
C5_6		the **design** of the branch, online branch, VR-BankingApp.	Karatepe/Yavas/Babakus (2005); Hamzah/Lee/Moghavvemi (2017)
C5_7		the information provided on **opportunities and risks** arising from the financial products.	Montoya-Weiss et al. (2003); Hamzah/Lee/Moghavvemi (2017)
C5_8		the **friendliness, politeness** and **interest** of employees.	Karatepe/Yavas/Babakus (2005); Siddiqi (2011)

Classification	**Context**	**Items**	**Source (selection)**
Db2_1–Db2_8	Purchase stage	***In detail, how satisfied were you with …***	
Db2_1		the **access** to your selected touchpoint.	Rubogora (2017); Zeng/Wu (2020)
Db2_2		the **comfortable** and uncomplicated **order execution**.	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013); Rod/Ashill/Shao/Carruthers (2009); Hamzah/Lee/Moghavvemi (2017)
Db2_3		the **accuracy** of the execution.	Bloemer/Ruyter/Peerers (1998); Rubogora (2017)
Db2_4		the customer **friendliness** and further support.	Rod/Ashill/Shao/Carruthers (2009)
Db2_5		the general **atmosphere** and the **lifestyle** of the bank.	Hamzah/Lee/Moghavvemi (2017); Bahin/Nantel (2000); Chavan/Ahmad (2013)
Db2_6		the **credibility** and creditworthiness (deposit protection) of the bank.	Matzler/Sauerwein/Heischmidt (2003)
Db2_7		the **data protection** and security standards.	Hamzah/Lee/Moghavvemi (2017); Montoya-Weiss et al. (2003)
Db2_8		the professional **competence,** the competence impression of the employees.	Rubogora (2017); Zaharia (2006); Zeng/Wu (2020)

Classification	**Context**	**Items**	**Source (selection)**
E1_1–E1_8	Post-purchase stage	***In detail, how satisfied were you after the purchase with …***	
E1_1		the **commitment** and **interest** of the employees even after the confirmation of the transaction.	Reith (2007); Chavan/Ahmad (2013); Bahia/Nantel (2000)
E1_2		the customer **friendliness** and the **comprehensibility** of the confirmation of the transaction.	Hamzah/Lee/Moghavvemi (2017); Siddiqi (2011)
E1_3		the professional **competence,** the impression of competence of the employees (also when solving problems).	Karatepe/Yavas/Babakus (2005); Parasuraman/Zeithaml/Berry (1988)
E1_4		the **accessibility** and prompt transfer to the right person or solution.	Paul/Mittal/Srivastav (2016)
E1_5		the **further** arrangement of **conditions** (no hidden costs).	Matzler/Würtele/Renzl (2006)
E1_6		the **further support** (VR Bank contacts me if it is necessary and important for me)	Bahia/Nantel (2000)
E1_7		the **data security**, confidentiality and discretion.	Moraru/Duhnea (2018); Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013)
E1_8		the **error-free** execution of orders.	Bahia/Nantel (2000)

Since this work intended to examine the variables influencing satisfaction in the purchasing process, an evaluation of the formative indicators was necessary. An evaluation of the formative indicators on external validity, however, became feasible by a further measurement using reflective indicators (Röthele, 2012, p. 223). This method was advisable because this approach does not require the addition of further constructs to the model for the purpose only of identification, thus not increasing complexity unnecessarily. Furthermore, with this approach, the measurement parameters are stable and less sensitive to the changes in the structure parameters (Diamantopoulos et al., 2008; Jarvis et al., 2003; MacKenzie et al., 2005). In order to measure the partial satisfaction of bank customers and to measure the perceived integration of the bank's touchpoints, reflective indicators were surveyed in parallel to the formative indicators through the questionnaire. Overall satisfaction was researched through numerous studies, which is why the reflective specification of the partial satisfaction of this dissertation is based on these studies (Fornell et al., 1996, p. 10; Fürst, 2016, p. 132; Giering, 2000, p. 160). These satisfaction indicators were further queried by the question regarding the confirmation of the decisions taken (Cronin et al., 2000, p. 213).

Table 11: Reflective Indicators to Measure Partial Satisfaction

Classification	Context	Items	Source (selection)
C6_1–C6_3	Pre-purchase stage	***How do the statements apply to the search for information at your VR Bank?***	
C6_1		In my search for information, I was generally satisfied with VR Bank.	Giering (2000); Fürst (2016)
C6_2		The information provided fully met my expectations.	Giering (2000); Fürst (2016)
C6_3		My decision to contact VR Bank for this service was correct.	Cronin et al. (2000)
Classification	**Context**	**Items**	**Source (selection)**
Db3_1–Db3_3	Purchase stage	***How do the statements apply to the purchase at your VR Bank?***	
Db3_1		I was generally satisfied with the purchase at VR Bank.	Giering (2000); Fürst (2016)
Db3_2		The purchase by VR Bank fully met my expectations.	Giering (2000); Fürst (2016)
Db3_3		My decision to purchase this service from VR Bank was correct.	Cronin et al. (2000)
Classification	**Context**	**Items**	**Source (selection)**
E2_1–E2_3	Post-purchase stage	***How do the statements in the after-sales service apply to your VR Bank?***	
E2_1		Even after purchasing the financial services, I am still satisfied with VR Bank.	Giering (2000); Fürst (2016)
E2_2		Also in the aftercare my expectations are fully met.	Giering (2000); Fürst (2016)
E2_3		Aftercare also confirms my purchase decision.	Cronin et al. (2000)

In parallel, the exogenous variable perceived integration was specified by the formative and reflective indicators in addition to measuring partial satisfaction. Again, as was previously the case during selecting the relevant indicators for measuring customer satisfaction in the purchasing process, the indicators used so far in other studies were reviewed and then classified as detailed in Appendix 2. Subsequently, the relevant indicators for the formative measurement

were selected using an expert selection as described above. Table 12 provides the relevant formative indicators that measured perceived channel integration by bank customers in an omni-channel system.

Table 12: Formative Indicators to Measure Perceived Channel Integration

Classification	Context	Items	Source (selection)
F1_1–F1_5	Perceived integration	***How intensively do you perceive the integration of the touchpoints at VR Bank?***	
F1_1		I can obtain product information on all touchpoints.	Zhang et al. (2018); Goersch (2002); Picot-Coupey et al. (2016)
F1_2		I get a consistently high quality on all touchpoints.	Kabadayi et al. (2017); Saghiri et.al (2017); Sousa/Voss (2006)
F1_3		Orders can be placed and changed across all touchpoints.	Zhang et al. (2018); Goersch (2002)
F1_4		I can track order completion and order status transparently across all touchpoints.	Saghiri et.al (2017); Goersch (2002);
F1_5		My order history is available at every touchpoint.	Zhang et al. (2018); Sousa/Voss (2006)

Channel integration has been studied several times in relevant literature. Studies by Picot-Coupey et al. (2016) which strategically addressed the implementation of an omni-channel strategy (already presented in Table 5) and the framework proposed by Saghiri et al. (2017) provided the scales on which reflective specification of indicators can be oriented. In addition, channel integration had already been a topic in multi-channel systems, with Bauer and Eckardt (2010) and Fleer (2016) provided important and relevant reflective indicators that are of considerable importance in an omni-channel system for measuring customer perception of integration. The following reflective indicators were applied to measure the perception of channel integration in the questionnaire.

Table 13: Reflective Indicators to Measure Perceived Channel Integration

Classification	Context	Items	Source (selection)
F2_1–F2_3	Perceived integration	***How do the statements apply to your perception of channel integration?***	
F2_1		I perceive the contact points as one seamless unit.	Picot-Coupey et al. (2016); Saghiri et al. (2017)
F2_2		The distribution channels complement each other easily in the purchasing process and I gain more flexibility.	Picot-Coupey et al. (2016); Bauer/Eckardt (2010); Fleer (2016)
F2_3		The simultaneous use of different touchpoints at VR Bank is uncomplicated.	Picot-Coupey et al. (2016); Bauer/Eckardt (2010); Fleer (2016)

The customer's assessment of overall satisfaction and customer loyalty to the bank that operates the omni-channel system is fundamental to this study. Overall satisfaction and customer loyalty, as endogenous variables in the structural model, were surveyed, using the questionnaire, by means of reflective indicators for the customer. To be able to evaluate the overall assessment of customer satisfaction, the overall satisfaction and the fulfilment of expectations of the bank client were surveyed (Table 14).

Table 14: Reflective Indicator to Measure Overall Satisfaction

Classification	Context	Items	Source (selection)
G1_1–G1_2	Overall satisfaction	***How do the statements apply to your overall satisfaction with VR Bank?***	
G1_1		I am satisfied overall with VR Bank.	Giering (2000); Fürst (2016)
G1_2		My expectations are fully met.	Giering (2000); Fürst (2016)

Finally, the structural model was operationalised by means of reflective indicators to measure customer loyalty in the form of the bank customer's behavioural intentions. As already described in subsection 2.3.1 of this dissertation and the concept phase covered in subsection 3.5.2, this dissertation regarded customer loyalty as a behavioural intention. Hence, the questions to the customer were placed in this direction. The questions examined, on the one hand, the intention to repurchase with respect to the same channel or generically with respect to one channel to gauge channel loyalty, on the other hand, the intention to repurchase from the bank operating the omni-channel system. In this regard, the research questions proposed by Bapat (2017, p. 179), Seiler et al. (2013, p. 243) and Fleer (2016, p. 181) were referred to. Involving the bank again in future financial decisions referred to the question posed by Zeithaml et al. (1996, p. 38) and Seiler et al. (2013, p. 243) in the past. Zeithaml et al. (1996) also included, among others, the question about the intention to make an additional purchase and the recommendation of the bank to one's friends, relatives and acquaintances.

Table 15: Reflective Indicators to Measure Customer Loyalty

Classification	Context	Items	Source (selection)
G2_1–G2_5	Loyalty	***Please evaluate your future behavioral intentions.***	
G2_1		If I acquire a financial service in the future, I will use the same VR Bank touchpoint again.	Bapat (2017); Seiler (2013); Fleer (2016); Homburg/Becker/Henschel (2013)
G2_2		If I purchase a financial service in the future, I will use one of the VR Bank touchpoints again.	Bapat (2017); Seiler (2013); Fleer (2016); Homburg/Becker/Henschel (2013)
G2_3		I will also request future financial services from VR Bank.	Zeithaml et al. (1996); Homburg/Becker/Henschel (2013); Schramm-Klein (2003)
G2_4		I will continue to use VR Bank's range of services at least to the same extent.	Zeithaml et al. (1996); Seiler (2013)
G2_5		I will recommend VR Bank to friends, relatives or acquaintances.	Zeithaml et al. (1996); Homburg/Becker/Henschel (2013); Schramm-Klein (2003)

4.3.3 Sampling Strategy

4.3.3.1 Pre-testing Questionnaire

The questionnaire was developed on the SurveyMonkey platform and configured as a pre-test. To test the design, process, clarity and conclusiveness of the final questionnaire, the pre-test questionnaire was sent to selected respondents who were bank customers of a VR bank with a request for taking the pre-test. The pre-test candidates represented a cross-section of

potential bank clients. For this purpose, online affine customers, customers who preferred a branch office, young and older persons, customers with banking experience and without banking knowledge, academics and persons without academic background were surveyed. A total of 21 people took the pre-test, which was conducted and completed in July 2020. The feedback of the probands was collected and evaluated. Subsequently, the questionnaire was slightly modified in terms of individual formulations, question formulations and intensity of the questions. To reduce the total time that the customers needed to answer the questionnaire, some questions were eliminated and some integrated with other questions.

4.3.3.2 Sampling Method

The sampling method is used to cover information and data regarding a large number of possible elements by employing it over a randomly selected smaller selection of these elements (Hair et al., 2003). In most cases, this procedure is used if the underlying total volume is so large that complete coverage of the entire volume is disproportionate (Hair et al., 2003). In the literature that was reviewed in this regard, two basic sampling schemes, *probability* and *non-probability*, were distinguished.

In probability sampling, each sampling unit in the defined target population has a known, non-zero, probability of being selected for the random sample (Hair et al., 2003, p. 350). However, it is important to note that the actual selection probability for each sampling unit may be equal or unequal depending on the type of probability sampling scheme used (Hair et al., 2003, p. 350). The results of the probability sample can be generalised to the target population by using statistical methods within a specified margin of error if the researcher has judged the reliability and validity of the raw data collected (Hair et al., 2003, p. 350).

In contrast, in the case of nonprobability sampling, the probability of selection of each sampling unit is not known because of which a potential sampling error is not precisely known. As a result, the selection of sample units, in this case, is based on the researcher's intuitive judgement, desire or knowledge (Hair et al., 2003, p. 350). Whether and how well the sample represents the defined target population depends on the sampling approach and on how well the researcher carries out and controls the selection activities (Hair et al., 2003, p. 350). Non-probability sampling procedures can be distinguished into convenience sampling, judgment sampling, quota sampling and snowball sampling (Hair et al., 2003, p. 359).

While in *convenience* sampling, the selection of the sample is made at the discretion of the researcher or interviewer, *judgement sampling* involves selecting participants according to

the conviction of an experienced person. *Quota sampling* involves the selection of potential participants according to predetermined quotas in terms of either demographic characteristics, specific attitudes, likes/dislikes or specific behaviours. *Snowball sampling* involves the initial selection of prospective respondents who, in turn, assist the researcher in identifying additional subjects to be included in the study (Hair et al., 2003, pp. 359–363).

This study pursued a non-probability and convenience sampling strategy, i.e. as the selection of the participating probands was random and without pre-selection. Hence, it was impossible to calculate the probability of selecting a single individual in advance. It was assumed, as pointed out by Hair et al. (2003, p. 359), that the target population is homogeneous and that bank customers are similar to the overall target population in terms of the characteristics studied.

4.3.3.3 Ensuring Data Quality on Missing Values

A variety of options for treating missing values in statistical analyses have been described in relevant literature (Hair et al., 2017, p. 23). Empirical analyses are often burdened with the lack of values. The reasons for this can differ (Kaiser, 2014, p. 42). In studying missing data, it is necessary to, first, determine the nature of the missing data as they could be part of the research design and therefore are under the control of the researcher (Hair, 2019, p. 60). For Hair (2019), missing data are by design are ignorable missing data. However, if systematic coherence exists between content issues and the reason for that is the missing data then, the missing values are non-ignorable missing data, and a more in-depth diagnosis is required (Hair, 2019, p. 60). The mechanism of missing data is usually classified as *missing completely at random (MCAR), missing at random (MAR) or not missing at random (NMAR)* (Hair, 2019; Kaiser, 2014, p. 43; Rubin, 1976). MCAR is classified as a data failure if the probability of a data set having a missing value for an attribute depends neither on the observed data nor on the missing data and is, therefore, completely random (Kaiser, 2014, p. 43). Data that are incomplete only for structural reasons are referred to as MAR. For such data, the probability of a data set having a missing value for an attribute depends on the observed data but not on the value of the missing data itself (Kaiser, 2014, p. 43). Finally, the missing data mechanism is considered to be non-accidentally missing (NMAR) when the probability of a data set having a missing value for an attribute may depend on the value of the attribute and may therefore lead to distortions (Kaiser, 2014, p. 43).

Missing data by design was applied intentionally in this dissertation as filter questions and navigation questions were used in the questionnaire. Refusals to reply are not detectable in the context of this analysis and are reflected at the most in the drop-out rate of customers. So, a more in-depth investigation of the missing mechanisms was dispensed with. Due to the very small number of missing values (less than 1%) in this dissertation, a replacement of these by the mean value was accepted as the risk of distortion was considered to be negligible. Hair et al. (2017, p. 23) considered missing values of less than 5% per indicator as marginal in the partial-least squares structural equation model/method (PLS-SEM) calculations as far as the quality of the results was concerned. In view of this, the use of extensive deletion and imputation procedures (Hair, 2019, p. 60; Schafer & Graham, 2002) was dispensed with. Detailed results of the data analysis can be found in chapter 5 of this dissertation.

4.3.3.4 Statistical Mass and Data Basis of the Study

Due to the focus of the study on an omni-channel system and the implementation knowledge of such a system in the cooperative banking group (point 4.3.1.2), the customer base of the VR banks (National Association of German Cooperative Banks) was the focus of this study. The cooperative banks are the third pillar of Germany's unique three-pillar banking system alongside savings banks and private commercial banks (Jovanović et al., 2017). According to BVR (Martin, 2019), the market share of VR banks in the lending business in 2018 was 23,6% for private customers, 16,9% for corporate customers and 20,5% for commercial customers. In the deposit business, 875 independent cooperative banks had a market share of 18,5% in Germany. In total, these banks operated 10,520 bank branches and 3,800 self-service branches and, thus, had the largest branch network of all German banks (Martin, 2019). The aggregated balance sheet of all cooperative banks amounts to € 935 billion, and the average balance sheet total per cooperative bank is € 1.1 billion ranging from € 20 million for the smallest bank up to 46 billion for the largest one (Martin, 2019).

4.3.3.5 Data Collection, Time Horizon and Sampling Strategy

In order to collect data, the questionnaire (refer to point 4.3.2.1) mentioned above was developed for being used with customers only of banks that operate an omni-channel system. The questionnaire was designed and implemented on the *SurveyMonkey* platform. Accordingly, the survey data were initially collected there. The research survey started at the end of July 2020, and the questionnaire was closed at the end of September 2020. The survey was taken by customers of the VR banks with support from the DZ Bank. The study was also published and

distributed on social networks and plattforms such as *XING*, *Facebook*, *Twitter* and *WhatsApp*. In order to gain further probands, the study was posted on the survey platform *SurveyCircle*. The accompanying personal letter of invitation met with great support and ensured a highly positive response rate to the questionnaire. The intended offer to ask questions using an e-mail address accompanying the study was used selectively by some respondents to provide additional feedback. The selection of the initial candidates was carried out according to the cut-off procedure (Berekoven et al., 2009, p. 52) (judgment sample) by contacting potential participants who were assumed to have a relationship with a VR bank. These target persons were asked to participate in the survey but also to distribute the questionnaire as multipliers to friends and acquaintances who also have a customer relationship with a VR bank.

In addition, the direct approach to customers by the participating VR banks as well as the linking of the study to the banks' websites enabled the focus to be placed directly on the target customer group.

4.3.4 Data Analysis and Analytical Strategy

The methods used to determine descriptive statistics have been explained in this section. This explanation is followed by a mention of the central statistical analysis methods used in this dissertation. In this context, the structural equation analysis and the methods of multivariate data analysis to evaluate the reflective and formative measurement models and the reliability and validity criteria have also been described.

4.3.4.1 Statistical Methods and Applied Software

In this dissertation various statistical analyses have been applied, including descriptive statistics, data distribution analysis, variance analysis, factor analysis, correlation analysis and structural equation analysis. The analysis of the complex relationships of the latent variables in the described causal model of this dissertation is conducted using a SEM. Depending on the research context, the collected data material and research questions to be answered, the SEM can be applied by means of a covariance-based approach (CB-SEM) or, exploratively, with PLS-SEM methods (Hair et al., 2011). To analyse this data set and to clarify the research questions, *SmartPLS 3* (3.3.2) for structural equation analysis was used in this dissertation (Amaro et al., 2015; Hair et al., 2011; Hair et al., 2017). *SPSS* and *R* were used for descriptive and multivariate statistics analysis. SPSS Statistics 27 and R-4 (4.0.2) packages were used for this purpose.

4.3.4.2 Descriptive Statistics

They are intended to analyse, among other things, the central tendency (mean, median, mode and quartiles) and the data variability (variance, standard deviation [SD] and coefficient of variation) (Mazzocchi, 2008, p. 100). This statistical subarea uses visual processing of the data for univariate exploration (e.g. histograms and charts) and for multivariate representations (e.g. scatter plots) (Mazzocchi, 2008, pp. 85–100). Along with these descriptive steps, a careful examination of the potential bias associated with missing data and outliers followed (Mazzocchi, 2008, p. 100). The results of the descriptive statistics have been presented in the next chapter.

4.3.4.3 Explorative Factor Analysis (EFA)

Factor analysis, which is a method of multivariate analysis and an interdependence technique, can be used to analyse structures in large sets of variables (Backhaus et al., 2018, p. 366; Hair, 2019, p. 124; Mazzocchi, 2008, p. 223). EFA can be used to examine data and obtain information that empirically identifies the number of factors that are required to represent these data. In this analysis, all the measured variables were loaded on each factor, thus creating an assumption of the factor load for each variable on all factors (Hair, 2019, p. 660). EFA can be used to structure relationships in large sets of variables by identifying groups of variables, calculating their correlation and then combining a smaller number of subsets or factors (Backhaus et al., 2018, p. 366; Hair et al., 2003, p. 601). Factor analyses, together with multiple regression analysis, are often closely related to the statistical analysis of SEM (Hair, 2019, p. 711). The results of the factor analysis have also been presented in the next chapter.

4.3.4.4 Structured Equation Model (SEM)

SEM allows the simultaneous study of a number of dependency relationships and is therefore extremely useful for testing theories as multiple equations can be represented even with alternating dependency relationships (Hair, 2019, p. 603). SEM, according to (Hair, 2019, p. 606), is a multivariate technique that combines the aspects of factor analysis and multiple regression and allows the simultaneous analysis of a number of interrelated dependency relationships between measured variables and latent constructs (variables) and between several latent constructs. By means of structural equation analysis, the interdependencies in a structural model can be estimated in terms of direction and strength on the basis of empirical data and, subsequently, compared with the a-priori formulated hypotheses (Weiber & Mühlhaus, 2014,

p. 7). As described above, an explorative approach based on variance-based PLS-SEM path analysis was used for SEM in this dissertation.

CB-SEM and explorative PLS-SEM differ essentially in first, the parameter estimation which is performed in PLS-SEM by a sequence of regressions, which means that no assumptions about the distribution or measurement scale of the observed indicators are required. CB-SEM approaches require normally distributed and interval-scaled variables. Second, PLS-SEM attempts to maximise the explained variance for all endogenous constructs in the model, while CB-SEM determines the model parameters to reproduce an empirically observed covariance matrix. Third, PLS-SEM can study an almost unlimited number of formative and reflective indicators, while CB-SEM can lead to implicit zero covariances for some indicators and/or equivalent models where formative measurements predominate (Reinartz et al., 2009, p. 335).

While cluster analysis, EFA and multi-dimensional scaling are described as first generation methods, the PLS-SEM, which is described as a second generation method, is becoming increasingly important (Hair et al., 2017, pp. 3–4).

Fassot (2005, p. 24) emphasises that not only are the relationships between the latent constructs in the PLS-SEM of great importance, but also the measurement models are important themselves. Thus, PLS-SEM enables the clarification of the formative questions of this dissertation and, in this context, the examination of the relevant influencing factors of the latent variables of bank customer satisfaction from the purchase process and, thus, the analysis of the measurement model of the exogenous variables of the structural model. Hair et al. (2011, p. 144) suggested that PLS-SEM should be applied if formative measured constructs are part of the structural model. Another major benefit for statistical analysis is that PLS-SEM does not require normally distributed data. PLS-SEM uses nonparametric bootstrapping, which involves repeated random sampling with substitution from the original sample to create a bootstrap sample to obtain standard errors for hypothesis testing (Hair et al., 2011, pp. 147–148). The following table provides an overview of the most important criteria in relation to PLS-SEM.

Table 16: Main Characteristics PLS-SEM

Source: Author's elaboration, adapted from Hair et al. (2017, pp. 16–17)

Data characteristics	
· Sample size	· Applicable for small samples. High power even with a small sample size.
	· Large samples increase precision (consistency at large; similar results for N > 250 (CB-SEM vs. PLS-SEM).
	· Applicable for complex models.
· Missing data	· Highly robust (5% per indicator leads to only minor distortions).
· Distribution	· Non-parametric method (normal distribution not required).
· Scale level	· Metric, ordinal, binary coded applicable. Limitations to be observed.
Model characteristics	
· Quantity of items	· Single and multi items applicable in the measurement model.
· Relationship between constructs and indicators	· Applicable to reflective-, formative-, single-item constructs (measurement models).
· Model complexity	· Complex and simple models capable of analysis. Increased number of items reduces the PLS-SEM bias.
	· Attention to circular relationships.
Algorithm	
· Objectives	· Minimizes the unexplained variance and maximizes R^2 level.
	· Predicting key target constructs or identifying key driver constructs.
· Efficiency	· Converges after few iterations.
· Construct values	· Linear combinationDerived from linear combination of its indicators.
	· Used for forecasting purposes.
	· Processable for futher input values.
· Parameter estimation	· Overall underestimation in the structure model (PLS-SEM bias).
	· Relationships in the measurement model are overestimated (PLS-SEM bias).
	· Consistency at large; high test intensity.
Model evaluation	
· Overall	· No goodness of fit criteria.
· Measurement models	· Reflective: Multiple criteria.
	· Formative: validity, significance, relevance of indicator weights, collinearity of indicators.
· Structural model	· Collinearity between constructs.
	· Significance of path coefficiency.
	· Further criteria for forecasting ability.

Consequently, the PLS-SEM was used in the case of formative indicators that have been applied in this dissertation in relation to the exogenous variables of the model, i.e. in the purchasing process of financial services and in the perception of integration, though reflective indicators are also used. By using this method, the direction and strength of the formative indicators and individual influences on the sub-models could be determined (Diamantopoulos & Riefler, 2008, 1189). A frequently used argument that a low sample size allows the use of PLS-SEM is not correct as according to Hair et al. (2017, pp. 20–22) PLS-SEM also requires minimum sample sizes to achieve stable results. According to Hair et al. (2017, p. 21), the exact minimum sample size depends on the underlying population, the model and the data characteristics and should ultimately be determined by the strength of the test itself.

Structural equation analyses are basically used when there are several dependent variables in a model in which causal relationships are assumed to exist (Backhaus et al., 2018, p. 559). The unknown model parameters (weights and loading of the latent variables as well as the path coefficients) are iteratively determined by the PLS-SEM algorithm using an ordinary

least squares (OLS) estimation (Esposito Vinzi et al., 2010, p. 3; Götz et al., 2010, pp. 701–703). To estimate the causal dependencies in a structural model, all hypothetical constructs have to be described first by the indicator variables (Backhaus et al., 2015, p. 73). It has become widely accepted in the literature that the indicator variables of the exogenous latent variables are designated **x** and the exogenous latent variable $\boldsymbol{\xi}$ (Xi). In contrast, the indicator variables of the endogenous variables are designated **y** and the endogenous latent variable $\boldsymbol{\eta}$ (Eta) (Backhaus et al., 2015, p. 73). PLS-SEM is often differentiated into an external and internal model (Backhaus et al., 2015, p. 79; Fornell & Cha, 1994, p. 57). The outer model is the measurement model; the inner model is the structural model, but these two models operate in fundamentally the exact same manner in both the approaches (Hair, 2019, p. 764). While the relationships (structural paths) between the constructs (inner model) connect the exogenous and endogenous constructs, the measurement model (outer model) depicts the relationships between the manifest variables (indicators) and the underlying construct (Götz & Liehr-Gobbers, 2004, p. 717; Hair, 2019, p. 774). $\boldsymbol{\delta}$ (Delta) and $\boldsymbol{\varepsilon}$ (Epsilon) are defined as confounders for the indicator variables and $\boldsymbol{\zeta}$ (Zeta) for the latent variable. Figure 17 illustrates an SEM.

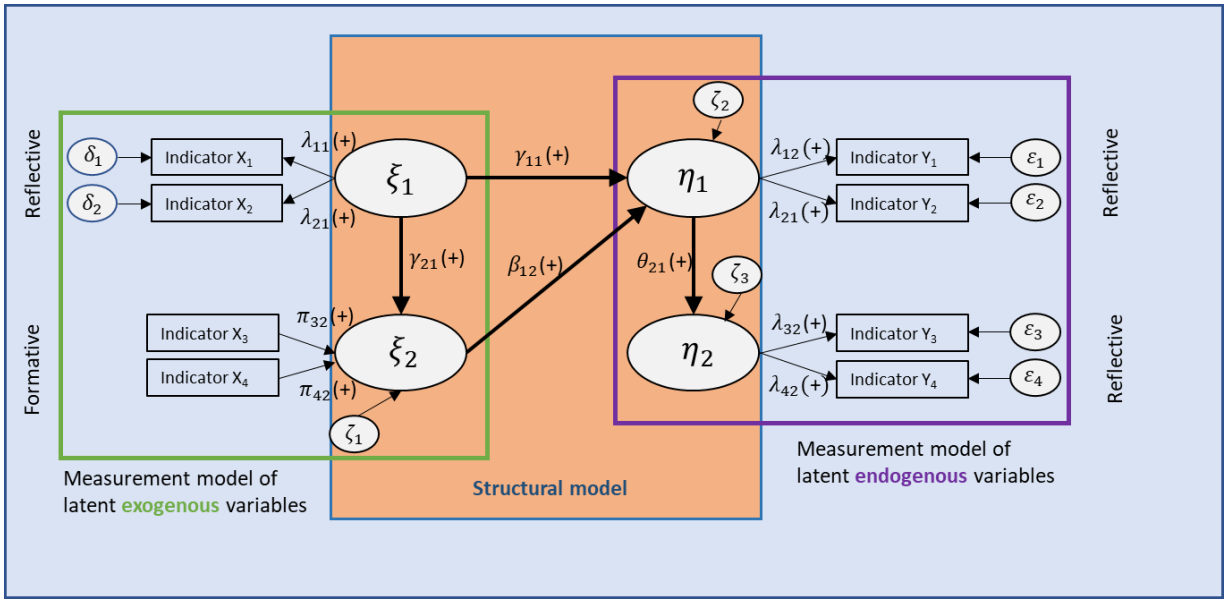

Figure 17: SEM with Reflective and Formative Measurement Models
Source: Author's elaboration, adapted from Backhaus et al. (2015, p. 79)

In the matrix notation a SEM can, thus, be formulated as follows (Backhaus et al., 2018, p. 562):

$$\eta = \mathrm{B}\eta + \Gamma\xi + \zeta$$

The matrices **B** (Beta) and **Γ** (Gamma) contain the regression coefficients (path coefficients) of the SEM and the vector $\boldsymbol{\zeta}$ (Zeta) again contains the error variables of the structural equation

according to Backhaus. In matrix notation, a ***reflective*** measurement model for latent ***endogenous*** variables can be expressed as follows (Backhaus et al., 2018, p. 562).

$$y = \Lambda_y \eta + \epsilon_y$$

For a ***reflective*** measurement model of the latent ***exogenous*** variable as follows:

$$x = \Lambda_x \xi + \delta_x$$

Matrixes $\boldsymbol{\Lambda_y}$ (Lambda-y) as well as $\boldsymbol{\Lambda_x}$ (Lambda-x) represent factor loading matrices, which reflect the strength of the relationship (factor loading) between the indicator variables y and x and the corresponding latent variables η or ξ as suggested by Backhaus et al. (2018, p. 562). Again, the vectors ϵ_y and δ_x contain the error terms of the measurement equation.

Accordingly, a ***formative*** **endogenous** measurement model can be represented in matrix notation as follows (Fornell & Cha, 1994, p. 60):

$$\eta = \pi_\eta y + \delta_\eta$$

The construct is formed from a linear combination of the relevant indicators and an error term (Bollen & Lennox, 1991, p. 306). The matrices $\boldsymbol{\pi_\eta}$ (Pi_η) contain the coefficients of weighting and the vector δ_η ($Delta_\eta$) the error terms. Accordingly, the ***formative exogenous*** measurement model as per Fornell and Cha (1994, p. 60) can be said to be:

$$\xi = \pi_\xi x + \zeta_\xi$$

Again, the matrix $\boldsymbol{\pi_\xi}$ (Pi_ξ) represents the multiple regression coefficients and the vectors $\boldsymbol{\zeta_\xi}$(related to the latent variable) are the residuals from the regression.

4.3.4.5 Criteria for model and quality assessment of PLS-SEM results

The PLS approach does not have a general, global and comprehensive criterion for verifying the quality of the SEM (in the sense of a goodness-of-fit [GoF] criterion). So, the measurement model level and the structural model level must be considered more granularly for the assessment of quality because here the available key figures do indeed provide the necessary details to be able to make a comprehensive estimate of the quality of the model's coherence (Henseler et al., 2009, p. 298; Herrmann et al., 2006, p. 58; Weiber & Mühlhaus, 2014, p. 325). Rather, it is advisable to evaluate all available individual criteria for the assessment of the measurement models and the structural model individually and, then, in the

overall context (Ringle, 2004, p. 23). To this end, Chin (1998, pp. 316–321) presented a catalogue of criteria for the assessment of partial model structures. A systematic application of these criteria is a two-step process. According to Henseler et al. (2009, p. 298), this process comprises first the evaluation of the outer model and then the evaluation of the inner model. Since PLS-SEM does not make any distribution assumption except for the predictor specification in its parameter estimation procedure, the traditional parametric techniques would not be suitable for a significance test and for the evaluation of the results, and therefore, non-parametric quality measures were used to check validity and reliability (Chin, 1998, p. 316). Goodness criteria for validity and reliability testing are distinguished in the relevant literature for this approach between the *first* and the *second generation* (Weiber & Mühlhaus, 2014, p. 129). The quality criteria of the first generation are essentially based on correlation considerations for reliability testing, while those of the second generation allow validity testing using CFA (Weiber & Mühlhaus, 2014, pp. 129–130).

4.3.4.6 Evaluation of Reflective Constructs

According to Weiber and Mühlhaus (2014, p. 130), reflective measurement models should first be tested for reliability using the quality criteria of the first generation. The methods comprise *explorative factor analysis* (EFA), *Cronbach's Alpha* and the *Item-Total Correlation* (ITC) (Weiber & Mühlhaus, 2014, pp. 130–141). Further measurement methods for testing reliability and validity are described below.

EFA is applied to investigate whether the assignment of measurement indicators and, thus, the interpretation of the content of the factors in accordance with the construct meanings is permissible (Weiber & Mühlhaus, 2014, p. 132). The aim of this test step of using EFA is to eliminate indicators that prove to be unreliable (Klopp, 2010; Weiber & Mühlhaus, 2014, p. 131). The assumption that reflective indicators represent different consequences of a certain construct and are caused by it implies that the constructs considered are *one-dimensional* (Weiber & Mühlhaus, 2014, p. 131). Testing the one-dimensionality of a construct is therefore a precondition for the reliability testing of reflective indicators as maintained by Weiber and Mühlhaus (2014). With confirmation, the content interpretation of the factors is considered permissible according to the construct meaning, and the factors, as the causal variable of the indicator correlation, are considered confirmed (Weiber & Mühlhaus, 2014, p. 132).

Testing can be performed separately for each set of the indicators of a construct (confirmation of the one-factor structure) or with several or all sets of indicators simultaneously

(confirmation of the relationships of the indicators to the construct) (Homburg & Giering, 1996, p. 12; Weiber & Mühlhaus, 2014, p. 132). Factor analyses are applicable as long as high correlations exist between the output variables (Backhaus et al., 2018, p. 379; Weiber & Mühlhaus, 2014, p. 132). Most commonly, *Measure of Sampling Adequacy (MSA)*[7] is used at the variable level to verify how far variables belong together, but also *communalities*[8] to test how much of the variable dispersion can be explained by the extracted factors (Weiber & Mühlhaus, 2014, p. 132). MSA values and communalities range within the interval [0;1] and are considered marvellous for values > 0,9 and unacceptable for values < 0,5, as the similarities become very limited (Backhaus et al., 2018, p. 379). The *Kaiser-Meyer-Olkin (KMO) test*[9] and the *Bartlett test*[10] provide information on the correlation of the variables when a complete set of variables is used (Weiber & Mühlhaus, 2014, p. 133). The KMO criterion shouldn't be less than 0,6 (aggregated MSA values) and values less than 0,5 need to be rejected (Backhaus et al., 2018, p. 379). The Bartlett test is used when only two indicators exist. It tests the null hypothesis that the variables come from an uncorrelated population (Backhaus et al., 2018, p. 133). With regard to factor extraction, the *Principal Component Analysis (PCA)*[11] is used methodically, assuming that the variance of the initial variables can be fully reproduced by uncorrelated factors (Jolliffe, 2002, p. 1), and thus, there are no individual residual variances, which is why the communalities of the initial variables are also set to 1 at the starting point of the estimate as suggested by Backhaus et al. (2018, p. 393). PCA is used to clarify how the variables uploaded to a factor are grouped together by a collective term (Backhaus et al., 2018, p. 393). In terms of rotation, a *varimax rotation* is used as the factors are independent and, therefore, uncorrelated constructs (Backhaus et al., 2018, p. 400; Weiber & Mühlhaus, 2014, p. 133). Orthogonal rotations, such as varimax produce factors that are uncorrelated (Costello & Osborne, 2005, p. 3).

The correlation of a measurement with a comparison measurement (test-retest reliability) is used to verify whether measurements are stable over time (Miller, 1995; Weiber & Mühlhaus, 2014, p. 136). The test of measurement equivalence has become established in the form of *internal consistency reliability*, which is based on measurements consisting of several indicators, according to Weiber and Mühlhaus (2014). The reflective indicators of a

[7] For detailed description see Cerny and Kaiser (1977).
[8] The influence of communality in EFA was investigated by Hogarty et al. (2005).
[9] For detailed description Kaiser and Rice (1974).
[10] For detailed description see Bartlett (1937).
[11] PCA has been presented in greater detail by Jolliffe (2002).

construct are interpreted as a collection of equivalent tests that all measure the same facts (Weiber & Mühlhaus, 2014, p. 136). *Cronbach's Alpha* (also termed tau equivalent reliability) is the most commonly used measure of reliability based on the intercorrelation between the observed indicator variables (Hair et al., 2017, p. 96). Cronbach's Alpha is defined as follows (Hair et al., 2017, p. 96):

$$Cronbachs\ \alpha = \left(\frac{M}{M-1}\right) \cdot \left(1 - \frac{\sum_{t=1}^{M} s_i^2}{s_t^2}\right)$$

Here, s_i^2 is the variance of the indicator variable *i* of a specific construct, which is measured by *M* indicators (*i* = 1 to *M*). s_t^2 represents the total variance of all *M* indicators of the construct (Hair et al., 2017, p. 96). Cronbach's Alpha has an interval of [0;1], whereby a high value indicates a high reliability (Homburg & Giering, 1996, p. 8). Reference are often made in relevant literature to Nunnally (1978) with regard to reference value of $\alpha \geq 0{,}7$ being acceptable, although Rossiter (2002, p. 310) claimed values around 0,8 and Hildebrandt (1984, p. 42) demanded values of 0,9 for hard statements as observed according to Weiber and Mühlhaus (2014, p. 142). These levels were confirmed by Nunnally and Bernstein (1994, pp. 264–265) with a target value around 0,8 noting that it is relevant how a measurement is used and recommending that a given level should not express a cut-off point. In general, Cronbach's Alpha tends to underestimate the true reliability of internal consistency and is considered as a conservative indicator (Hair et al., 2017, p. 96).

Cronbach's Alpha is based on the assumption that the indicators of the construct are equally reliable, and therefore, all indicators have the same external loading on the construct (Hair et al., 2017, p. 96). For PLS-SEM, therefore, the examination of *internal consistency reliability* by means of *composite reliability (synonymous with factor reliability, congeneric reliability, construct reliability and Jöreskog's rho)* is more consistent, since individual reliability is prioritised in PLS-SEM (Hair et al., 2017, p. 96). Therewith, it can be tested by using the loading to see how well the construct is measured by the chosen indicators (Chin, 1998, p. 320; Götz et al., 2010, p. 695). The following formula can be used to measure composite reliability (Fornell & Larcker, 1981, p. 45; Hair et al., 2017, p. 96):

$$Composite\ reliability\ (p_c) = \frac{\left(\sum_i \lambda_{ij}\right)^2}{\left(\sum_i \lambda_{ij}\right)^2 + \sum_i var\ (\epsilon_i)}$$

whereby, λ_i indicates the loading of indicator variable *i* of a latent variable, ϵ_i represents the measurement error of indicator variable *i*, and *j* represents the flow index across all reflective measurement models (Götz et al., 2010, p. 695). The variance of the measurement error is defined by $1 - \lambda_i^2$ (Hair et al., 2017, p. 97). Composite reliability can have values ranging from 0 to 1, whereby higher values indicate higher reliability. Composite reliability is interpreted in the same way as Cronbach's Alpha, although composite reliability tends to overestimate the reliability of internal consistency (Hair et al., 2017, p. 97). Values should be >.7 but not above .95 (Hair et al., 2017, p. 97).

It is not necessary to change the indicators if the values of Cronbach's Alpha and/or composite reliability are acceptable, but even then, the internal consistency of a construct can (but need not) be tested using *item-total correlation* (ITC), and if necessary, the composition should be optimised (Weiber & Mühlhaus, 2014, p. 138). On the other hand an ITC test should be executed in any case, if the values are not acceptable. To determine the ITC, the correlation of an indicator *i* with the sum of the indicators of a construct is calculated by using the formula given by Nunnally (1967, p. 262) and cited by Weiber and Mühlhaus (2014, p. 138) which is the following:

$$ITC\ (x_i, x_s) = \frac{cov\ (x_{i,} x_s)}{\sigma_{xi}\sigma_{xs}}$$

whereby, x_s is the sum-variable $\sum x_i$, which is formed by the values of all variables; σ_{xi} is the standard deviation of the variable x_i , and σ_{xs} is the standard deviation of the scale x_s. $cov\ (x_{i,} x_s)$ is the covariance between variable x_i and sum variable x_s (Weiber & Mühlhaus, 2014, p. 139).

Usually the *corrected item-total correlation (CITC)* is used to prevent the individual variables from partially correlating with themselves. Hereby the considered variable is not included in the summation of the variable x_s, which is why the standard deviation of the scale and the covariance change accordingly (Weiber & Mühlhaus, 2014, p. 139). Both coefficients are able to take values between -1 and +1, however, an indicator < 0,5 should be excluded if good reliability is to be achieved (Weiber & Mühlhaus, 2014, p. 139). Indicators with low values can be eliminated according to Churchill (1979, p. 68).

Convergent validity in close relation to *indicator reliability*, as well as *content validity* and *discriminant validity* are further evaluation types for validating reflective measurement models (Götz et al., 2010, pp. 694–696).

Convergent validity reveals the correlation between different measurements of a construct (Hair et al., 2017, p. 97). Without alternative approaches to measuring the same construct, the indicators of a reflective construct are considered to be different methods of measuring the latent construct (Götz et al., 2010, p. 696; Hair et al., 2017, p. 97). The items that constitute the indicators of a construct should therefore be convergent, according to Hair et al. (2017). A common measure for examining convergent validity is *Average Variance Extracted (AVE)*, which considers the loading of the indicators as well as the average variance and is formally defined as follows (Fornell & Larcker, 1981, p. 45; Götz et al., 2010, p. 696; Hair et al., 2017, p. 97):

$$AVE = \frac{\sum_i \lambda_i^2}{\sum_i \lambda_i^2 + \sum_i var\,(\varepsilon_i)}$$

whereby, contrary to the composite reliability, the factor loading is first being squared and then summarised. However, the error variance of an indicator *i* in the denominator is calculated equal to the composite reliability (Backhaus et al., 2015, p. 146). High loadings imply that the indicators carry much in common with the things that the construct is intended to express (Hair et al., 2017, p. 97). The level of the loading is often referred to as *indicator reliability*, according to Hair et al. (2017, p. 97) and results from the square of the factor loading (λ) (Henseler et al., 2009, p. 299). The level of the loadings should exceed a value of 0,7 (statistically 0,708) (Hair et al., 2017, p. 98). According to Hulland (1999, p. 198), reflective indicators should only be excluded from the measurement model if the loadings in the overall PLS model are less than 0,4 (commonly used) respectively 0,5 (Hulland, 1999, p. 198). In addition to the value of loading, the significance should be determined by means of a *t-test* using the bootstrapping method in PLS by assuming a null hypothesis that the parameter has the value zero. Factor loading is significantly different from zero if the one-sided t-test is at least 1.645 at a 5% significance level (Homburg & Giering, 1996, p. 11).

Usually, the relevant literature also requires a value of 0,5 ($0{,}708^2 = 0{,}5$) for the AVE threshold as a latent variable should, accordingly, explain a substantial part of the variance of each indicator (Fornell & Larcker, 1981, p. 45; Götz et al., 2010, p. 696; Homburg & Giering, 1996, p. 12).

Based on these considerations, *discriminant validity* explains the extent of differentiation and, thus, the independence of a construct from others (Götz et al., 2010, p. 696; Hair et al., 2017, p. 99). Discriminant validity is, therefore, defined by Götz et al. (2010, p. 696) as the dissimilarity in the measurement of different constructs by a measuring instrument. In a PLS context, a criterion for adequate discriminatory validity is that a construct should share more variance with its measures than it shares with other constructs in a given model. In other words, the common variance between the latent variable and its indicators should be greater than the common variance with other latent variables (Götz et al., 2010, p. 696; Hulland, 1999, p. 199). Discriminatory validity is usually proven by two different approaches (Hair et al., 2017, p. 99). Discriminatory validity is confirmed (*Fornell-Larcker criterion*) in the case where AVE of a latent variable is larger than the squared correlations of this latent variable with any other of the model's constructs as pointed out by Fornell and Larcker (1981, p. 46) (Backhaus et al., 2015, p. 147; Götz et al., 2010, p. 696; Hair et al., 2017, p. 100). Another approach (*cross-loading analysis*) to verify discriminant validity requires the calculation of the correlation between the indicators on their associated latent variable and is considered fulfilled if the loading of an indicator on its latent variable is higher than any of its cross-loadings or correlations to other constructs (Hair et al., 2017, p. 99).

Due to the performance weaknesses of cross-loading and the Fornell-Larcker criterion, more recent studies prefer the *Heterotrait-Monotrait (HTMT) ratio of correlation* for assessing discriminant validity (Hair et al., 2017, p. 102). This approach is based on the Multitrait-Multimethod-Matrix of Henseler et al. (2015) and describes the relationship of two types of correlations (*r*), namely the correlation between indicators measuring different constructs (between-trait-correlation) and the correlations between indicators measuring their own construct (within-trait-correlation) (Hair et al., 2017, p. 102). HTMT is the mean value of all indicators that each measure different constructs (heterotrait-heteromethod correlation) in relation to the (geometric) mean of the average indicator correlations that each measure its own construct (monotrait-heteromethod correlation), according to Hair et al. (2017, p. 102). The HTMT of the constructs ξ_i and ξ_j with, respectively, with K_i and K_j indicators can be formulated according to Henseler et al. (2015, p. 121) as follows:

$$HTMT_{ij} = \underbrace{\frac{1}{K_i K_j}\sum_{g=1}^{K_i}\sum_{h=1}^{K_j} r_{ig,jh}}_{\text{average heterotrait-heteromethod}} \div \underbrace{\left(\frac{2}{K_i(K_i-1)}\cdot \sum_{g=1}^{K_i-1}\sum_{h=g+1}^{K_i} r_{ig,ih} \cdot \frac{2}{K_j(K_j-1)}\cdot \sum_{g=1}^{K_j-1}\sum_{h=g+1}^{K_j} r_{jg,jh}\right)^{\frac{1}{2}}}_{\text{geometric mean of the average monotrait–heteromethod correlation of construct } \xi_i \text{ and the average monotrait–heteromethod correlation of construct } \xi_j}.$$

According to Henseler et al. (2015) thresholds larger than 0,9 to 1 are considered critical, because this makes the constructs conceptually very similar and thus indicates a lack of discriminant validity. A conservative value of 0,85 should be applied in cases where the constructs differ conceptually in the path model (Hair et al., 2017; Henseler et al., 2015). Additionally, a statistical test for discriminant validity can be implemented using the HTMT criterion, where the bootstrapping procedure has to be applied (Hair et al., 2017, p. 103). The 95% confidence interval of the HTMT statistics should not contain a value of 1 for any of the construct combinations, according to Hair et al. (2017, p. 106).

Finally, *content validity*, which is indispensable for the validation of reflective measurement models, is also stated here. Content validity cannot be determined objectively and formally with statistical indicators, but, according to Weiber and Mühlhaus (2014, p. 157), it is deemed to exist once the associated indicators of a latent variable identify the content-semantic area of the construct and the measured items represent all defined meaning contents. Content validity requires a profound conceptualisation of the constructs (Wacker, 2004, p. 629; Weiber & Mühlhaus, 2014, p. 157). Assessment can be provided by experts (expert validity) or can be made intuitively (face validity) (Churchill, 1979, p. 69). Additionally, an EFA can be used to identify the underlying factor structure (Götz & Liehr-Gobbers, 2004, p. 727).

4.3.4.7 Evaluation of Formative Constructs with Regard to the PLS-SEM Approach

The reverse causality of formative indicators to reflective indicators requires a different interpretation and assessment of the measurement model (Götz et al., 2010, p. 697). Thus, the statistical evaluation criteria for reflective measurement models cannot be directly transferred to formative measurement models (Diamantopoulos & Winklhofer, 2001, p. 271; Hair et al., 2017, p. 121). Formative constructs require an intensive exploration and validation of the content validity first, followed by an empirical evaluation of the formatively specified constructs (Hair et al., 2017, p. 121). When selecting formative indicators, all the facets or, at least, all the essential facets of the construct must be covered by the indicators (Bollen & Lennox, 1991, p. 308; Hair et al., 2017, p. 121; Röthele, 2012, p. 214). By employing comprehensive literature research and a qualitative preliminary study, whereby experts can also verify the set of formative indicators (Haynes et al., 1995), a concept and the operationalisation of its structure can be determined, and subsequently, the formative indicators can be derived (Fassot & Eggert, 2005, p. 40; Hair et al., 2017, p. 121).

When compared to reflective measurement models, collinearity testing is added to the quality assessment of formative measurement models; however, reliability testing is limited, and validity testing requires a different approach (Weiber & Mühlhaus, 2014, p. 262).

To ensure *content validity for formative indicators*, some quantitative methods involving expert judgements, in which several experts assess the relevance of the items to the construct, were applied (Haynes et al., 1995, p. 244). Although it is controversial whether 12 or 30 experts should participate in the pre-test sample, there is consensus among the scholars on this subject that the number of participants should be a function of the instrument and the target population (Hunt et al., 1982, p. 270). *Proportion of substantive agreement (p_{sa})* and *substantive-validity coefficient (c_{sv})* are the indices proposed by Anderson and Gerbing (1991, p. 734) to determine, first, the proportion of respondents who assign an item to its postulated construct and, second, the extent to which these respondents assign an item to its postulated construct more than any other construct. These indices can be expressed as follows (Anderson & Gerbing, 1991, p. 734):

$$p_{sa} = \frac{n_c}{N}\,, and\ c_{sv} = \frac{n_c - n_0}{N},$$

by n_c represents the number of respondents assigning a measure to its posited construct, n_0 represents the highest number of assignments of the item to any other construct in the set, and N represents the total number of respondents. P_{sa} values can take from 0 to 1, c_{sv} from -1 to 1, and a larger value indicates a greater validity of the content.

The indicators of a formative measurement model should be mostly independent because in the case of *multicollinearity*, a regression analysis is arithmetically not feasible (Weiber & Mühlhaus, 2014, p. 262). To test multicollinearity, a multiple regression is carried out for each indicator, whereby this indicator represents the dependent variable and the other indicators are included in the regression as independent variables (Hair et al., 2017, p. 124; Weiber & Mühlhaus, 2014, p. 262). Per regression, the resulting coefficient of determination (R^2) is then subtracted from 1, resulting in the tolerance $\left(TOL_{xj} = 1 - R^2\right)$ of the indicator defined as a dependent variable (Weiber & Mühlhaus, 2014, p. 262). The reciprocal value of the tolerance is used to calculate the Variance Inflation Factor (VIF), which is usually used to test multicollinearity, according to Weiber and Mühlhaus (2014, p. 262).

Variance Inflation Factor (Backhaus et al., 2018, p. 100):

$$VIF_j = \frac{1}{1 - R_j^2},$$

whereby, R_j^2 is the coefficient of determination for the regression of the independent variable X_j towards the other variables in the regression.

VIF_j values of 10 (corresponding to an R_j^2 of 0,9) have been assumed in the literature to be the cut-off criteria (Diamantopoulos & Winklhofer, 2001, p. 272; Hair et al., 2017, p. 263). However, Weiber and Mühlhaus (2014, p. 263) suggest that in the case of VIF values > 3, a more detailed examination of the content of the indicators should already be carried out. In PLS path modelling, Hair et al. (2017, p. 126) propose that VIF values up to five should be considered as uncritical and collinearity problems should be treated only for values above five and, if necessary, to discard the formally specified measurement model if it cannot be modified.

In terms of *reliability and validity* testing, a different approach was required for the formatively measured constructs when compared to reflectively measured indicators as the collinearity problem required a low correlation of formative indicators (Weiber & Mühlhaus, 2014, p. 264). According to Hair et al. (2017, p. 122), the formatively specified measurement models should be tested by employing redundancy analysis to assess their *convergent validity*. Convergent validity describes the extent to which a measurement ($Y_n^{formative}$ items) correlates positively with an alternative measurement of the same construct based on other items ($Y_n^{reflective}$ items) (Hair et al., 2017). Path coefficiency of the two constructs should have a value of, at least, .7 to confirm validity (Hair et al., 2017, p. 131). With regard to verifying *construct validity*, the related literature usually considers the relationships of a construct with the constructs required to ensure that the formative model is identifiable (Weiber & Mühlhaus, 2014, p. 265). To verify this external validity, Diamantopoulos and Winklhofer (2001, p. 272) have proposed that the correlation of each indicator with another variable be tested, and only those indicators that correlate well with this variable be retained. Since this variable must have a strong theoretical reference to the formative indicators, they propose a global item that summarises the essence of the formative construct. Only if there is a lack of significance to the global item do Diamantopoulos and Winklhofer (2001, p. 272) suggest a review and, if this fails, the elimination of the indicator. According to Hauser and Goldberger (1971)), a further approach to validation (two-construct model), allowing the assessment of the proposed indicators as a set, is to include reflective indicators and estimate a *multiple indicators and*

multiple causes (MIMIC) model (Diamantopoulos & Winklhofer, 2001, p. 272). The inclusion of reflective indicators made it possible to determine the error term and thus evaluate the formative measurement model (Götz & Liehr-Gobbers, 2004, p. 719). The insertion of a phantom variable enabled the reflective operationalisation of the considered latent variables (Krafft et al., 2005, pp. 80–82), whereby the formative indicators were assigned to the exogenous construct and the reflective indicators to the endogenous construct (Fleer, 2016, p. 170; Hair et al., 2017, p. 122). Validity was assigned once the supposed significant relationship between the formative and the redundant reflective construct (redundancy analysis) was confirmed (Götz & Liehr-Gobbers, 2004, p. 729; Krafft et al., 2005, p. 82; Rindskopf, 1984).

To test the *significance* and *relevance* of the formative items, the *weights* of the indicators, which are the result of multiple regression, must be determined (Hair et al., 2017, p. 127). Predictive validity was used to assess the validity of the indicators (Weiber & Mühlhaus, 2014, p. 264). A indicator is relevant[12] if the regression coefficient deviates significantly from zero (Diamantopoulos & Riefler, 2008, 1189). According to Weiber and Mühlhaus (2014, p. 265), the indicators that have a low explanatory content for the construct require a closer examination to determine whether their exclusion appears meaningful or whether the model-fit changes and how much the proportion of the explained variance of the construct changes. In the PLS model, the nonparametric approach was applied by means of bootstrapping to determine significance (Chin, 1998, p. 320). Besides the weights of the items, and the *loadings* of the formative indicators were analysed with regard to their significance (Hair et al., 2017, p. 130). Elimination of a formative indicator was considered only if the loading was < .5, and the loading was also non-significant (Hair et al., 2017, p. 130). However, if the test detects multicollinearity, Götz and Liehr-Gobbers (2004, p. 729) have pleaded for the indicator to be eliminated.

[12] In assessing indicator relevance, the contribution of each indicator to construct formation will be verified. The weights formed in this context in PLS analysis are not to be interpreted as a factor loading, as they may reveal positive, negative or no correlations therebetween, according to Krafft et al. (2005, p. 78). Instead, the weights allow to determine which indicators contribute most sustainably to construct formation, according to Sambamurthy and Chin (1994, p. 231).

4.3.4.8 Evaluation of the Structural Model with regard to the PLS-SEM approach

In lieu of testing GoF[13], a structural model was evaluated using primarily heuristic criteria that assessed the model's predictive power (Hair et al., 2017, p. 165). The model was tested to determine how well the endogenous latent variables were predicted with the *magnitude* and *significance* of the *path coefficients, R^2 values, f^2 effect size, predictive relevance Q^2*, and *q^2 effect size* contributing as suggested by Hair et al. (2017, p. 165).

Initially, the latent exogenous variables in the structural model were tested for *multicollinearity* as has been already described in the testing of the formatively specified measurement models (i.e. the tolerance and VIF values) (Grewal et al., 2004, p. 519; Hair et al., 2017, p. 167). Each set of driver constructs were tested individually for the sub-areas of the structural model, and here it also applies analogously to the formative measurement where tolerance levels < 0,20 (VIF values >5) in the driver constructs were an indicator for collinearity (Hair et al., 2017, p. 168). As mentioned in point 4.3.4.7, the case of multi-collinearity was proceeded with, if necessary.

In a subsequent step, it was necessary to verify the *path coefficients* of the PLS path model in terms of direction, significance and magnitude of influence (Hair et al., 2017, pp. 168–170). By applying the PLS-SEM algorithm, the estimates for the relationships in the structural model were obtained in the form of standardised path coefficients, which represented the theoretically assumed relationship between the constructs (Hair et al., 2017, p. 168). Using the bootstrapping approach, standard errors of the coefficients were determined, which in turn enabled the calculation of empirical t-values and p-values for all path coefficients in the structural model (Hair et al., 2017, p. 165; Tenenhaus et al., 2005, p. 176). Empirical t-values that exceed a critical value, bearing in mind the probability of error, are statistically significant (Hair et al., 2017, p. 168). Hair et al. (2017, p. 168) have identified critical values of 1.28 for a 10% significance level, 1.65 for 5% and 2.33 for a 1% significance level for a one-sided test. One-sided test approaches were used for testing the significance at the levels of the measurement model and structural model as suggested by Homburg and Giering (1996). The p-value corresponds to the probability of determining the t-value that is, at least, as high as the actually observed value if the null hypothesis applies (Hair et al., 2017, p. 168). The significant

[13] According to Henseler and Sarstedt (2013), the goodness-of-fit index (GoF) of Tenenhaus et al. (2005) is not able to check the validity of a PLS-SEM, and the GoF is not applicable to formatively specified measurement models.

path coefficients, which agreed in sign with the hypothesis, confirmed the hypothesis. Those whose signs were not pronounced were rejected (Götz & Liehr-Gobbers, 2004, p. 730; Henseler et al., 2009, p. 304).

The *coefficient of determination (R^2 value)* is a central indicator of the predictive performance of the model, and it is calculated by squaring the correlation between the actual and predicted values for a specific endogenous construct (Hair et al., 2017, p. 170). The coefficient represents the combined effects of all the exogenous latent variables on the endogenous latent variable, and the R^2 value indicates the proportion of variance of the endogenous construct that is explained by all the predecessor constructs linked to the endogenous construct (Hair et al., 2017, p. 171). The coefficient of determination is normalised and can range from 0 to 1. The greater the R^2, the higher is the proportion of the dispersion explained by the exogenous variable in the total dispersion of the endogenous variable, thus indicating better predictive performance (Hair et al., 2017, p. 171; Krafft et al., 2005, p. 83). The complexity of the model determines the required level of R^2 (Hair et al., 2017, p. 171). Chin (1998, p. 323) has identified R^2 values of 0,67 as substantial, values of 0,33 as moderate and values of 0,19 as weak. Hair et al. (2017, p. 171) have given the values 0,75, 0,50 and 0,25 as R^2 values for the same classification. A high R^2 value is conducive to the predictive power of the model, though moderate R^2 values may be acceptable as long as the endogenous variables are explained by only a few exogenous variables (Backhaus et al., 2018, pp. 77–89; Henseler et al., 2009, p. 303).

In addition to testing the R^2 values for all endogenous constructs, a further test was applied to determine whether an exogenous construct exerts a substantial influence on an endogenous construct (Hair et al., 2017, p. 173). To determine the *f^2 effect strength*, as suggested by Cohen (1988), the structural model was first estimated taking into account the exogenous variable (R^2_{incl}) and then without (R^2_{excl}) it, which can be calculated as follows (Hair et al., 2017, p. 173):

$$f^2 = \frac{R^2_{incl} - R^2_{excl}}{1 - R^2_{incl}}$$

f^2 values of 0,02 indicate small effects of the exogenous latent variable, 0,15 medium effects and 0,35 large effects (Chin, 1998, p. 317; Cohen, 1988, p. 413; Hair et al., 2017, p. 173).

To check the prediction relevance of the model, it was important to evaluate the Stone-Geisser Q^2 *value*, which characterises the *out-of-sample prediction capability* of the model (Chin, 1998, p. 317; Fornell & Cha, 1994, p. 71; Geisser, 1974; Hair et al., 2017, p. 174; Stone, 1974). A PLS path model with high predictive relevance can identify data that were not relevant for modelling the estimation as has been pointed out by Hair et al. (2017, p. 175). The Q^2 values > 0 indicate the prediction relevance of the path model for a reflectively measured construct. Q^2 values were generated using the blindfolding procedure (sample re-use technique) for a specific omission *distance D* (Tenenhaus et al., 2005, p. 174). The blindfolding procedure omits the *d-th data point* in the data matrix of indicators of endogenous constructs, and it estimates the parameters with the remaining data points (Chin, 1998; Hair et al., 2017, p. 175; Tenenhaus et al., 2005). The omitted data points were considered as missing values while executing the PLS-SEM algorithm, and the resulting differences between true data points and the estimated data points were used for the Q^2 value (Hair et al., 2017, p. 175). The Q^2 valuation can be represented as follows (Fornell & Cha, 1994, pp. 71–73):

$$Q_j^2 = \frac{\sum_k E_{jk}}{\sum_k O_{jk}},$$

whereby, E_{jk} is the square sum of the forecast errors, and O_{jk} is the square sum of the difference between the estimated value and the mean value of the remaining data from the blindfolding procedures[14] (Chin, 1998, p. 318). Index *j* shows the measurement model of the respective endogenous variable, and *k* is the running index over all indicators of the measurement model (Chin, 1998). In case the Q^2 value for all endogenous variables delivers a positive value, the whole model shows prognostic relevance (Chin, 1998, p. 318; Fornell & Cha, 1994, p. 73). A value of zero indicates that the model does not forecast the original data any better than an estimate using the mean value. Q^2 values less than zero indicate that the model is not suitable (Weiber & Mühlhaus, 2014, p. 329).

Q^2 values can be modified to evaluate the predictive power of individual path relationships. For this purpose, not all constructs assigned to an endogenous variable are taken into account for the prognosis of the removed original data, but one exogenous variable is removed in each case (Weiber & Mühlhaus, 2014, p. 330). A deterioration of the Q^2 value after elimination of the regression relationship indicates a high predictive relevance of this construct

[14] Details on blindfolding can be found at Weiber and Mühlhaus (2014, p. 329) and Hair et al. (2017, p. 174).

(Weiber & Mühlhaus, 2014). The path related *Stone-Geisser criterion* (q_{ij}^2) can be stated as follows (Chin, 1998, p. 318; Weiber & Mühlhaus, 2014, p. 330):

$$q_{ij}^2 = \frac{Q_{ink.}^2 - Q_{exk.}^2}{1 - Q_{ink.}^2},$$

whereby, $Q_{ink.}^2$ represents the value of the criterion of the endogenous variable *j* if all exogenous variables are used to forecast the missing raw data, and $Q_{exk.}^2$ represents the value if exogenous variable *i* is not used to forecast the missing raw data (Weiber & Mühlhaus, 2014, p. 330).

5 Research Findings

This chapter presents the empirical verification of the causal model established and operationalised in Chapter 3. As such it presents the relevant results of this study and addresses its research questions. For this purpose, the data material was first examined descriptively followed by an examination of the data structure and representativeness of the data and the purchasing behaviour of the Volksbanken Raiffeisenbanken (VR banks) customers at different stages in the purchasing process. Finally, in this chapter, the verification of the measurement model vis-a-vis the hypotheses has been described, and the research questions have been answered.

5.1 Descriptive Analysis

As detailed in point 4.3.3.2 of this dissertation, this survey followed a non-probability and convenience sampling strategy. Overall, 380 customers of VR banks participated in the survey. As many as 84,21%, i.e. 320 of the banks' customers filled out the questionnaire completely. As described in point 4.3.2.1 of this dissertation, the questionnaire used jump questions embedded specifically to filter customers for analysis if the purchase process was not fully completed by the customer at the VR bank meaning that the customer completed the transaction at another bank. This aspect is particularly important in the analysis of the SEM as missing values have to be avoided in this context given that the whole purchase process and not parts of it are being examined. This aspect is less relevant in the descriptive analysis. So, all of the 320 customers can be examined in this context. Questions regarding the purchasing process at the Bank, including questions regarding the perception of integration of the banking channels and customer loyalty, were fully answered by 250 of the VR banks customers. Further, 249 of these respondents provided complete answers to the subsequent sociodemographic surveys.

5.1.1 Representativeness of the Data

This section details how the samples of this study were examined to assess whether the data reflect the total population of customers of VR banks. For this purpose, individual socio-demographic data from the study were compared with the target population. Statista's data for VR banks' customers in Germany (Statista, 2020b) were used as a benchmark for the demographic population. Table 17 presents the details.

A comparison between the data of the bank customers who completed the questionnaire in full and the data of those who were filtered according to section 5.1 and, therefore, have a reduced number showed no significant differences. A comparison of the sample with the total population of VR banks' customers revealed a close match in terms of gender. In terms of age structure too, the samples covered the population well, though there were slight distortions for younger persons and persons aged over 70 years. This is probably because an online survey tends to target younger people more and fewer people aged over 70 years.

Table 17: Sociodemographics and Representativeness of the Data

		Total n=320*		Total n=249**		Total population***
		n	%	n	%	%
Gender	Female	147	45,9%	118	47,4%	49,7%
	Male	173	54,1%	131	52,6%	50,3%
Age	Up to 20	26	8,1%	19	7,6%	7,2%
	20–29	55	17,2%	36	14,5%	12,8%
	30–39	36	11,3%	29	11,6%	11,8%
	40–49	48	15,0%	42	16,9%	13,4%
	50–59	57	17,8%	44	17,7%	18,5%
	60–69	58	18,1%	45	18,1%	16,3%
	Over 70	39	12,2%	33	13,3%	20,2%
	None specified	1	0,3%	1	0,4%	N/A
Education level	No school-leaving qualification	8	2,5%	7	2,8%	3,3%
	Secondary school (school year 5–9)/ Hauptschulabschluss	64	20,0%	49	19,7%	34,9%
	Secondary school/Mittlere Reife	92	28,8%	75	30,1%	32,4%
	Grammar school/Abitur, Hochschulreife	82	25,6%	62	24,9%	29,6%
	Graduate degree/Hochschulabschluss	74	23,1%	56	22,5%	N/A
Occupation status	Working full-time	161	50,3%	134	53,8%	N/A
	Working part-time	16	5,0%	11	4,4%	N/A
	Student/pupil	52	16,3%	34	13,7%	N/A
	Housewife/houseman	8	2,5%	7	2,8%	N/A
	Retired	82	25,6%	62	24,9%	N/A
	None of the information is correct	1	0,3%	1	0,4%	N/A
Persons in household	1	98	30,6%	74	29,7%	N/A
	2	112	35,0%	86	34,5%	N/A
	3	46	14,4%	36	14,5%	N/A
	4	44	13,8%	35	14,1%	N/A
	5 or more	20	6,3%	18	7,2%	N/A
Number of bank accounts	1	22	6,9%	19	7,6%	N/A
	2	89	27,8%	71	28,5%	N/A
	3	139	43,4%	105	42,2%	N/A
	4 or more	70	21,9%	54	21,7%	N/A
Net household income	Up to 1.500 €	34	10,6%	23	9,2%	N/A
	1.501–3.000 €	55	17,2%	39	15,7%	N/A
	3.001–5.000 €	146	45,6%	118	47,4%	N/A
	5.001–7.500 €	42	13,1%	36	14,5%	N/A
	More than 7.500 €	28	8,8%	22	8,8%	N/A
	None specified	15	4,7%	11	4,4%	N/A

* Participants completely finished the questionnaire.

** Participants completely answer the questions C5,C6,Db2,Db3,E1,E2,F1,F2,G1 and G2 according to 4.3.2.1 of this dissertation.

*** Statista's data (Statista, 2020) for Volksbank's customers in Germany

With regard to the school-leaving qualifications of the participants, a reliable and valid comparison of the data could not be carried out because the questionnaire asked not only for the school-leaving qualification but also for a possible university degree, and the data regarding the overall population of the VR banks' customers do not include this information. Yet, it can be ascertained that the total population has a higher proportion of lower secondary school graduates, while the sample had a significantly higher proportion of grammar school and university graduates. Standardisation and conversion of the data were dispensed with as this would have led to a possible distortion later of the sample data resulting in a greater scope for their interpretation. Further, there was no directly comparable database in terms of household size, number of bank accounts and net household income of VR banks' customers. However, the data for Germany, as a whole, showed that 42,3% of Germans are a one-person household, 33,2% live in a two-person household, 11,9% live in a three-person household, 9,1% liven in a four-person household and 3,5% share a household with more than four persons (Statista, 2020a). With regard to the average level of monthly net income per private household, the data for VR bank's customers were available only per person and not for household income. Given that this data cannot be transferred to a household, there no representative benchmark was available in this regard. For Germany, as a whole, the average monthly net income per private household totals 3.661 € (Statistisches Bundesamt, 2020).

A generalisation of the results of this study cannot be made without any restrictions. The data about school-leaving qualifications showed slight differences from those of the VR banks' population and those in the study. The results of the German population as a whole to the results of the study among single-person households, as shown above, also show slight deviations, which is why a generalisation of the results can be made to a limited extent. However, the data on gender and age structure represented the population of VR bank's customers well (with a slight deviation for customers over 70 years of age). Some socio-demographic data could not be verified with regard to their representativeness due to a lack of information about the total population.

5.1.2 Test for Multivariate Normality

A test for multi-normal distribution is usually performed in two steps. First, the individual variables are tested for a univariate normal distribution. This is followed by testing the variable population for a multivariate normal distribution (Kline, 2016, p. 74; Weiber & Mühlhaus, 2014, p. 180). According to Weiber and Mühlhaus (2014), the univariate normal

distribution of individual variables can be tested using skewness and kurtosis measurements as well as statistical tests. Normal distribution occurs in cases where skewness and kurtosis coefficients have a value of zero (Weiber & Mühlhaus, 2014, p. 180). Negative (or positive) skew values indicate a right-sided (or left-sided) distribution, whereas negative kurtosis values indicate a leptokurtic (platykurtic) distribution (Kline, 2016, p. 75).

The statistical tests for univariate normal distribution include the *Kolmogorov–Smirnov test* (KS test) or the *Shapiro-Wilk test* (SW test). In the KS test, the observed data about individual characteristics are compared with the data available in a normal distribution. A null hypothesis H_0 shows an agreement of the empirical distribution of the variable with the reference distribution (mean and SD are congruent). In the SW test, the null hypothesis tests the variable for normal distribution (Weiber & Mühlhaus, 2014, pp. 180–181; Zelterman, 2015, pp. 129–131).

With a probability of error, $p < 0{,}05$ (assumed significance level), the examined distribution deviates significantly from the normal distribution, therefore H_0 must be rejected (Bühl, 2019, p. 275). **Appendix 6** presents the results of the KS and SW tests, which were used to test the variables for a univariate normal distribution. For all the indicators, these tests revealed, with the probability of error close to zero, that the null hypothesis must be rejected and that there is, therefore, *no normal distribution for the variables*. The graphical methods also confirmed that the normal distribution in this sample should be rejected.

A necessary condition for the existence of a multivariate normal distribution is that all individual univariate distributions are normal (Kline, 2016, p. 74; Weiber & Mühlhaus, 2014, p. 181). This could be excluded, and therefore, *no multivariate normality* was assumed in the case of this data and for their further analysis.

In statistical studies where rating scales are used, the violation of the multivariate normal distribution is the normal case and therefore not surprising (Scholderer & Balderjahn, 2006, p. 62; Weiber & Mühlhaus, 2014, p. 181). Moreover, according to Ringle et al. (2009, p. 24) customer satisfaction studies frequently reveal non-normal distribution curves with varying degrees of skewness and kurtosis for the manifest variables.

PLS-SEM is a non-parametric statistical method, and so, a normal distribution is not mandatory. That said the data should not deviate excessively from the normal distribution (Hair et al., 2017, p. 52). As per a conservative view, the skewness and kurtosis measures of the data

should not be larger than ±1 (Hair et al., 2017, p. 52). However, other researchers do consider deviations in the skewness of up to |2| and kurtosis measures of up to |7| to be acceptable (Weiber & Mühlhaus, 2014, p. 180).

5.1.3 Data Structure in Relation to the Financial Services Used

In order to investigate the data structure of the participants and the usage behaviour of the bank's customers with regard to the financial service selected by the respondent for this study, the data were analysed and grouped.

Table 18: Sociodemographics in Relation to Financial Services Used

		Used financial service*								Total	
		Financial advice		Cash custody		Financing		Payments			
		n=103	32,2%	n=45	14,1%	n=118	36,9%	n=54	16,9%	n=320	%
Gender	Female	49	47,6%	24	53,3%	50	42,4%	24	44,4%	147	45,9%
	Male	54	52,4%	21	46,7%	68	57,6%	30	55,6%	173	54,1%
Age	Up to 20	5	4,9%	6	13,3%	5	4,2%	10	18,5%	26	8,1%
	20–29	24	23,3%	5	11,1%	22	18,6%	4	7,4%	55	17,2%
	30–39	8	7,8%	3	6,7%	18	15,3%	7	13,0%	36	11,3%
	40–49	18	17,5%	9	20,0%	16	13,6%	5	9,3%	48	15,0%
	50–59	14	13,6%	3	6,7%	25	21,2%	15	27,8%	57	17,8%
	60–69	21	20,4%	8	17,8%	23	19,5%	6	11,1%	58	18,1%
	Over 70	12	11,7%	11	24,4%	9	7,6%	7	13,0%	39	12,2%
	None specified	1	1,0%	0	0,0%	0	0,0%	0	0,0%	1	0,3%
Education level	No school-leaving qualification	2	1,9%	1	2,2%	1	0,8%	4	7,4%	8	2,5%
	Secondary school (school year 5–9)/ Hauptschulabschluss	15	14,6%	15	33,3%	31	26,3%	3	5,6%	64	20,0%
	Secondary school/Mittlere Reife	31	30,1%	11	24,4%	39	33,1%	11	20,4%	92	28,8%
	Grammar school/Abitur, Hochschulreife	30	29,1%	10	22,2%	30	25,4%	12	22,2%	82	25,6%
	Graduate degree/Hochschulabschluss	25	24,3%	8	17,8%	17	14,4%	24	44,4%	74	23,1%
Occupation status	Working full-time	48	46,6%	16	35,6%	73	61,9%	24	44,4%	161	50,3%
	Working part-time	5	4,9%	3	6,7%	4	3,4%	4	7,4%	16	5,0%
	Student/pupil	18	17,5%	6	13,3%	15	12,7%	13	24,1%	52	16,3%
	Housewife/houseman	4	3,9%	0	0,0%	3	2,5%	1	1,9%	8	2,5%
	Retired	28	27,2%	20	44,4%	23	19,5%	11	20,4%	82	25,6%
	None of the information is correct	0	0,0%	0	0,0%	0	0,0%	1	1,9%	1	0,3%
Persons in household	1	35	34,0%	11	24,4%	36	30,5%	16	29,6%	98	30,6%
	2	40	38,8%	17	37,8%	38	32,2%	17	31,5%	112	35,0%
	3	11	10,7%	4	8,9%	24	20,3%	7	13,0%	46	14,4%
	4	10	9,7%	11	24,4%	14	11,9%	9	16,7%	44	13,8%
	5 or more	7	6,8%	2	4,4%	6	5,1%	5	9,3%	20	6,3%
Number of bank accounts	1	10	9,7%	3	6,7%	4	3,4%	5	9,3%	22	6,9%
	2	18	17,5%	11	24,4%	31	26,3%	29	53,7%	89	27,8%
	3	52	50,5%	24	53,3%	49	41,5%	14	25,9%	139	43,4%
	4 or more	23	22,3%	7	15,6%	34	28,8%	6	11,1%	70	21,9%
Net household income	Up to 1.500 €	11	10,7%	6	13,3%	8	6,8%	9	16,7%	34	10,6%
	1.501–3.000 €	19	18,4%	7	15,6%	22	18,6%	7	13,0%	55	17,2%
	3.001–5.000 €	53	51,5%	24	53,3%	53	44,9%	16	29,6%	146	45,6%
	5.001–7.500 €	12	11,7%	4	8,9%	19	16,1%	7	13,0%	42	13,1%
	More than 7.500 €	3	2,9%	3	6,7%	15	12,7%	7	13,0%	28	8,8%
	None specified	5	4,9%	1	2,2%	1	0,8%	8	14,8%	15	4,7%

* Participants completely finished the questionnaire

For this analysis, only those participants were accepted who completed the questionnaire entirely (So, n = 320). About 36,9% of the participants chose *financing* for this study, which was described in the questionnaire as loans, mortgage financing, consumer credits, current account credits, guarantees or sureties. Almost one-third (32,2%) of the participants

chose *financial advice* for this study, which was indicated in the questionnaire as advice for financial investments, certificates, equities, funds, insurances, building society savings or leasing. *Payment transactions*, described in the questionnaire as the issue of credit cards, advice and information for Apple Pay, paydirekt, foreign exchange-related services, foreign bank transfers (not €) were selected by 16,9% of the participants. Actually, payment transaction services per se are not advisory-intensive financial products; however, information about data protection, server locations, data storage in cloud systems, data use and evaluation, the scope of services, extensive forms for foreign currency payments and other topics have become increasingly relevant information for customers. So, payment transactions was included in the questionnaire. Finally, 14,1% of respondents chose *cash custody services*. These were mentioned in the questionnaire as examples of advice regarding overnight money, time deposits, savings deposits, depot services, safe-deposit boxes and advice about opening accounts.

Overall, the sample was well distributed across both financial services of the bank and socio-demographic criteria without any clustering or any significant gaps in them. The group of housewives/housemen, the group of school leavers without qualification and part-time workers are probably underrepresented in the sample. Hence, the distribution across services was rather small.

5.1.4 Bank Customers' Behaviour in a Omni-Channel Environment

An analysis of the VR banks customers' behaviour with regard to channel behaviour has been presented in this chapter. Furthermore, it has also been analysed whether the socio-demographic characteristics of the bank's customers, influenced their satisfaction as customers and loyalty in an omni-channel system.

First, the customer behaviour within the bank's omni-channel environment was investigated with regard to the customers' usage of the regular touchpoints during the last 12 months (Figure 18). Internet banking was identified as the most often used touchpoint by the VR banks customers during the last 12 months, followed by service terminals & ATMs.

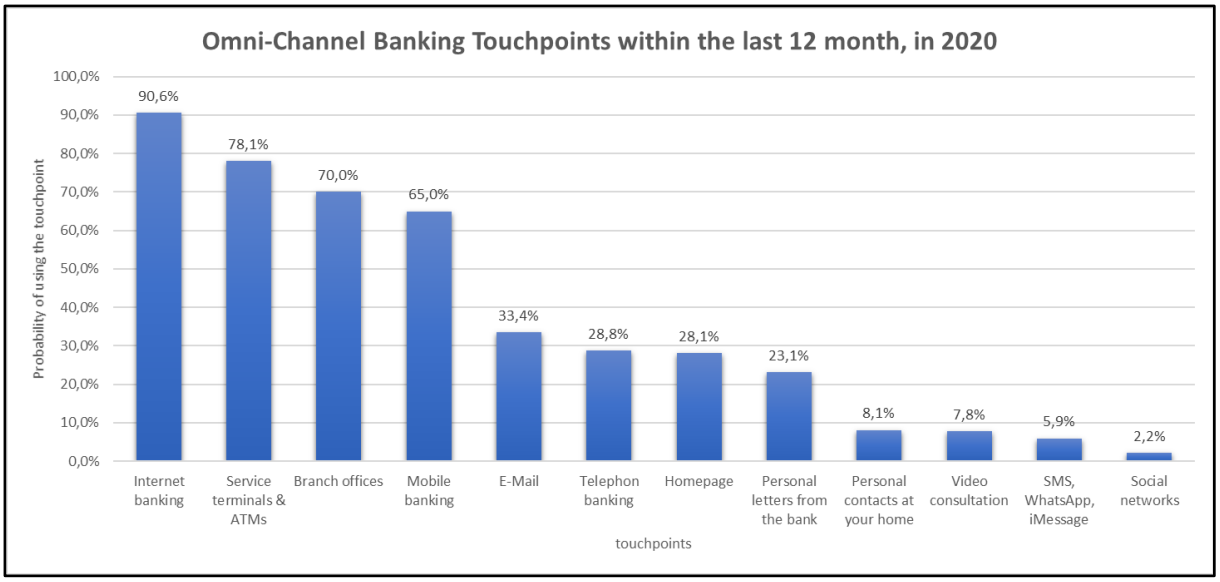

Figure 18: Omni-Channel Banking Customer Contact Points within the Last 12 months, in 2020

The personal contact and interaction facility provided by a branch of the bank was not used by 30% of its customers during the last 12 months. However, it must be taken into account that during this period physical access to banks was in some cases severely restricted due to the risks associated with the COVID-19 pandemic. It is understandable that the digital channels were particularly heavily frequented during the time this study was conducted. Mobile banking was used by 65% of the bank's customers during the last 12 months.

Subsequently, the sources of information used by bank customers in the omni-channel environment at the pre-purchase stage of the financial services were examined (Table 19). In this analysis, it was not relevant whether the customer used only this touchpoint in the pre-purchase stage. Rather, it was relevant whether the bank customer used this touchpoint with VR banks as well. The results reveal that Internet banking was most frequently used by the bank's customers in the pre-purchase stage to gather information in an omni-channel environment, followed by the branch office and, then, mobile banking. As many as 64,4% of the bank's customers used Internet banking exclusively or alongside other channels in the pre-purchase stage. Almost half of the customers used a branch office presumably for personal contact, and around a quarter used the mobile channels. It is also striking that although service terminals & ATMs were highly frequented during this period (Figure 18), they were not sought out by the bank's customers as a source of information. These services merely assumed a cash deposit and withdrawal character.

Table 19: Information Sources Used in the Pre-purchase Stage by Bank Customers within an Omni-Channels System

Touchpoint*	n**	%	Touchpoint*	n**	%
Internet banking	206	64,4%	**Personal contacts at your home**	17	5,3%
Branch offices	158	49,4%	**Video consultation**	13	4,1%
Mobile banking	78	24,4%	**Personal letters from the bank**	12	3,8%
Homepage	33	10,3%	**Service terminals & ATMs**	10	3,1%
Telephon banking	25	7,8%	**Social networks**	6	1,9%
E-Mail	24	7,5%	**SMS, WhatsApp, iMessage**	3	0,9%

* Not limited to one touchpoint (multi-channel search).

** Touchpoints used by customers.

n = 320 bank customers.

The information regarding the behaviour of the customers in an omni-channel environment of the VR banks has been analysed further in this subsection in greater detail by additionally considering the financial services they used (Table 20). The survey revealed that 64,4% of the bank's customers used Internet banking in the pre-purchase stage of financial services, and only half of them (49,4%) used a branch office to obtain information or advice. Mobile banking, which was already used in the pre-purchase stage of the financial services, was further used by one-quarter (24,4%) of the bank's customers. About 13,4% of the bank's customers exclusively used personal contact (i.e. face-to-face banking) with the VR bank for advisory purposes or to obtain information in the pre-purchase stage of financial service. More than half (50,6%) of the bank's customers did not use a branch office at all in the pre-purchase stage of banking service in an omni-channel environment.

With regard to the financing-related services, the number of customers using Internet banking (67,8%) and the branch office (68,6%) (in addition to other touchpoints) was almost the same in the pre-purchase stage of financial services. One-eighth (12,7%) of all customers interested in financing exclusively used face-to-face banking. Around a third (31,4%) of all customers who sought information about financing completely refrained from using a branch office and the information available there. Almost three-quarters (74,1%) of the customers who obtained information about payment services decided not to use a branch office while searching in the pre-purchase stage. About 25,9% of customers of the bank interested in payment services used a branch office besides other channels in the pre-purchase stage. Only 5,6% of the customers interested in payment services obtained information exclusively via face-to-face banking. The use of services related to financial advice and cash custody showed a similar trend in terms of the use of Internet banking, branch office and mobile banking. Internet banking was the dominant form of use by customers covered by this study in the pre-purchase stage of

financial services. Face-to-face banking was of minor importance and customers mainly (over 50%) used other channels instead of visiting the bank's branch office. Although mobile banking had already gained an important role as a source of information for bank customers in an omni-channel environment, it still lagged far behind a visit to the bank's branch in terms of being the leading source of information, Internet banking.

As part of this study, the interviewed customers of VR banks provided information on how important other sources of information outside the bank's channels are for them. Overall, friends, acquaintances and relatives were mentioned to be the most important sources of information during the pre-purchase stage of financial transactions, followed by information from competitors and comparison portals. Field reports from customers, newspaper reports and social networks were considerably less important. According to customer feedback, interest rates for financing services were strongly compared in terms of what the competitors offered and on the basis of the information available on the comparison portals, but friends, acquaintances and relatives also fulfilled an important role as sources of information. The information available on comparison portals and that obtained from competitors was less relevant for payment services. The dominant source of information were friends, acquaintances and relatives, as payment services were likely to be requested by a customer mainly from their main bank. Presumably, due to the low-interest-rate environment and the problem of negative interest rates on deposits in Germany, cash custody services and financial advisory services are exposed to high competition and were therefore compared that much more.

Table 20: Information Sources for Financial Services Used by Bank Customers in the Pre-purchase Stage in an Omni-Channel System

Service / **Customer channels used**	Financial advice n = 103 (% to service)	Financial advice %age of total	Cash custody n = 45 (% to service)	Cash custody %age of total	Financing n = 118 (% to service)	Financing %age of total	Payments n = 54 (% to service)	Payments %age of total	Total n=320
Internet banking	66 (64,1%)	20,6%	29 (64,4%)	9,1%	80 (67,8%)	25,0%	31 (57,4%)	9,7%	206 (64,4%)
Branch offices	42 (40,8%)	13,1%	21 (46,7%)	6,6%	81 (68,6%)	25,3%	14 (25,9%)	4,4%	158 (49,4%)
Mobile banking	25 (24,3%)	7,8%	9 (20%)	2,8%	18 (15,3%)	5,6%	26 (48,1%)	8,1%	78 (24,4%)
Face-to-face banking -exclusively-*	17 (16,5%)	5,3%	9 (20%)	2,8%	15 (12,7%)	4,7%	3 (5,6%)	0,9%	44 (13,4%)
Channels other than a visit to the branch office	61 (59,2%)	19,1%	24 (53,3%)	7,5%	37 (31,4%)	11,6%	40 (74,1%)	12,5%	162 (50,6%)
Further sources of information	Mean		Mean		Mean		Mean		Mean
Comparision portals (e.g. check24, verivox)	3,39		3,02		3,78		2,26		3,29
Friends, acquaintances and relatives	3,33		3,31		3,54		3,35		3,41
Newspaper articles, social networks (Facebook, Xing, etc.)	1,97		1,78		1,87		2,69		2,03
Field reports from customers	2,28		2,40		2,26		2,81		2,38
Information from competitors (online, personal contact)	3,16		3,51		3,98		2,44		3,39

* ∑ Branch offices + Personal contacts at your home + Personal letters from the bank.

Overall, however, it was seen that there were varying degrees of use of these different sources of information in the pre-purchase stage of banking services, and this use depended on the service.

Subsequently, it was analysed whether within the omni-channel system the bank's customers also made a *purchase* at the VR bank or whether they selected another bank. It was also examined which channel the bank customers ultimately chose to close the transaction in an omni-channel environment. In this regard, the information regarding the VR bank not being selected for the transaction was also reviewed. The findings of this analysis are presented in Table 21.

The results revealed that 77,8% of the customers who had previously obtained information from the VR bank's omni-channel environment did conclude their transactions with the bank. However, about 22.2% of the customers preferred a competitor for the financial services previously requested. Most of these customers (10%) were lost to online banks, followed by 6,3% to savings banks and 4,4% to private banks. The bank's customers who did not use the omni-channel environment of the VR bank to conclude contracts mainly used Internet banking (50,7%), followed by a visit to a branch office (23,9%) and mobile banking (21,1%) to close a purchase at another bank. With regard to cash custody, the percentage of customers who left the omni-channel environment of VR bank was higher than those for other financial services. Although 64,4% still used the services of the VR bank to conclude contracts, 35,6% did not use the omni-channel environment of VR bank to close the financial services. The bank customers who did not finalise their cash custody with VR bank closed the transaction mainly either by using Internet banking (56,3%) or by mobile banking (37,5%). Regarding cash custody, in particular, a quarter (24,4%) of the services previously requested from the VR bank were lost to online banks. Overall, it can be observed that most of the requests were lost to the online banks with the exception of payment services (which were lost to the savings banks [5,6%]).

For financial services contracted within the omni-channel environment of a VR bank, it was observed that a very high percentage (51,4%) of the contracts were closed in the VR bank's branches. Given that the dominant source (64,4%) in the pre-purchase stage was Internet banking (Table 20), a high number of the later transactions being carried out in the branch office was remarkable. The high rate of contracts being closed in the branch office was particularly

the result of the large proportion of financing contracts. Thus, 22,5% of VR bank's total transactions were for the purpose of financing and were concluded at the bank's branch offices.

Table 21: Preferred Channels for the Purchase of Financial Services in an Omni-Channel System

Service / **Customer channels used**	Financial advice n = 103	%age of total	Cash custody n = 45	%age of total	Financing n = 118	%age of total	Payments n = 54	%age of total	Total n = 320
VR banks	82 (79,6%)	25,6%	29 (64,4%)	9,1%	93 (78,8%)	29,1%	45 (83,3%)	14,1%	249 (77,8%)
Savings banks	7 (6,8%)	2,2%	2 (4,4%)	0,6%	8 (6,8%)	2,5%	3 (5,6%)	0,9%	20 (6,3%)
Private banks	2 (1,9%)	0,6%	3 (6,7%)	0,9%	7 (5,9%)	2,2%	2 (3,7%)	0,6%	14 (4,4%)
Online banks	10 (9,7%)	3,1%	11 (24,4%)	3,4%	10 (8,5%)	3,1%	1 (1,9%)	0,3%	32 (10,0%)
None of these	2 (1,9%)	0,6%	0		0		3 (5,6%)	0,9%	5 (1,6%)
VR banks	n = 82	%age of total	n = 29	%age of total	n = 93	% to total	n = 45	%age of total	n = 249
Branch offices	34 (41,5%)	13,7%	21 (72,4%)	8,4%	56 (60,2%)	22,5%	17 (30,8%)	6,8%	128 (51,4%)
Internet banking	40 (48,8%)	16,1%	6 (20,7%)	2,4%	27 (29%)	10,8%	15 (33,3%)	6,0%	88 (35,3%)
Mobile banking	4 (4,9%)	1,6%	0		1 (1,1%)	0,4%	8 (17,8%)	3,2%	13 (5,3%)
E-Mail	2 (2,4%)	0,8%	1 (3,4%)	0,4%	7 (7,5%)	2,8%	2 (4,4%)	0,8%	12 (4,8%)
Service terminal & ATMs	0		0		0		1 (2,2%)	0,4%	1 (0,4%)
Telephon banking	1 (1,2%)	0,4%	1 (3,4%)	0,4%	0		2 (4,4%)	0,8%	4 (1,6%)
Personal contacts at your home	1 (1,2%)	0,4%	0		2 (2,2%)	0,8%	0		3 (1,2%)
Lost VR-banks transactions	n = 21	%age of total	n = 16	%age of total	n = 25	%age of total	n = 9	%age of total	n = 71
Branch offices	3 (14,3%)	4,2%	1 (6,3%)	1,4%	9 (36%)	12,7%	4 (44,4%)	5,6%	17 (23,9%)
Internet banking	12 (57,1%)	16,9%	9 (56,3%)	12,7%	12 (48%)	16,9%	3 (33,3%)	4,2%	36 (50,7%)
Mobile banking	5 (23,8%)	7,0%	6 (37,5%)	8,5%	2 (8%)	2,8%	2 (22,2%)	2,8%	15 (21,1%)
E-Mail	0,00		0,00		2 (8%)	2,8%	0,00		2 (2,8%)
Service terminal & ATMs	0,00		0,00		0,00		0,00		0
Telephon banking	1 (4,8%)	1,4%	0,00		0,00		0,00		1 (1,4%)
Personal contacts at your home	0,00		0,00		0,00		0,00		0

While mobile banking as a closing channel was generally not preferred by the VR bank's customers, some of them (5,3%) who had obtained information from the VR bank did sign contracts via mobile banking; however, they tended to do so with the bank's competitors (21,1%). The reason for this did not seem to the idea of mobile banking itself, but rather some issues regarding the *VR-BankingApp*.

Overall it was observed that for the different financial services in an omni-channel system, the customers used different channels to close the transactions. While the main channel for closing a transaction at the VR bank was its branch office, the main channel for the bank's customers who left the omni-channel environment of the VR bank in favour of another bank was the Internet.

The main reasons cited for taking out a contract to another bank related to price aspects and missing sales competence and/or professional competence among the VR bank's employees.

Table 22: Reasons for Contracting with Another Bank

Reasons for contracting with another bank	Frequency of designation	%age of total
Margin, price, fees, interest rates	58	39%
Missing professional and sales competence and service focus	36	24%
Unfriendliness of the employees	9	6%
Distribution due to deposit protection	8	5%
Scope of the product range	8	5%
Design and equipment of the branch, online branch, VR-banking App	7	5%
Closer relationship with another bank (house bank status)	6	4%
More comprehensive safety standards	3	2%
More convenient and uncomplicated execution	2	1%
Wider access	2	1%
Other specific reasons	9	6%

5.1.5 Influence of Bank Service Selection on Customer Satisfaction and Loyalty in a Bank's Omni-Channel Environment

The analysis of variance (ANOVA) method can be applied to examine the effect of independent variables on dependent variables (Backhaus et al., 2018, p. 164). This subsection examines how independent variables influence the outcome of the dependent variables which for this study were pre-purchase satisfaction, purchase satisfaction, post-purchase satisfaction, overall satisfaction and loyalty. The ANOVA method with more than one dependent variable is termed as multivariate or multi-dimensional analysis of variance (MANOVA) (Backhaus et al., 2018, p. 165). A MANOVA analysis was applied to the data collected for this study to examine mean values and to test the influence of the independent variable by analysing a set of given metric variables as dependent variables. This was done with the objective of finding groups of respondents that showed differences in the set of dependent variables (Hair, 2019, p. 380). The MANOVA method was used to determine exactly these differences between the mean values (Backhaus et al., 2018, p. 169). Statistical significance was tested using the F-statistics in MANOVA (Backhaus et al., 2018, p. 172). The variances (mean square deviations) were obtained from the dispersions by division with their respective degrees of freedom (Backhaus et al., 2018, p. 172). The Null hypothesis H_0 for the MANOVA is that all group mean vectors are the same, i.e. they came from the same population (Hair, 2019, p. 378). The

differences between the mean values are statistically significant (significance level α of 0,05 is common) for a p-value ≤ α (Hair, 2019, p. 372).

Applying the MANOVA method requires the following assumptions to be valid (Eschweiler et al., 2007, pp. 549–551; Hair, 2019, p. 399):

- Avoidance of outliers in the case of an open scale
- Random allocation to groups
- Minimum group size n > 20
- A significant correlation between the dependent variables (violation of premises by multi-collinearity)
- Multivariate normal distribution of the dependent variables
- Variance homogeneity (application of the Levene-test)

To cure the premises of normal distribution and variance homogeneity, a high number of sample data and the use of the same number of data (by elimination at random if necessary) in each sample is required (Backhaus et al., 2018, p. 199; Eschweiler et al., 2007, p. 550; Glaser, 1978, p. 165).

The dependent variables pre-purchase satisfaction, purchase satisfaction, post-purchase satisfaction, overall satisfaction and customer loyalty were each considered by means of the mean value of the data at the construct level. These five dependent variables were subsequently analysed using MANOVA with the inclusion of independent variables.

As stated in section 5.1, a total of 249 respondents answered all the questions regarding customer satisfaction and loyalty because of which the same sample size was used for the multivariate variance analysis. This analysis was applied to determine whether the choice of banking services has a significant influence on customer satisfaction and loyalty. Lack of normal distribution of the data (subsection 5.1.2) made it necessary to adjust the different group sizes to each other by using individual samples. In all 82 of the bank's customers used financial advice, 29 used cash custody, 93 used financing and 45 used payment services. Notably, 17 of the 29 bank customers who used cash custody services were female and 12 were male; so, the other service groups were adjusted to achieve a balanced group distribution. In order to achieve a balance between gender and financial service use, 46 men (17 availing the financial advice service, 17 availing the financing service and 12 availing the payment services) and 41 women (12 availing the financial advice service, 12 availing the financing service and 17 availing the payment services) were randomly selected from the sample. The transformation of the data

brought the data closer to a symmetric normal distribution, although a single-factor MANOVA would also have been considered robust against a violation of the normal distribution (Finch, 2005). It must be taken into account that three participants (a woman availing the cash custody service and payment services and a man availing the financing service) were excluded from the data set when it came to further analyses concerning this MANOVA due to extreme values (cut-off values were calculated using the Chi² distribution with a p-value of ,001.) regarding the Mahalanobis distance (Backhaus et al., 2018, p. 234) for multivariate outliers (Backhaus et al., 2018, p. 199; Eschweiler et al., 2007, p. 550). An analysis of the correlations between the dependent variables revealed a high significance at a level of ,01 (2-tailed), whereby multi-collinearity was not a disturbing factor in the analysis ($r < ,85$) (Harlow, 2005, p. 46; Schroeder, 1990; Tabachnick & Fidell, 2012, p. 89; Verma, 2016, p. 191). Homoscedasticity of the error variances between the groups was fulfilled and assessed by Levene's test of equality for the results of pre-purchase and purchase satisfaction and for bank customer loyalty ($p > ,05$), but not for post-purchase satisfaction ($p = ,000$) or overall satisfaction ($p = ,014$) either. According to Ateş et al. (2019), the MANOVA method is relatively robust when it comes to violations of variance equality. So, further testing was necessary. Since the power of Box's M test for equality of variance-covariance matrices of dependent variables between groups is highly sensitive to the presence of non-normal variables, the test became significant (Hair, 2019, p. 372). There was homogeneity of covariances, as assessed by Box's M test ($p > ,001$, H_0 = observed covariances matrices of the dependent variables are equal across group) (Hair, 2019, p. 372; Verma, 2016, p. 211; Warner, 2013, p. 722). The MANOVA (H_0 = mean vectors are equal, $p > ,05$) showed a statistically significant difference between the financial services used on the combined dependent variables, $F(15, 290) = 1{,}980$, $p = ,017$, partial $\eta^2 = ,086$, Wilk's $\Lambda = ,764$. Post-hoc univariate ANOVAs were conducted for every dependent variable. The results (Table 23) showed a statistically significant difference between the financial services concerning purchase satisfaction and overall satisfaction, but not for pre-purchase satisfaction. For this post-hoc analysis, the Bonferroni adjusted level (p*-value = p-value multiplied by the number of dependent [5] variables) was applied in order to test the significant conservative. On this basis, the mean differences in post-purchase satisfaction and customer loyalty did not show significance.

Table 23: Influence of Banking Services on Customer Satisfaction and Loyalty

		Dependent variables									
		Pre-purchase satisfaction		**Purchase satisfaction**		**Post-purchase satisfaction**		**Overall satisfaction**		**Loyality**	
	Independent variables	Mean SD	F-Value Significance Partial η²	Mean SD	F-Value Significance Partial η²	Mean SD	F-Value Significance Partial η²	Mean SD	F-Value Significance Partial η²	Mean SD	F-Value Significance Partial η²
Used financial service n = 113	**Financial advice n = 29**	3,954 0,5399	1,700 0,857* 0,045	**3,897** 0,6049	**4,151** **0,040*** **0,103**	3,644 0,9341	3,001 0,169* 0,076	**3,672** 0,8481	**5,774** **0,005*** **0,137**	3,903 0,7776	2,829 0,209* 0,072
	Cash custody n = 28	3,786 0,668		**3,869** 0,6749		4,000 0,6667		**3,875** 0,6328		4,05 0,6197	
	Financing n = 28	3,643 0,6662		**3,441** 0,786		3,393 1,0926		**3,179** 0,8946		3,543 0,8792	
	Payments n = 28	3,952 0,5571		**4,024** 0,5513		3,905 0,5279		**3,911** 0,528		3,993 0,5374	

p* < 0,05 for testing signifiance (H_0: no differences in the mean vectors of the dependent variables between the groups).
*Bonferroni adjusted level (correction).
F(df Hypothesis, df Error); F(3,109).

Results revealed that there were significant mean differences in purchase satisfaction and overall satisfaction between financing services and other banking services. The reasons for this are probably to be found in Table 21. As Table 21 shows, financial services are often concluded at the branch office and this implies, on the one hand, a commitment to the bank's opening hours and, on the other hand, probably less convenient order execution compared to Internet banking. At the VR bank, cash custody transactions are even more often carried out in the bank's branches, but it can be assumed that these services are easier for customers to understand than credit transactions. Therefore, satisfaction ratings are probably slightly higher in this case. In addition, is fairly clear from the survey's responses and/or their analysis that the lending business, which implies an interest expense for the customer and also involves a far-reaching information requirement on the part of the bank customer to the bank, tends to have a negative perception among customers, while the perception about investment and payment services probably ranges from rather neutral to positive.

5.1.6 Influence of the Pre-purchase Stage on Customer Satisfaction and Loyalty in a Bank's Omni-channel Environment

This central question, which concerns the hypotheses H(1), H(4), H(5) and H(9), was answered in the questionnaire by bank customers, asking whether the transaction was closed at the VR bank, and the customers, therefore, remained loyal to the bank, or whether the bank customer closed at another bank. Table 21 shows that 249 customers (77,8%) actually remained loyal to the bank, which means that 71 bank customers (22,2%) concluded the transaction with a third party. The reasons for the change of bank can be known from Table 22. Accordingly, the price and margin aspects were the top issues for customers switching banks. In order to clarify, detached from this aspect, whether the bank change for these customers was also

causally related to the pre-purchase stage, a univariate (ANOVA) was carried out. The questions in the survey about the customers' satisfaction during the pre-purchase stage were asked independently of the price, which is why a mean value comparison between ratings from customers who remained loyal and customers and those who opted for a third-party contract could provide information in this matter.

Again, due to the violation of the normal distribution (Shapiro-Wilk-Test, $p < ,05$), a random sample of n = 71 of the 249 loyal bank customers was formed to obtain an equally distributed data set of the 71 customers who became unfaithful (Backhaus et al., 2018, p. 199; Eschweiler et al., 2007, p. 550; Glaser, 1978, p. 165). Levene's test ($p > ,05$) was taken to analyse the homogeneity of the variances. It revealed that equal variances could be assumed (p = ,078). The inspection with a box plot showed no outliers. The ANOVA analysis revealed statistically significant $F(1,149) = 49,99$, $p < ,001$, $\eta^2 = ,2638$, differences in the satisfaction assessments of customers in the pre-purchase stage who remained loyal to the VR bank (Mean = 3,614, SD = ,7894) and those who switched to another bank (Mean = 2,662, SD = ,9735).

On the basis of the purchase transactions conducted by the bank's customers, a positive relationship can thus be confirmed for the above-mentioned hypotheses. This relationship will be examined in greater detail in the following sections/subsections using structural equation analysis. However, it must be taken into account that for the structural model only the customers who remained loyal are relevant, since for customers who changed banks it cannot be ensured whether an omni-channel system was introduced.

5.2 Evaluation of the Measurement Models

In this section, the formative and reflective measurement models have been assessed followed by an assessment of the SEM. As pointed out in section 5.1, an analysis of the SEM is sensitive to missing values, which is why the following evaluations are based on those questionnaires (n = 249) that were completely answered by the bank's customers.

5.2.1 Formative Measurement Model

The formative items for the customer survey were carefully selected after intensive literature research (Chapter 3 of this dissertation details the intensive research) and a pre-test item sorting task as suggested by Anderson and Gerbing (1991) was carried out (detailed in point 4.3.2.1). Through the proportion of substantive agreement and the indexing of the results

using the substantive-validity coefficient, it was initially possible to achieve unambiguousness of the items used in the literature for the relevant constructs (Anderson & Gerbing, 1991, p. 734). The results produced p_{sa} values from .905 to 1 for the items of the constructs pre-purchase, purchase and post-purchase satisfaction along with perceived channel integration. Thus, there was also a high relevance of the items to the respective constructs.

To further confirm these formative items, a redundancy analysis was conducted as proposed by Hair et al. (2017, p. 122). As both formative and reflective items were used in the customer survey for the constructs pre-purchase, purchase and post-purchase satisfaction and for the perceived integration, these could then be used in the convergence validity test. If redundancy were to be established, parts of the formative indicators could be eliminated. The path coefficient values (Table 24) provided values well above the threshold of .7 (corresponding to R^2 values above ,5) (Hair et al., 2017, p. 131). So, the convergence validity for the formative items was confirmed.

Subsequently, the collinearity of the formative items was examined to exclude a high correlation between the indicators and thus also the equality of the items' contents (Hair et al., 2017, p. 124). To measure collinearity, VIF, which should be below 5 to exclude collinearity, was calculated (Hair et al., 2017, p. 131). Collinearity was excluded for all the formative items of the study.

To finally analyse the significance and relevance of the formative indicators (Hair et al., 2017, p. 154), the weights of the individual items were determined using the bootstrapping[15] method with a significance level of ,5 in SmartPLS. Those items with a significant indicator weight were confirmed as relatively relevant and persisted as formative indicators (Hair et al., 2017, p. 126). Some items showed a non-significant indicator weight[16] but a significant loading > ,5. So, these indicators were considered absolutely relevant, and were, therefore, also confirmed (Hair et al., 2017, p. 131). Unlike the weights, the loading was calculated using a simple regression of each indicator with the corresponding construct (Hair et al., 2017, p. 129). Three items each in the constructs pre-purchase satisfaction and purchase satisfaction revealed a loading below the threshold value of ,5, but these indicators were significant at a 1% level

[15] Details of the procedure can be found at Hair et al. (2017, pp. 131–139).
[16] With a large number of formative indicators, there is an increased probability that one or more indicators have a small or even insignificant weight, according to Hair et al. (2017, p. 128). Cenfetelli and Bassellier (2009) even identify an inherent maximum number of formative indicators that can have a statistically significant weight.

and were not rejected going by previous literature references (point 4.3.2.2) and the pre-test results (Hair et al., 2017, p. 130). Overall, the reliability and the validity of the formatively specified measurement models were confirmed.

Table 24: Results for the Formative Measurement Model

n = 249	Item	Measurement methods: Path coefficiency	R^2	VIF	Weight	t-value	p-value* (p < .05)	95% BCa-confidence interval*	Loading	Loading p-value (p < .01)
		Convergent validity		Collinearity	Significance and relevance					
	R. / F.	C6_1, C6_2, C6_3						[2,5%; 97,5%]		
Pre-purchase satisfaction	C5_1	0,803	0,645	1,864	0,085	0,896	0,370	[-0,086; 0,29]	0,570	0,000
	C5_2			1,923	0,090	0,884	0,376	[-0,116; 0,281]	0,566	0,000
	C5_3			1,230	0,026	0,389	0,697	[-0,112; 0,148]	0,322	0,000
	C5_4			1,352	0,029	0,385	0,700	[-0,114; 0,182]	0,386	0,000
	C5_5			1,506	0,513	6,534	0,000	[0,346; 0,653]	0,850	0,000
	C5_6			1,220	-0,002	0,033	0,974	[-0,151; 0,153]	0,359	0,000
	C5_7			1,149	0,226	3,147	0,002	[0,074; 0,357]	0,490	0,000
	C5_8			1,373	0,434	5,460	0,000	[0,27; 0,581]	0,774	0,000
Purchase satisfaction	R. / F.	Db3_1, Db3_2, Db3_3								
	Db2_1	0,861	0,741	1,924	0,027	0,489	0,625	[-0,084; 0,134]	0,344	0,000
	Db2_2			2,208	0,085	1,242	0,214	[-0,048; 0,22]	0,532	0,000
	Db2_3			2,052	0,240	2,831	0,005	[0,086; 0,417]	0,791	0,000
	Db2_4			2,758	0,224	3,043	0,002	[0,069; 0,361]	0,857	0,000
	Db2_5			1,416	0,166	3,374	0,001	[0,074; 0,265]	0,582	0,000
	Db2_6			1,280	0,081	1,528	0,127	[-0,031; 0,175]	0,458	0,000
	Db2_7			1,447	0,045	0,876	0,381	[-0,056; 0,144]	0,491	0,000
	Db2_8			2,111	0,461	8,024	0,000	[0,336; 0,565]	0,885	0,000
Post-purchase satisfaction	R. / F.	E2_1, E2_2, E2_3								
	E1_1	0,926	0,857	2,733	0,221	3,662	0,000	[0,1; 0,338]	0,860	0,000
	E1_2			2,077	0,172	3,505	0,000	[0,071; 0,262]	0,785	0,000
	E1_3			2,531	0,293	5,477	0,000	[0,18; 0,392]	0,870	0,000
	E1_4			2,099	0,054	0,999	0,318	[-0,045; 0,165]	0,739	0,000
	E1_5			1,431	0,001	0,025	0,980	[-0,081; 0,092]	0,506	0,000
	E1_6			2,374	0,159	2,810	0,005	[0,047; 0,268]	0,809	0,000
	E1_7			1,616	0,136	2,677	0,007	[0,036; 0,234]	0,676	0,000
	E1_8			2,380	0,194	3,129	0,002	[0,073; 0,314]	0,816	0,000
Perceived channel integration	R. / F.	F2_1, F2_2, F2_3								
	F1_1	0,848	0,719	1,758	0,198	1,497	0,134	[-0,063; 0,453]	0,704	0,000
	F1_2			2,153	0,496	4,021	0,000	[0,238; 0,728]	0,855	0,000
	F1_3			1,991	-0,130	1,061	0,289	[-0,369; 0,118]	0,629	0,000
	F1_4			1,749	0,325	2,878	0,004	[0,097; 0,539]	0,777	0,000
	F1_5			1,615	0,345	3,251	0,001	[0,117; 0,53]	0,770	0,000

* Bias-correted and accelarated-(BCa)-bootstrapping with 5000 subsamles.

T-Statistic: Weight (Mean) / Standard deviation.

F. = Formative Items; R. = Reflective Items.

Path coefficiency: $Y_n^{formativ}$; $Y_n^{reflectiv}$ > ,7.

R^2-value > .64 (min. ,5).

Variance Inflation Factor (VIF) < 5.

Loadings > ,5.

5.2.2 Reflective Measurement Model

The specification, cut-off values and parameters for the analysis are described in point 4.3.4.6. As described there, the *first generation* criteria were initially applied to test reliability. By doing so, unsuitable indicators of the reflective construct can be identified and subsequently excluded if necessary (Weiber & Mühlhaus, 2014, p. 132).

The one-dimensionality of the indicator sets was verified by the application of an EFA (Weiber & Mühlhaus, 2014, p. 131). In a narrower sense, as shown in point 4.3.4.6, a PCA is carried out, which is not a factor analysis in the strict sense. Instead, it aims to extract information from a data set and, if necessary, to reduce the data (Klopp, 2010; Ringnér, 2008, p. 303). The two endogenous variables, i.e. overall satisfaction and customer loyalty of bank customers were analysed both of which were specified for the omni-channel system by a reflective measurement model. A one-dimensionality of the scales for constructs could be confirmed. The KMO criterion respectively the Bartlett test (significant with $p < ,001$) and the MSA confirmed the suitability of the variables for EFA. Thus, there was sufficient correlation between the items to perform a PCA. The total variance explained was 85,1% for overall satisfaction and 67,4% for customer loyalty. Both constructs revealed high factor loads. So, the validity criteria were confirmed (Backhaus et al., 2018, p. 429; Hair, 2019, p. 153; Homburg & Giering, 1996, p. 8).

Cronbach's Alpha showed values of > ,8 for both overall satisfaction and customer loyalty. The corrected Item-Total Correlation revealed values initially below ,5 for two items (G2_1 and G2_2) concerning repurchase. These two items aimed at the same issue by asking about future touchpoints. The answers of the probands confirmed the rationality of an omni-channel environment in which the bank's customers used an undefined future touchpoint in the omni-channel environment for future banking transactions (Mean = 4,19) and less the last touchpoint used (Mean = 3,20). In order not to double weight this answer, item G2_1 was excluded from further consideration in the SEM analysis. The quality criteria in Table 25 were already included in the elimination of the item. The item G2_2 was kept in the set because discarding it would change the construct and the Cronbach's Alpha could only be increased slightly by eliminating the item. Due to the high Cronbach's Alpha, the reliability could be confirmed (Weiber & Mühlhaus, 2014, p. 142).

The results, following verification of the measurement data based on the first generation criteria, provided a valid and reliable assessment of the individual constructs for the reflective measurement models.

Table 25: Results for the Reflective Measurement Model based on the First Generation Criteria

n = 249	Measurement methods of the first generation								
	Item	Cronbach's Alpha	Corrected Item-Total correlation (CITC)	Cronbach's Alpha, if item omitted	Exploratory factor analysis (EFA, PCA)				
					KMO	Bartlett's test -significance-	MSA -Anti-image Matrices-	Factor loadings	Total variance explained -communalities-
		Reliability test			Validity test				
Overall satisfaction	G1_1	0,8101	0,702		0,500*	0,000	0,500*	0,922	85,10%
	G1_2		0,702				0,500*	0,922	
Loyality	G2_2	0,8330	0,460	0,869	0,773	0,000	0,863	0,893	67,38%
	G2_3		0,738	0,761			0,807	0,868	
	G2_4		0,721	0,763			0,755	0,859	
	G2_5		0,769	0,741			0,730	0,639	

* As there are only two indicators, the Bartlett test and not the KMO should be tested because the KMO always has a value of ,500.
Cronbach's Alpha > ,7.
CITC > ,5.
Kaiser-Meyer-Olkin (KMO) > ,6.
Bartlett test: Significance p < ,001. H_0: The Correlation matrix of the observed variables in the population is equal to the identity matrix.
Measure of Sampling Adequacy (MSA) > ,5.
Factor loadings > ,4.
Total variance explained > 50%.

Following this analysis, the quality criteria of the *second generation* were tested using SmartPLS. For this purpose, *internal consistency reliability*, *convergent validity* and *discriminant validity* are analysed (Table 26 shows the results).

To test the internal consistency reliability, the composite reliability was analysed whose values should be > ,7, as described in section 4.3.4.6. The composite reliability confirmed values > ,7 and did not indicate redundant items for the reflective indications (< ,95) (Hair et al., 2017, p. 97). To verify the *convergent validity*, the indicator reliability and the Average Variance Extracted (AVE) were analysed. This is also described in detail in point 4.3.4.6. With the exception of item G2_2, the external loading of the indicators revealed values well above ,708. Nevertheless, the item G2_2 was also within the tolerance level as even its elimination would have led to an insignificant increase in the composite reliability (Hair et al., 2017, p. 98; Hulland, 1999, p. 198). Furthermore, the AVE, and thus the mean value of the squared loadings

of all indicators related to the construct exceeded ,5. Therefore the convergent validity was confirmed (Hair et al., 2017, pp. 97–99). Finally, the discriminant validity was analysed in terms of the HTMT ratio of correlation, which should have values of < ,9 to reveal validity (Hair et al., 2017, p. 103; Henseler et al., 2015). Furthermore, the HTMT criterion confirms the discriminant validity with the help of a statistical test.

Table 26: Results for the Reflective Measurement Model Based on the Second Generation Criteria

n = 249	Measurement methods of the second generation									
	Item	Loading λ	Indicator reliability -communalities- λ^2	Average Variance Extracted (AVE)	Composite reliability	Composite reliability, if item omitted	HTMT ratio	HTMT significance test*		
								includes value 1	Confidence level 2,5%	Confidence level 97,5%
		Convergent validity			Internal consistence reliability		Discriminant validity			
Overall satisfaction	G1_1	0,922	0,850	0,851	0,919		0,8690	No	0,7670	0,9470
	G1_2	0,923	0,852							
Loyality	G2_2	0.587	0,345	0,671	0,889	0,890				
	G2_3	0,861	0,741			0,836				
	G2_4	0,882	0,778			0,837				
	G2_5	0,907	0,823			0,827				

Loading > .708; Elimination for values < ,4.
Indikator reliability > ,5; Elimination for values < ,16.
AVE > 0,5.
Composite reliability > ,7 but < ,95.
$HTMT_{0,90}$ ratio < 0,9.
* Heterotrait-Monotrait (HTMT) ratio based on bias-correted and accelarated-(BCa)-bootstrapping with 5.000 subsamles.

Overall, the first- and second-generation quality criteria for the reflective measurement models revealed validity and reliability.

5.2.3 Structural Model

The results of the structural model were also evaluated which have been presented here. For this evaluation, the collinearity in the structural model was initially verified to avoid possible distortions of the path coefficients in the structural model (Hair et al., 2017, p. 164). To test the collinearity, the VIF, which should not exceed limit values of 5, was examined again (Hair et al., 2017, p. 181). As suggested, for VIF values above 5, the elimination of the construct should be considered (Hair et al., 2017, p. 168). Each set of the driver constructs was examined individually for the parts of the structural model and, in this context, it was ascertained whether

critical levels of collinearity existed between the driver constructs (Hair et al., 2017, p. 164). The following collinearity of the driver constructs was examined: (1) PRE, PUR, POST and INT as drivers for SAT and LOY, (2) PRE as a driver for PUR, (3) PUR as a driver for POST and (4) SAT as a driver for LOY (Table 27). Since the limit values of 5 were not exceeded, a critical degree of collinearity between the driver constructs in the structural model was excluded.

Table 27: Collinearity Statistics (VIF) at Structural Model Level

Exogenous constructs	Endogenous constructs: PRE	PUR	POST	INT	SAT	LOY
PRE		1,000			2,131	2,158
PUR			1,000		3,594	3,737
POST					2,809	4,489
INT					1,411	1,493
SAT						4,567
LOY						

Variance Inflation Factor (VIF) < 5.
PRE= Pre-purchase satisfaction.
PUR = Purchase satisfaction.
POST = Post-purchase satisfaction.
INT = Perceived channel integration.
SAT = Overall satisfaction.
LOY = Loyalty to the bank.

Next, the path co-efficiency in the structural model was analysed using the bootstrapping procedure in SmartPLS (Table 28). The path coefficients showed that post-purchase satisfaction (0,606), purchase satisfaction (0,177) and perceived channel integration (0,134) were the most important drivers of customer satisfaction. In addition, post-purchase satisfaction with a path coefficient of 0,342 and perceived channel integration with 0,166 are the most important drivers of customer loyalty to the bank alongside overall satisfaction with a path coefficient of 0,328. The effect of pre-purchase satisfaction on customer satisfaction was rather weak at 0,076, though pre-purchase satisfaction had a strong effect on purchase satisfaction with 0,720 and thus provided an indirect influence on customer satisfaction via purchase satisfaction (0,177)

The relationships between pre-purchase satisfaction and customer loyalty to the bank (path coefficient = 0,035) and between purchase satisfaction and customer loyalty (path coefficient = 0,009) did not show any significant path coefficients with a t-value of 0,540 and 0,119, respectively, in the PLS analysis, though both these relationships confirmed the basic assumption of the postulated direction. The relationship between pre-purchase satisfaction and

customer loyalty to the bank showed weak significance ($p < 0,10$) with a t-value of 1,543. The other relationships in the structural model demonstrated high significance ($p < 0,01$).

Overall, the analysis showed that post-purchase satisfaction and the perception of channel integration were particularly important for customer satisfaction and customer loyalty to a bank offering an omni-channel environment. Moreover, overall customer satisfaction had a high significance impact on customer loyalty.

Table 28: Significance of the Path Coefficients in the Structural Model

			Path coefficient	t-value (bootstrapping)	significance (one-sided)
PRE	→	**SAT**	0,076	1,543	*
PUR	→	**SAT**	0,177	3,268	***
POST	→	**SAT**	0,606	11,464	***
PRE	→	**PUR**	0,720	18,056	***
PUR	→	**POST**	0,791	28,178	***
INT	→	**SAT**	0,134	3,481	***
INT	→	**LOY**	0,166	2,951	***
SAT	→	**LOY**	0,328	3,829	***
PRE	→	**LOY**	0,035	0,540	n.s.
PUR	→	**LOY**	0,009	0,119	n.s.
POST	→	**LOY**	0,342	3,746	***

Bias-correted and accelarated-(BCa)-bootstrapping with 5.000 subsamples.

Significance level (t-test one-sided):

***: $p < 0,01$ ($t_{crit.} = 2,33$); ** $p < 0,05$ ($t_{crit.} = 1,65$); * $p < 0,10$ ($t_{crit.} = 1,28$); n.s. = not significant.

The analysis of the indirect cause-effect (Table 29) relationships demonstrated the total relevance of the respective latent variables. While in the path model the direct causal effects were initially recognisable, the analysis of the total effects via one or more intermediate variables was very revealing (Weiber & Mühlhaus, 2014, p. 236). The total effect was calculated by adding the indirect causal effect to the direct causal effect (Weiber & Mühlhaus, 2014, p. 236).

Since the purchasing process is of particular importance in the case of this model, the indirect relationships are of particular relevance. The results show high indirect effects of pre-purchase satisfaction and purchase satisfaction on overall satisfaction. This is particularly interesting because their direct effects on overall satisfaction were rather less when compared with those of post-purchase satisfaction. While pre-purchase satisfaction has only little significant influence on overall satisfaction by means of the path coefficient (0,076), the total effect (0,549) revealed a high and significant influence. The direct influence of pre-purchase

satisfaction (0,035) and purchase satisfaction (0,009) on customer loyalty was recognised in the path model as low and not significant via the path coefficients, though the overall effect was indirectly very high and significant as it was 0,416 for pre-purchase satisfaction and 0,495 for purchase satisfaction.

Table 29: Indirect and Total Effects

			Direct effect	Indirect effect	Total effect	t-value (bootstrapping)	Significance (one-sided)
PRE	→	**SAT**	0,076	**0,473**	0,549	12,243	***
PUR	→	**SAT**	0,177	**0,479**	0,656	13,269	***
PRE	→	**POST**	0,000	**0,570**	0,570	14,700	***
INT	→	**LOY**	0,166	**0,044**	0,210	3,698	***
PRE	→	**LOY**	0,035	**0,381**	0,416	6,652	***
PUR	→	**LOY**	0,009	**0,486**	0,495	7,232	***
POST	→	**LOY**	0,342	**0,199**	0,541	7,224	***

Bias-correted and accelarated-(BCa)-bootstrapping with 5.000 subsamples.

Significance level (t-test one-sided):

***: p < 0,01 ($t_{crit.}$ = 2,33); ** p < 0,05 ($t_{crit.}$ = 1,65); * p < 0,10 ($t_{crit.}$ = 1,28); n.s. = not significant.

The results continued to reveal the high influence of post-purchase satisfaction on overall satisfaction and customer loyalty to the bank; however, they relativised the direct causal influence via the indirect causal effects of pre-purchase satisfaction and purchase satisfaction, which had an indirect effect on overall satisfaction and customer loyalty via post-purchase satisfaction.

In order to determine the forecast performance of the model, the R^2 value (Table 30) was analysed subsequently. This value assumes a substantive forecast performance in marketing research at R^2 > ,75, a moderate forecast performance at R^2 > ,5 and only a weak forecast performance at R^2 > ,25 (Hair et al., 2017, p. 171). The results revealed moderate to substantial results of the combined effects of all the exogenous latent constructs on the endogenous constructs. About 61% of the variance of the constructs' overall satisfaction and 78% of the variance of customer loyalty to the bank was explained by the model.

Table 30: Coefficient of Determination (R^2 value)

Endogenous latent constructs	**R^2***
Purchase satisfaction	0,519
Post-purchase satisfaction	0,625
Overall satisfaction	0,781
Loyalty to the bank	0,610

* R^2 >,75 "substantial", R^2 > ,5 "moderate", R^2 > ,25 "weak".

Further to analysing the R^2 value, the f^2-effect strength (Table 31) was examined to determine whether one exogenous construct exerted a substantial influence on one endogenous construct (Hair et al., 2017, p. 173). The results confirmed the high influence of the purchasing process in banking transactions. Pre-purchase satisfaction (f^2 = 1,078) had a high influence on purchase satisfaction, which in turn had a high influence (f^2 = 1,670) on post-purchase satisfaction. Finally, the high f^2-effect showed a high influence of post-purchase satisfaction (f^2 = 0,598) on overall satisfaction. Perceived channel integration (f^2 = 0,048), overall satisfaction (f^2 = 0,060) and post-purchase satisfaction (f^2 = 0,067) showed an influence on customer loyalty based on the strength of the f^2-effect, even if this was only weakly pronounced in this case.

Table 31: f^2-Effect Strengths

	PRE	PUR	POST	INT	SAT	LOY
PRE		1,078 ***			0,012	0,001
PUR			1,670 ***		0,040 *	0,000
POST					0,598 ***	0,067 *
INT					0,058 *	0,048 *
SAT						0,060 *

f^2 > 0,35: *** large effects, f^2 > 0,15: ** medium effects, f^2 > 0,02: * small effects, f^2 < 0,02 no effect.
PRE= Pre-purchase satisfaction.
PUR = Purchase satisfaction.
POST = Post-purchase satisfaction.
INT = Perceived channel integration.
SAT = Overall satisfaction.
LOY = Loyalty to the bank.

Finally, to test whether this model is good enough to predict the endogenous (reflectively measured) constructs, the out-of-sample forecasting capability was tested by means of the Stone-Geisser Q^2 value (Geisser, 1974; Hair et al., 2017, p. 174; Stone, 1974). In a structural model, Q^2 values > 0 reveal the prediction relevance of the path model for the endogenous constructs. This was confirmed for the model for the two endogenous and reflectively measured constructs overall satisfaction and customer loyalty to the bank (Table 32).

Table 32: Out-of-sample Forecasting Capability, Q^2 value

Endogenous latent constructs (reflectively measured)	**Q^2***
Overall satisfaction	0,646
Loyalty to the bank	0,391
Q^2 was generated using the blind folding procedure in SmartPLS.	
* Out-of-sample prediction capability $Q^2 > 0$.	

By testing the *q^2-effect* strengths, the effect of a particular exogenous construct on the Q^2 value of an endogenous latent variable can be investigated (Hair et al., 2017, p. 179).

The results (Table 33) show that post-purchase satisfaction had the largest forecast relevance with *q^2-effects* of 0,311 for overall customer satisfaction. It also had forecast relevance (q^2 = 0,036) on customer loyalty. Perceived channel integration showed small (q^2 = 0,025) forecasting relevance for overall customer satisfaction, and this, in turn, showed small forecasting relevance (q^2 = 0,030) for customer loyalty.

Table 33: *q^2-Effect* Strengths

	Overall satisfaction	**Loyalty to the bank**
Pre-purchase satisfaction	0,000	0,000
Purchase satisfaction	0,008	-0,007
Post-purchase satisfaction	0,311 **	0,036 *
Perceived channel integration	0,025 *	0,018
Overall satisfaction		0,030 *
$q^2 > 0,35$: *** large effect		
$q^2 > 0,15$: ** medium effect		
$q^2 > 0,02$: * small effect		
$q^2 < 0,02$ no effect.		

Overall, the structural model was confirmed on the basis of the quality assessment conducted.

5.3 Analysis of Unobserved Heterogeneity

In order to investigate whether the observations belong to a single homogeneous population or whether there is unobserved heterogeneity in the internal path model relationships, the Finite-Mixture-PLS (FIMIX-PLS) approach (Hahn, 2002) is applied (Hair et al., 2017, p. 250; Sarstedt & Ringle, 2011). The method developed by Hahn (2002) and Hahn, Johnson et al. (2002) is used to investigate whether the results can be obtained on an aggregated

data level or whether a segmentation with group-specific PLS-path analysis is required (Sarstedt & Ringle, 2011). The assumed heterogeneity refers to the segment-specific cause-and-effect relationships between the constructs of the structural model that are not directly observable (Hahn, 2002, p. 125).[17] Sequentially the proposal of Rigdon et al. (2010, p. 273) was followed and the analysis was conducted in SmartPLS 3 assuming that the heterogeneity of the model was reflected in the values of the latent variables and thus in the path coefficients of the structural model (Sarstedt & Ringle, 2011). According to the recommendations of Hair et al. (2017, p. 22) regarding a significance level of 5% and a minimum R^2 value of 0,25, the existing model with a sample size of 249 required at least 45 observations to reliably estimate the model. Therefore the upper bound of the range of segment solutions was 5 (Hair et al., 2018). Table 34 provides the results of the FIMIX-PLS analysis, but it also points out divergent directions of the different criteria.[18] Sarstedt et al. (2011) have examined the effectiveness of different information criteria in FIMIX-PLS across a range of data and constellations and have concluded that researchers should jointly consider AIC_3 and CAIC for result analysis (Hair et al., 2018). AIC_4 and BIC perform equally well, while AIC often overspecifies the correct number of segments by three or more segments (Hair et al., 2018; Sarstedt et al., 2011). Unfortunately, the fit indices did not provide a uniform result. AIC_3 (4-segment solution) and CAIC (1-segment solution) provided completely different results, as did AIC_3 and BIC (2-segment solution). While MDL_5 assumed a 1-segment solution, AIC_4 provided data for a 2-segment solution and HQ for a 3-segment solution. The entropy value (EN) had already provided a level above 0,5 for a 2-segment solution (Rigdon et al., 2010, p. 278).

Table 34: Fit Indices for the Segment Solution

	Number of segments				
Criteria	**1**	**2**	**3**	**4**	**5**
AIC	1.817.132	1.757.703	1.734.634	1.713.026	**1.709.046**
AIC_3	1.832.132	1.788.703	1.781.634	**1.776.026**	1.788.046
AIC_4	1.847.132	**1.819.703**	1.828.634	1.839.026	1.867.046
BIC	1.869.894	**1.866.744**	1.899.955	1.934.625	1.986.924
CAIC	**1.884.894**	1.897.744	1.946.955	1.997.625	2.065.924
HQ	1.838.370	1.801.594	**1.801.178**	1.802.223	1.820.896
MDL_5	**2.200.941**	2.550.908	2.937.236	3.325.023	3.730.440
LnL	-893.566	-847.851	-820.317	-793.513	-775.523
EN	n/a	**0,606**	**0,702**	0,688	0,653

[17] See Hahn (2002, p. 117), Hahn, Johnson et al. (2002) for algorithm details.
[18] Sarstedt et al. (2011, p. 40) provides an overview of the different model selection criteria, frequently used for model selection.

Due to the disparate results, the relative segment size of the FIMIX-PLS solution was analysed for the prespecified number of segments (Table 35). These findings revealed that the selection of more than 2 segments was not reasonable. Clearly, 15,9% of 249 = 39 was not enough (Hair et al., 2017, p. 22) for a segment-specific PLS-SEM analysis (Hair et al., 2018).

Table 35: Relative Segment Sizes

N = 249	Relative segment sizes				
Number of segments	**1**	**2**	**3**	**4**	**5**
1	1,000				
2	0,781	0,219			
3	0,677	0,164	0,159		
4	0,431	0,415	0,089	0,064	
5	0,341	0,235	0,188	0,169	0,067

The R^2 values of the FIMIX-PLS analysis for a 2-segment solution revealed that the FIMIX-PLS-weighted R^2 values would be only slightly higher for purchase satisfaction and post-purchase satisfaction, but the key relevant latent variables overall satisfaction and customer loyalty would be negatively influenced (even considerably). The FIMIX-PLS-weighted R^2 values were calculated by multiplying the segment-specific values by the relative 2-segment sizes (Hair et al., 2018).

Table 36: FIMIX-PLS R^2 Values for the 2-Segment Solution

	R^2 values			
	Full data set original R^2 values	**FIMIX-PLS Segment 1**	**FIMIX-PLS Segment 2**	**FIMIX-PLS Weighted average R^2 value**
Purchase satisfation	0,519	0,627	0,365	0,570
Post-purchase satisfaction	0,625	0,653	0,599	0,651
Overall satisfaction	0,781	0,736	0,895	0,771
Loyalty to the bank	0,610	0,397	0,968	0,552

As the results of the segment-specific path coefficients of FIMIX-PLS did not reveal any significant differences, the above results in combination indicated that unobserved data heterogeneity in the study may not prevail to any significant extent. The fit indices provided different results regarding the number of segments to be obtained from the data, while the relative segment sizes only allowed a 2-segment solution. This conclusion is supported by the analysis of the segment-specific R^2 values as for the central constructs of overall satisfaction and customer loyalty the weighted average R^2 values are even lower than those of the full set

of data. In conclusion, it is probably not advantageous to use different segments for further analysis. This conclusion is supported by research results from Hair et al. (2018).

5.4 Verification of the Hypotheses

For the final evaluation of the hypotheses both R^2 and thus the explained variance and the path coefficients of the PLS structural model were assessed. Paths that do not reveal any significance or hypotheses that counteract the set direction of the hypothesis were rejected (Krafft et al., 2005, pp. 83–84). Significant path coefficients that approve the a priori postulated sign support the hypothesis (Krafft et al., 2005, p. 84). Nine (out of the eleven) hypotheses were thus confirmed. Of these eight hypotheses had a significance of < 0,01, and only one hypothesis had a significance of < 0,1. The hypotheses regarding the impact of pre-purchase satisfaction and purchase satisfaction on customer loyalty could not be confirmed due to a lack of sufficient path co-efficiency and significance (Table 37).

Table 37: Results of the Hypothesis Testing

	Hypotheses	Result	Significance
H(1):	**Pre-purchase** customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank.	supported	*
H(2):	**Purchase** customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank.	supported	***
H(3):	**Post-purchase** customer **satisfaction** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank.	supported	***
H(4):	**Pre-purchase** customer **satisfaction** has a **positive** impact on **purchase** customer **satisfaction** with an omni-channel bank.	supported	***
H(5):	**Purchase** customer **satisfaction** has a **positive** impact on **post-purchase** customer **satisfaction** with an omni-channel bank.	supported	***
H(6):	**Perceived** omni-channel **integration** has a **positive** impact on customer **overall satisfaction** with an omni-channel bank.	supported	***
H(7):	**Perceived** omni-channel **integration** has a **positive** impact on customer **loyalty** to an omni-channel bank.	supported	***
H(8):	Customer **overall satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank.	supported	***
H(9):	**Pre-purchase** customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank.	not supported	n.s.
H(10):	**Purchase** customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank.	not supported	n.s.
H(11):	**Post-purchase** customer **satisfaction** has a **positive** impact on customer **loyalty** to an omni-channel bank.	supported	***

Significance level (t-test one-sided):
***: $p < 0,01$ ($t_{crit.} = 2,33$); ** $p < 0,05$ ($t_{crit.} = 1,65$); * $p < 0,10$ ($t_{crit.} = 1,28$); n.s. = not significant.

The final results of the structural model are presented in Figure 19 (also see Appendix 7).

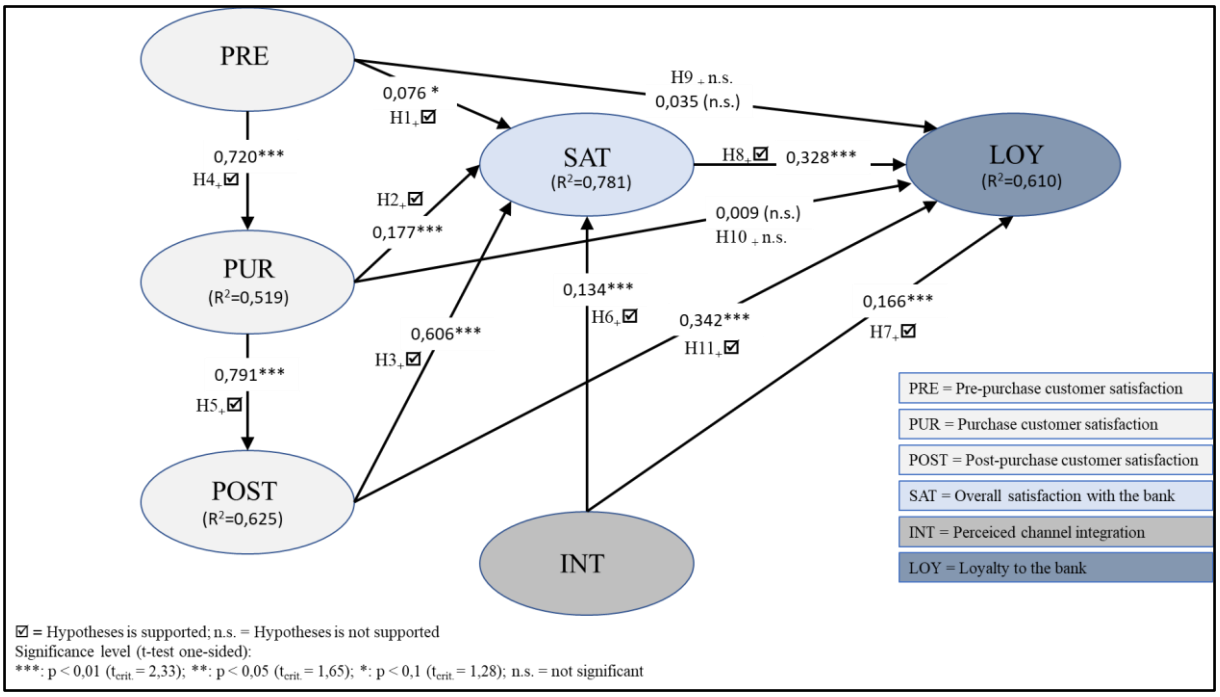

Figure 19: Results of the Structural Model

5.5 Discussion of the Results

The behaviour of customers in a bank's omni-channel environment, which synergistically networks distribution channels, customer touchpoints, banking processes and data flow holistically, was investigated in this dissertation across the customer's purchase process stages for financial services. The overall objective of this research was to systematically deepen the understanding of customer satisfaction and customer loyalty in a bank's omni-channel system. The perception of this innovative but evolutionary channel integration approach by bank customers on customer satisfaction and loyalty is supported by the results of the empirical study. Thus, this dissertation provides insights that help advance the existing theoretical and conceptual approaches to omni-channel systems such as those proposed by Beck and Rygl (2015), Picot-Coupey et al. (2016), Huebner et al. (2016), Hossain et al. (2017), Saghiri et al. (2017) and Chen et al. (2018), by taking into consideration the real-time behaviour of bank customers when using an omni-channel system, and, in addition, examines customer satisfaction during the financial services purchase process. The results of this study confirm the positive relationship of the perceived integration on customer satisfaction and loyalty when using an omni-channel system for banking. Thus, this work confirms the study of Hamouda (2019), who had identified a positive relationship between integration quality and customer

satisfaction through his research conducted among bank customers in Tunisia. However, Hamouda (2019) could not confirm a positive relationship between integration quality and loyalty, which was probably because Tunisian banks were not advanced in terms of processes regarding introducing a highly complex omni-channel system.

Based on the conceptual definition of an omni-channel system in the banking business, the theoretical concepts of customer satisfaction and customer loyalty in the banking business and the behaviour of bank customers during the purchase process of financial services, a causal model was developed to examine the behaviour of bank customers in the omni-channel system of a bank with regard to customer satisfaction and customer loyalty. This causal model examines customer behaviour in the pre-purchase stage, the purchase stage and the post-purchase stage, as the purchase process, on the whole, can have a different impact on overall customer satisfaction and customer loyalty. In this regard, this dissertation also represents the perspectives pursued by Burmann (1991), Bloemer and Lemmink (1992), Korte (1995), Siefke (1998) and Fleer (2016) in their respective studies, though the context, sector and research objects are different. The purchase process is very important to understand customer behaviour, according to this author. Such an approach has not been adopted yet in the previous research on banking. It has been conceptualised and operationalised for the progressive and ground-breaking omni-channel system of a bank.

For this study, existing research on customer satisfaction with the use of bank branch services, Internet banking services, mobile banking services and previous distribution channel approaches in the banking business was also examined to identify relevant triggers. Since the perception of channel integration is elementary for the omni-channel approach, existing research was also examined for relevant triggers. Based on this, a customer survey was designed, which was the core of this work. The empirical study was carried out by means of a web link where only customers of German VR banks could participate. This ensured that the customers would give feedback on the omni-channel system, which had been introduced by VR banks. The customers were able to participate in the survey using the link sent to them without any influence from third parties and were thus able to give their independent and anonymous feedback.

Significant findings for assessing the quality of the theoretically developed causal model are derived from the quantitative verification of the construct. Overall, the measurements of the causal relationships proved to be reliable. Several statistical tests were carried out to empirically

validate and verify the reliability of the causal model and to answer the research questions. This enabled the evaluation of the central relationships of customer satisfaction in the individual purchase stages of financial services. Additionally, knowledge was developed of the perception of channel integration by bank customers. Finally, the cause-and-effect relationships between the satisfaction ratings of bank customers and customer loyalty to the bank and the perception of channel integration and customer loyalty to the bank were revealed.

In contrast to the widely used covariance-based method for the analysis of SEMs, a variance-based PLS-SEM approach was used as besides reflective measurement models, formative measurement models were also included to identify the causes of customer satisfaction in the purchasing process and perception of distribution channel integration. The assessment of the presented causal model was carried out on the basis of the partial quality criteria deriving from the regression analyses of the PLS approach according to the relevant literature. The quality assessment of the measurement models and the structural model supported the theoretical derivation of the model, thereby proving that the structural model was suitable to answer the research questions. Unobserved heterogeneity in the research data was investigated by means of a FIMIX-PLS analysis. Segmentation of the research data was rejected as unnecessary.

5.6 Summary of the Main Results

In summary, the *research questions* can be answered as follows.

1. *How can customer satisfaction with a bank operating an omni-channel system be conceptualised and, subsequently, operationalised, if the process of purchasing before, during and after the purchase of financial services is to be covered?*

Following the modern literature and the definition given in subsection 3.3.3 of this dissertation, customer satisfaction is understood as the result of a process of customer evaluation that is influenced by cognitive (comparing perceived performance with customer expectations) and affective aspects. Furthermore, customer satisfaction is considered as a subjective, theoretical and hypothetical construct. Customer satisfaction is, along with customer loyalty, the most comprehensive construct in banking where high competition and regulatory constraints and high fixed costs squeeze margins, and sustainable success is often closely linked to stable customer business. Based on the scientifically grounded EDT, factual and temporal

aspects are highly relevant to classify the assessment of customer satisfaction. In addition, customer judgement is combined with practical experience and transactional insights.

On a factual level, this study found that bank customers determine their satisfaction assessment on a micro-level and thus a transaction-specific level along with the evaluation of complex service in the bank's omni-channel in which all the stages of the purchasing process are relevant, and the customer can act across all available distribution channels. Partial satisfaction ratings are thus formed by customers during the pre-purchase, purchase and post-purchase stages, and all three have an effect on the overall satisfaction of the bank customer. The overall satisfaction of a bank customer is determined, to varying degrees, by their partial satisfaction evaluations. Moreover, partial satisfaction evaluations can also influence the loyalty of bank customers. Satisfaction with traditional and conventional face-to-face banking, satisfaction with progressive digital banking (which includes the modern bank access channels) and satisfaction with personal/digital banking (which includes both analogue and digital aspects) were examined. As described in subsection 3.3.5, this dissertation examines an approach which explores subjectively perceived satisfaction with a multi-attributive approach, which directly interviews bank customers and thus follows an explicit method using a variety of individual aspects to interview customers ex-post about their satisfaction. Conceptually, customer satisfaction is measured by the extremes of satisfaction and dissatisfaction, and the measurement tool refers to all the touchpoints between a bank and its customers throughout the entire purchasing process in an omni-channel banking environment.

2. *Which customer satisfaction indicators concerning the banking sector have significant relevance for the enhancement of bank customer satisfaction in the purchasing process?*

By measuring formative as well as reflective indicators in this empirical study of bank customers, it was possible to test the items for customer satisfaction identified on the basis of intensive literature research and the pre-test item-sorting task (point 4.3.2.1) for the pre-purchase, purchase well as post-purchase stages. The weights of the individual items were determined using the bootstrapping method with a significance level of ,05 in SmartPLS (subsection 5.2.1).

In the pre-purchase stage within a bank's omni-channel system, the items *professional competence, friendliness, politeness* and *interest of the bank's employees* and *provided information's on opportunities and risks arising from the financial products*, were highly weighted and significant. The items, namely *availability and quantity of information* and

content quality and visual design of the information showed a non-significant initiator weight but a significant loading. So, these indicators also showed absolute relevance.

The high importance of *professional competence* in the banking business for customer satisfaction was also confirmed by the bank customers surveyed in the purchasing stage. In addition, the items, namely *accuracy of the execution, customer friendliness and further support* as well as the *general atmosphere and the lifestyle of the bank* (in terms of image, customers' sense of well-being and commonality) revealed high weighting and significance. Furthermore, the item *comfortable* and *uncomplicated order execution* also revealed absolute relevance.

All the indicators of the post-purchase stage had significance by weight or by loading. At this stage too, the most important item was the need for *professional competence* in the banking business. This was due to the fact that the basis of this study were complex financial services. Additionally, the items, namely *commitment and interest of the employees even after the confirmation of the transaction, error-free execution of orders, friendliness and the comprehensibility of the confirmation of the transaction as well as further support (VR bank contacts me if it is necessary and important for me),* and *data security, confidentiality* and *discretion,* received high weights. *Accessibility* and *prompt transfer to the right person or solution and further arrangement of conditions (no hidden costs)* were also relevant in absolute terms through a significant loading.

3. *Which indicators allow bank customers to perceive the integration of the banks' distribution channels and are, therefore, highly relevant in assessing customer satisfaction related to an omni-channel system?*

Since the integration of distribution channels is the central element of an omni-channel system, this study also implemented the customer perception of the integration by means of formative indicators in order to test the significance of the individual items for this emerging field of research. The omni-channel approach is, as described in section 3.4 of this study, highly complex for the bank to implement and only pays off if it is appreciated by the customer and contributes to customer satisfaction.

The formative indicators regarding the perception of integration are indicative of the fact that bank customers *consider consistently high quality at all touchpoints* to be necessary. In addition, the *availability of the order history across every bank channel* and the *transparency of order completion and order status across all channels* is of high importance. The item to

obtain product information on all touchpoints and the one on the possibility of *executing and modifying orders via all channels* had high loading and significance. It must be noted that the possibility to execute instructions has a negative weight, and it can be assumed that it is not yet sufficiently perceived by bank customers in the ongoing implementation of the omni-channel system.

4. *What influence does pre-purchase customer satisfaction exert on the bank customer's purchase satisfaction and purchase satisfaction on post-purchase satisfaction in the overall context of an omni-channel system?*

The strong interdependencies of the purchasing process are evident from the results of the path coefficients. Purchase satisfaction is therefore strongly and positively influenced by the satisfaction of bank customers in the pre-purchase stage. This is reflected, first, by the high rate of transactions at the bank and, second, by the high path coefficients. As many as 77,8% of the customers who had previously obtained information in the VR bank's omni-channel environment also concluded their banking transactions with this bank after the pre-purchase stage. Only 22,2% of the customers preferred a competitor for the financial services they had previously requested. The high path coefficients between the purchase stage and the post-purchase stage confirm the very close positive relationship. Thus, the positive effect of satisfaction, beginning in the pre-purchase stage of the purchase process up to the post-purchase stage within an omni-channel system of a bank was revealed.

5. *What is the impact of pre-purchase, purchase and post-purchase satisfactions on the customer's overall satisfaction with a bank operating an omni-channel system?*

The significant influence of post-purchase satisfaction in the banking business within an omni-channel system on the overall satisfaction of customers became apparent from the results of the structural analysis. Although the analysis of the indirect effects of pre-purchase satisfaction and purchase satisfaction revealed high effects on overall satisfaction as well as significant total effects on overall satisfaction, the structural model nevertheless demonstrated the importance of post-purchase satisfaction in the banking business. This effect is so pronounced, presumably, because banking services have a long life cycle and customer relationships in the banking business often last a lifetime.

6. *Does the customer perceived channel integration in an omni-channel system have an impact on overall customer satisfaction?*

The high and significant path co-efficiency confirms the strong importance of the omni-channel approach for the overall customer satisfaction of bank customers. This confirms that the omni-channel approach is worthwhile in the banking business and that the high effort involved has a positive effect on bank customer satisfaction. The results confirm the findings of Shen et al. (2018) and Hamouda (2019).

7. *Does customer satisfaction in the pre-purchase, purchase, post-purchase stage, overall satisfaction as well as the perceived channel integration within a bank's omni-channel system influence customer loyalty to the bank?*

Customer loyalty was designed as an endogenous latent construct in the causal model to determine the influence, on customer loyalty to the bank, of satisfaction in the purchase process of financial services, the overall satisfaction of bank customers and the perceived integration of the distribution channels. In addition to the significant influence of post-purchase satisfaction on the overall satisfaction of bank customers, which has already been pointed out, the study also found that post-purchase satisfaction with financial products has the most significant influence on customer loyalty to the bank. Although the indirect effects of pre-purchase satisfaction and purchase satisfaction on customer loyalty to the bank were also identified to be considerable, yet, the direct effects nevertheless revealed the importance of after-sales service for bank customers. Further, it was observed that the perception of distribution channel integration had an equally strong impact on overall satisfaction as on customer loyalty to the bank. The bank customers thus rewarded the bank's efforts to introduce an omni-channel approach and intended to purchase future services from the bank. This study considers customer loyalty (as defined in 3.5.2) to a bank operating an omni-channel system as the customer's intention to use the bank's services again in one of the bank's channels and/or to recommend the bank's services to family, friends and/or acquaintances and/or to make additional purchases from the bank.

The analysis carried out for this research revealed that within an omni-channel approach, the channel loyalty of bank customers was not very pronounced. This demonstrates that the omni-channel approach was entirely effective, as customers practice cross-channel behaviour for the banking business. The dominant customer channel in the pre-purchase phase was Internet banking, whereas the bank branch was found to be the channel with the highest closing

rate for financial services. For complex products, it was identified that mobile banking was not yet widely used as a closing medium in comparison to bank branches and Internet banking.

The customer survey provided loyalty insights into the effectively realised behaviour of bank customers concerning the determined customer switching rate after the pre-purchase stage. The results revealed that 77,8% of the bank's customers who had previously received information in the bank's omni-channel environment subsequently concluded their transactions with the bank, thus demonstrating their loyal behaviour to the transaction enquired about.

8. *Does the use of the bank's services for financial advice, cash custody, financing and payment have an impact on the satisfaction level of bank customers in the pre-purchase, purchase and post-purchase stages, overall satisfaction as well as loyalty to the bank?*

Using multivariate variance analysis, individual significances could be identified for the various financial services within the omni-channel system. There were significant differences in the mean values of purchase satisfaction and overall satisfaction of the bank's customers with the financing services compared to the other financial services surveyed. Financial services are often concluded at the branch office, and this implies, on the one hand, a commitment to the bank's opening hours and, on the other, probably less convenient order execution compared to Internet banking or mobile banking. In addition, since financing is often very individual and personalised, customers are less likely to be served in a standardised manner. This means that a high level of expertise is required. Further considerable differences in the assessments of bank customers could not be identified.

6 Limitations and Implications

Customer satisfaction and loyalty is a field of research with a long history, whereas the omni-channel approach is a very new and ambitious research approach, which has not yet produced many research findings as only a few research objects have been implemented to date. A further central component of this research project was the purchasing process, which, as this study revealed, had a considerable influence on customer satisfaction and customer loyalty, but had been neglected in many research studies so far. This study examines the banking sector that in itself enjoys a high level of research interest. The following limitations of this study provide pointers for further research in this sector.

6.1 Limitations and Future Research

This research examined banks and their banking services within an omni-channel system. The banking business in Germany was examined with inputs from research subjects at VR banks as the omni-channel system had been introduced in these banks. An extension of the research area to other countries and regions as well as to other banking groups would be appreciated as it would allow the study to be compared and further explored. A comparison of the omni-channel approach with the multi-channel approach previously used by the banks would also be very helpful to examine not only the differences in these two approaches but also the effects of these different approaches on bank customers.

Only selective and random customers of VR banks were examined. In order to maintain anonymity, it was not investigated with which VR bank the customer relationship actually exists. The aim of this study was not to examine one VR bank, but to draw conclusions about the behaviour of VR bank customers in general. However, due to the lack of information on the actual VR bank, possible biases due to clusters of individual VR bank customer relationships cannot be excluded.

The research carried out for this study focused on complex banking services as the purchase process was fully covered by the pre-purchase, purchase and post-purchase stages. Not all banking products are complex. Hence, an investigation of the mass business within an omni-channel system would certainly bring up interesting aspects. An extension of the study by adding information and communication channels within the omni-channel environment could also reveal interesting new aspects.

The survey of bank customers started at the end of July 2020, and the questionnaire was closed at the end of September 2020 during the COVID-19 pandemic. Although the survey asked questions about the bank customers' transactions during the last 12 months, it cannot be denied that the pandemic influenced the responses of the bank customers. During the pandemic, access to bank branches was partially restricted. Though this was the trend anyway, the pandemic period may have acted as an amplifier for future digital customer behaviour. Future research could also investigate this effect in the post-COVID-19 period.

This study was able to cover the population quite well, but it would be useful if a broader study could cover bank customers even more precisely. In particular, bank customers over 70 years of age could not be covered well by the survey as it was an online survey, and this age group is less comfortable with this form of survey. An adjustment of the methodology would have to be reviewed in order to cover this age group properly.

In this study, the research statements of bank customers were examined by means of the MANOVA method to determine whether different behaviours could be detected depending on the banking services. This type of analysis could be extended more deeply into other socio-demographic aspects such as gender, income, education level, occupation status, region and others. This led to interesting statements with regard to user behaviour, which generated a high degree of practical relevance. Even more detailed information about the behaviour of bank customers is likely to be of great interest to banks and practitioners as customer interests can, consequently, be better targeted.

6.2 New Scientific Results

This dissertation combines modern theoretical approaches to customer satisfaction and customer loyalty with the purchasing process of customers and develops these approaches further for benefitting banking services even as it empirically tests the causal model constructed. To elaborate, this dissertation examines the behaviour of bank customers in terms of satisfaction and loyalty in an omni-channel environment. It provides a causal model for measuring partial satisfaction of bank customers concerning the purchase process of financial services, starting before the purchase, continuing through the purchase and up to the post-purchase stage. In addition, the causal model covers the channel integration perceived by bank customers as channel integration is the central element of an omni-channel approach. It enables an investigation of the influence of a bank's omni-channel management on the overall satisfaction

of its customers. The causal model for the omni-channel approach of a bank has conceptualised and subsequently operationalised for complex financial services in this dissertation. For banking services, such as *financial advice*, *cash custody*, *financing* and *payment transactions*, this study provides a comprehensive understanding of customer behaviour and customer perception.

The central contribution of this dissertation is to empirically test the causal model and to verify its validity and reliability. The omni-channel approach is regarded by researchers and practitioners as the most promising distribution approach. This dissertation combines the theoretical and conceptual approaches to the omni-channel system with the real-life behaviours of bank customers when using an omni-channel system and investigates customer satisfaction during the purchase process. The results of this study confirm the positive relationship of the perceived integration on customer satisfaction and loyalty when using an omni-channel system for banking.

A research approach that integrated the complete purchasing process to derive overall customer satisfaction in the banking business and investigating the factors influencing customer loyalty in the banking business within an omni-channel environment was not available in the scientific literature at the start of this study. This dissertation provides the relevant drivers of satisfaction throughout the financial services purchase process of banking customers in an omni-channel environment. It finds that the professional competence of the bank staff and their friendliness in the pre-purchase stage contribute even more to satisfaction than the communication of chances and risks resulting from the financial services. Accuracy of execution, friendliness and atmosphere that customers feel at the bank also contribute significantly to purchase satisfaction. The highest significance for overall satisfaction is contributed by post-purchase satisfaction. Professional competence, reliability, flawless order execution, friendliness, proactive action by bank employees and data security are particularly valued by bank customers. Additionally, the drivers for perceived channel integration are provided via the formative indicators. It becomes apparent that bank customers particularly value the same high quality at all touchpoints and that a transparent purchasing process for financial services along with access to historical transaction data in an omni-channel environment is particularly important to bank customers. The study shows that the purchasing process in the banking business has a significant influence on customer satisfaction and customer loyalty. In particular, the post-purchase process has a strong impact on the banking business. Thus, this dissertation confirms the high importance of the integration of the purchase

process in the analysis of customer satisfaction. This study demonstrates that notwithstanding the significant challenges that an omni-channel system poses for banks (Ostrom et al., 2015), it is sensible for them to introduce and manage this approach. This study reveals that the post-purchase stage of financial services is particularly important in banking due to the often long life cycle of complex financial products and the long-term customer-bank relationship and that this stage has the strongest impact on customer satisfaction and finally on customer loyalty.

This study also examines the omni-channel system in operation including all touchpoints that are relevant to the customer. Thus, this study includes the traditional customer contact point in the branch office as well as the digital and semi-digital contact points that are networked with each other. This research examines this approach with regard to bank customers and thus enables a better understanding of their behaviour. In addition to face-to-face banking, which continues to have a high, albeit already decreasing significance among bank customers, Internet banking and mobile banking, as well as personal/digital banking, are of central importance in the context of this dissertation. While the Internet is the most important pre-purchase channel for customers, most transactions are still concluded in the bank branch. Mobile banking is relevant for bank customers in the pre-purchase phase, but it is still of minor importance for the closing of complex financial transactions. This study provides evidence that the introduction of an omni-channel approach to banking is both effective and worthwhile if banks want to increase customer satisfaction and achieve customer loyalty. This positively confirms the direction that various bank groups are heading in by introducing omni-channel systems as pointed out by Menrad (2020).

In summary, this work contributes to fill gaps in the understanding of bank customers in a highly complex banking infrastructure setup. This publication combines the modern approaches to customer satisfaction and loyalty, omni-channel distribution, purchasing processes, and produces new scientific results via a developed causal model verified under real-life bank customer behaviours. The results of the study provide the relevant customer satisfaction indicators for attaining bank customer satisfaction in the purchase process of financial products in an omni-channel environment. In addition, the relevant indicators for customers' perception of the integration of distribution channels in an omni-channel system are provided. A central result of this work is that the purchasing process in banking has a significant influence on customer satisfaction and loyalty. In this context, it is found that the post-purchase process, as well as in process terms the perceived channel integration, have a very strong influence on customer satisfaction and loyalty in an omni-channel environment.

6.3 Implications for Practitioners

This research is a wake-up call for banks. It underlines how fundamental the implementation of an omni-channel system is for banks to make their business customer-friendly. It demonstrates how distribution channels can be networked to increase customer satisfaction and to achieve customer loyalty. Further, it shows how banks can use their branches to strengthen their contact with their customers. The omni-channel approach provides the opportunity for the financial advisors to receive all client information immediately, to engage proactively and to bring significant value addition to the customer. At the same time, the omni-channel system offers the opportunity to outsource processes directly to the customer. In this way, banks can build up more efficiency and advisory capacity, which also benefits their customers. This apart, banks can reduce overcapacity and thus become more competitive. While in the past, banks have managed their distribution in a disjunctive or only partially networked manner, this study points out that the introduction of an omni-channel system and the resultant complete networking of the distribution channels into a whole is purposeful. Some banking groups have already started managing an omni-channel system, though the steps towards its full-scale implementation are still underway as its full implementation is highly complex and burdensome. This study identifies the specific aspects and trigger points that banks should keep in mind if they want to increase customer satisfaction and loyalty. The results of this study confirm that customers do perceive channel integration and reward it by exhibiting loyal customer behaviour towards the bank. Further, as this study points out, bank customers require a high level of professional competence at all the stages of the purchase process to ensure their customers' satisfaction. Structured omni-channel management provides banks with the opportunity to more effectively deploy financial advisors in keeping with their customers' needs. Advisory capacities can be used to act more intensively and effectively proactively with the bank customer.

Moreover, this study reveals how important it is for banks to provide services to their customers throughout the entire purchase process. The post-purchase stage is particularly important for financial services and supports overall customer satisfaction and loyalty to a particularly high degree. The banking business is facing major structural challenges due to increased new competition from tech companies, tough regulatory requirements, a massive flood of money from central banks and associated risks, to name but a few. Probably, they can manage these tasks only through loyal customer behaviour and stable revenues. The results of this research are helpful in as much as they show the way to achieve this.

7 Conclusions and Recommendations

This complex research project aimed to examine a bank's omni-channel system in operation to determine the extent of its impact on customer satisfaction and loyalty. To examine the overall satisfaction in a more refined manner, and to obtain more precise findings regarding the formation of customer loyalty which is of considerable importance for the banking business, the entire purchasing process and even the partial satisfactions within the purchasing process were examined. As the implementation of an omni-channel system poses huge challenges for banks, customer perception of channel integration is of particular importance and was included as a latent construct in the causal model.

The financial services of *financial advice*, *cash custody*, *financing* and *payment transactions* were investigated in this research because these services are usually spread over the entire purchasing process of bank customers. An omni-channel system includes all relevant distribution channel activities and touchpoints for the customer; therefore, the relevant attributes for customer satisfaction and customer loyalty were analysed for the central channels, namely face-to-face banking, digital banking and personal/digital banking. In addition, the key factors of channel integration were analysed. A causal model was conceptualised and operationalised for this issue which included formative and reflective indicators in order to derive relevant indicators.

This empirical study succeeds in demonstrating the positive relationship between channel integration and customer satisfaction and, for the first time, customer loyalty for the financial services within the banking sector in an omni-channel environment. High significances were also observed for the purchase process, which has a positive impact on overall customer satisfaction. Post-purchase satisfaction has a very strong influence on customer satisfaction and customer loyalty, and it is, in turn, indirectly influenced by the preceding processes. A direct and significant influence of pre-purchase satisfaction and purchase satisfaction on customer loyalty within an omni-channel system could not be ascertained. The results of the segment-specific path coefficients of the FIMIX-PLS analysis did not reveal any significant differences. Hence, it was concluded that unobserved data heterogeneity is not likely to prevail to a significant extent in this study.

This empirical study was conducted on Germany's bank customers who had maintained an account relationship with a VR bank to ensure that the omni-channel system was also an

object of research. For this reason, the study's findings and conclusions cannot be fully generalised. In addition, the study was conducted during the COVID-19 pandemic. However, the customers were allowed to select bank contacts up to 12 months before the start of the study. These findings can only be applied to the selected complex financial services. Mass business within an omni-channel system was beyond the scope of this research.

In conclusion, it can be confirmed that an omni-channel system positively influences customer satisfaction and customer loyalty. The factors influencing customer satisfaction and customer loyalty are, however, differently pronounced, and this conclusion has been drawn taking into account the limitations of this study that have been mentioned earlier. The rapid developments in the field of digital banking underscore the need for banks to closely monitor customer requirements so that they are able to face their competition effectively.

This dissertation can be understood as a kind of wake-up call for banks to consider implementing an omni-channel system. In terms of long-term process efficiencies for the bank and to improve customer satisfaction and loyalty, also in view of the high level of competition from outside the bank, the author is meanwhile convinced that a traditional bank should implement an omni-channel system and thus integrate its distribution channels into one whole.

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Publications

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Appendix 1: Key Factors of Customer Satisfaction with Banks

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Access	FtF FtS H	SAT: Which is your opinion about the bank's network (branches, ATM, etc.)	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF	SAT: Availability of the branch	Pre Pur	**Belás/Chochoľáková/Gabčová (2015)**
	FtF	SAT: Location of the branch	Pre Pur Post	**Westbrook (1981);** Korte (1995); Parasuraman et al. (1985); Deppisch (1997); Reith (2007); Unger/Stearns/Lesser (2015)
	DC	CB: Availability and access (at each time)	Pre Pur Post	**Schramm-Klein (2003)**; Hoque/Lohse (1999); Childers et al. (2001); Burke (2002); Zaharia (2006); Verhoef/Neslin/Vrommen (2007); Siddiqi (2011)
	FtF	SQ, SAT: Convenience business hour	Pre Pur Post	**Rubogora (2017)**
	FtF	SAT: Bank location	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF	SAT: Distance to the bank	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF H	SAT: Operating hours convenient to all their customers	Pre Pur Post	**Chavan/Ahmad (2013)**; Bloemer/Ruyter/Peerers (1998); Matzler/Sauerwein/Heischmidt (2003)
	FtF FtS H	SQ, SAT: Bank does not make its customers stand in a queue for a long time	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**; Bloemer/Ruyter/Peerers (1998); Paul/Mittal/Srivastav (2016)
	FtF H	SQ: Queues that move rapidly	Pre Pur Post	**Bahia/Nantel (2000)**
	DC	SAT, LOY: Availability and access to product informations	Pre	**Fleer (2016)**
	FtF FtS H	SAT: What do you think about the resonsiveness of their personnel	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF FtS H	SAT: What do you think about the relationship with the personnel of the bank	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF H	SQ: Waiting time for receiving services is not too long	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Bahia/Nantel (2000)
	FtF FtS H	SAT: Which is the average waiting time	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtS	SQ, SAT: Sufficient number of ATMs	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Bahia/Nantel (2000); Matzler/Sauerwein/Heischmidt (2003); Al-Hawari/Ward (2006); Chavan/Ahmad (2013); Moraru/Duhnea (2018)
	FtS	SAT: ATM should always be in working condition	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF	SQ: Number of open tellers during peak hours is adequate	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Bahia/Nantel (2000)
	H	SAT: Bank service is easily accessible by telefone (telefon banking)	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Al-Hawari/Ward (2006)
	H	SAT: Telefon banking: Reasonable number of voice prompts	Pre Pur Post	**Al-Hawari/Ward (2006)**
	H	SAT: Telefon banking: Short waiting list and clear instructions	Pre Pur Post	**Al-Hawari/Ward (2006)**
	H	SAT: Phone banking facilities should always be there	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtS	SAT: Internet banking availability and functionality	Pre Pur Post	**Al-Hawari/Ward (2006)**; Cox/Dale (2001); Bauer et al. (2005, 2006); Falk (2007); Belás/Chochoľáková/Gabčová (2015); Moraru/Duhnea (2018)
	FtF	SAT: Availability of services	Pur	**Westbrook (1981);** Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtS H	SAT: Availability of services	Pur	**Falk (2007)**
	FtS	SQ: Online banking has the ability to provide round-the-clock services	Pre Pur Post	**Zeng/Wu (2020),** Cox/Dale (2001); Zeithaml et al. (2002); Yiu et al. (2007); Falk (2007)
	FtS	SQ: I feel the service system is very stable when I use online banking	Pre Pur Post	**Zeng/Wu (2020)**; Zeithaml et al. (2002); Bauer et al. (2005, 2006)
	FtS	SQ: The online banking system works well	Pre Pur Post	**Zeng/Wu (2020)**; Bauer et al. (2005, 2006)
	FtS	CB: Using smartphone banking enables me to access banking services more quickly	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Venkatesh et al. (2011); Bhattacherjee and Premkumar (2004); Al-Jabri/Sohail (2012); Foroughi/Iranmanesh/Hyun (2019)
	FtS	CB: Using smartphone banking makes it easier to access banking services (using mobile banking services helps me accomplish things more quickly)	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Venkatesh et al. (2011); Bhattacherjee and Premkumar (2004); Al-Jabri/Sohail (2012); Baptista/Oliveira (2015); Foroughi/Iranmanesh/Hyun (2019)

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Convenience / Ease of use	FtF	SAT: Convenience of location and operating hours	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**
	FtF FtS H	SQ: Bank extends its working hours in order to meet customer needs	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF	SQ: Bank provides the necessary convenience for customers (e.g. parking area and special counters for elderly/disabled customers)	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	DC	CB: Speed of information	Pre Post	**Verhoef/Neslin/Vrommen (2007)**; Hoque/Lohse (1999); Childers et al. (2001)
	DC	CB: Perceived required time (time cost) and perceived difficulty to gather information	Pre Post	**Verhoef/Neslin/Vrommen (2007)**; Baker et al. (2002); Ratchford et al. (2003); Kang/Herr/Page (2003)
	FtF H	SQ, SAT, LOY: Time and attention to customer	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**
	DC	CB: Efficiency, ease and speed which services can be purchased	Pur	**Verhoef/Neslin/Vrommen (2007)**; Mathwick/Malhotra/Rigdon (2001); Messinger/Narasinhan (1997)
	DC	CB: Perceived difficulty and time costs when purchasing a service using a channel	Pur	**Verhoef/Neslin/Vrommen (2007)**; Baker et al. (2002); Bhatanagar/Ratchford (2004)
	FtF H	SQ: Bank staff never too busy to respond to my requests	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Chavan/Ahmad (2013)
	FtF FtS H DC	SQ, SAT: Prompt service to customers. Employees of this bank enact transactions on a timely manner	Pre Pur Post	**Rubogora (2017)**; Karatepe/Yavas/Babakus (2005); Verhoef/Neslin/Vrommen (2007); Siddiqi (2011); Paul/Mittal/Srivastav (2016); Fleer (2016)
	FtF H	SQ, SAT, LOY: Speed of handling at the office	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**
	FtF FtS H	SAT: Quickly connected to the right person	Post	**Paul/Mittal/Srivastav (2016)**
	FtF FtS H	SAT: High level of acceptance of their own needs	Pre Pur Post	**Lages/Piercy (2012)**
	FtF FtS H	SAT: Core Banking facilities is very important for me	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtS	SQ, SAT: ATMs are conveniently located (e.g. shopping malls, government departments, etc.)	Pur Post	**Hamzah/Lee/Moghavvemi (2017)**, Al-Hawari/ Ward (2006); Paul/Mittal/Srivastav (2016)
	FtS	SAT: ATM has a user-friendly system	Pur Post	**Al-Hawari/Ward (2006)**
	FtS	SAT: There is ample availability to carry out operations	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013);** Albashrawi/Motiwalla (2020)
	FtS	SAT: The site has clear and comprehensive information	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013)**
	FtS	SAT: There is agility in the completion of transactions/queries	Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013);** Albashrawi/Motiwalla (2020)
	FtS	SAT: Navigation and management of e-banking services are easy	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013);** Albashrawi/Motiwalla (2020)
	FtS	SAT: The system is adapted to electronic banking operational needs	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013);** Albashrawi/Motiwalla (2020)
	FtS	SQ, SAT: The layout of the information in XYZBANK's internet banking web site is easy to follow	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Zeithaml et al. (2002); Yang et al. (2004)
	FtS H	SQ, SAT: I can easily log on to my account	Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Zeithaml et al. (2002); Yang et al. (2004)
	FtS	SQ, SAT: Using XYZ-BANK's internet banking web site requires a lot of effort	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang et al. (2004)
	FtS	SQ, SAT: It is easy for me to complete a transaction through XYZBANK's internet banking web site	Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang et al. (2004); Falk (2007)
	FtS	SQ: It is easy to learn how to operate online system	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017);** Al-Hawari/Ward (2006); Falk (2007); Yiu et al. (2007); Albashrawi/Motiwalla (2020)
	FtS	SQ, SAT: I do not encounter long delays when searching for information on XYZBANK's internet banking web site	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang et al. (2004); Falk (2007)
	DC	SAT, LOY: It is easy and logical to find what I am looking for on the Bank site (Navigation structure)	Pre	**Montoya-Weiss et al. (2003)**
	FtS	SQ: The information provided by the website is accurate and easy to understand	Pre Pur Post	**Zeng/Wu (2020),** Montoya-Weiss et al. (2003)
	FtS	CB: Using smartphone banking enhances the effectiveness of my banking activities/services (using mobile banking services is fun and enjoyable)	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Venkatesh et al. (2011); Bhattacherjee and Premkumar (2004); Al-Jabri/Sohail (2012); Baptista/Oliveira (2015); Foroughi/Iranmanesh/Hyun (2019)
	FtS	SAT: Mobile Banking is a convenient way to manage finance	Pre Pur Post	**Al-Jabri/Sohail (2012)**
	FtS	SAT: Mobile Banking gives greater control over finances	Pre Pur Post	**Al-Jabri/Sohail (2012)**
	FtS	SAT: Mobile Banking is compatible with my lifestyle	Pre Pur Post	**Al-Jabri/Sohail (2012)**
	FtS	SAT: Using Mobile Banking fits into my working style	Pre Pur Post	**Al-Jabri/Sohail (2012)**
	FtS	CB: I find smartphone banking to be useful for my banking needs (it is easy for me to become skilful at using mobile banking services)	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Venkatesh et al. (2011); Bhattacherjee and Premkumar (2004); Baptista/Oliveira (2015)

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources
Price	FtF FtS H	SQ, SAT: Acceptable and competitive fees	Pre Pur Post	**Al-Hawari/Ward (2006)**; Bloemer/Ruyter/Peerers (1998); Bahia/Nantel (2000)
	FtF	SAT: Account for free	Pre Pur	**Belás/Chochoľáková/Gabčová (2015)**
	FtF	SAT: General pricing level (unit costs; margin, risk costs)	Pur	**Westbrook (1981)**, Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtF FtS H	SAT: Which is your satisfaction level from the privided interested rates	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF FtS H	SAT: Which is your satisfaction level from the cost	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF FtS H	SAT: Price and quality meet my needs	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: The prices I pay are fair	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I have the impression that I know what I am paying for	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: The prices I pay depend on how much I use certain services	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I do not get worse terms and conditions than others for the same service	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I get a good price-quality ratio	Pre	**Matzler/Würtele/Renzl (2006)**
	DC	SAT, LOY, CB: Price and performance were appropriate	Pre Pur	**Fleer (2016)**
	DC	CB: Value for money (Information: Not used in factor analysis due to low factor loadings), General pricing level (unit costs; margin, risk costs)	Pur	Schramm-Klein (2003); Dickson/Albaum (1977); Burke (2002), Baker et al. (2002); Montaya-Weiss et al. (2003); Verhoef/Neslin/Vrommen (2007)
	FtF FtS H	SAT, LOY: Level of savings rates	Pre Pur	**Bloemer/Ruyter/Peerers (1998)**
	FtF FtS H	SQ, SAT, LOY: Level of mortgage rates	Pre Pur	**Bloemer/Ruyter/Peerers (1998)**
	FtF FtS H	SAT: Overdrafts do not cause abnormally high interest rates	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	Adequately explaining service charges (all price components are clear, comprehensible and understandable)	Pre Pur Post	**Al-Hawari/Ward (2006)**; Bahia/Nantel (2000); Matzler/Würtele/Renzl (2006)
	FtF FtS H	SAT: Price changes are communicated properly und timely	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: There are no "hidden" costs	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Prices and conditions do not change unexpectedly	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I can count on my customer advisor to find the best price for me	Pur	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: My bank keeps all promises regarding prices	Pur	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Price information is complete, correct and frank	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Price information is understandable and comprehensible	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I am properly informed about the prices of the services	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I know what I pay and what I get	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I do not believe that another bank would have the same or even a better offer	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Terms and conditions of my bank are better tailored to my needs than terms and conditions of other banks	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Balance amount from which service charges begin	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SAT: Terms and conditions of my bank are better than those of other banks	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: I am convinced that my bank is the best choice	Pre	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: Terms and conditions are affordable for everyone, independently of income	Post	**Matzler/Würtele/Renzl (2006)**
	FtF FtS H	SAT: My bank does not take advantage of me	Post	**Matzler/Würtele/Renzl (2006)**
Reliability	FtF FtS H	SQ: Bank contacts me every time it is useful	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SQ: Keeping the client informed every time that a better solution appears for a problem	Pre Pur Post	**Bahia/Nantel (2000)**
	DC	SQ, CB: Perceived ability to negotiate on price, other aspects	Pur	**Verhoef/Neslin/Vrommen (2007)**
	DC	CB: Perceived level and depth of promotions	Pre Pur	**Verhoef/Neslin/Vrommen (2007)**; Kunkel/Berry (1969); Dickson/Albaum (1977); Lam/Vandenbosch/Hulland/Pearce (2001)
	FtS	SQ: The content of the service provided by the online bank is consistent with the promise in the advertisement	Pur Post	**Zeng/Wu (2020)**
	FtF H	SQ, SAT: Willingness to solve problems	Post	**Parasuraman/Zeithaml/Berry (1988)**; Parasuraman et al. (1985); Gagliano/Hathcote (1994); Korte (1995); Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001); Siddiqi (2011); Chavan/Ahmad (2013)
	FtF FtS H	SQ, SAT: Employees of this bank are willing to solve customer problems	Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SQ, SAT: Willingness to help customers	Post	**Rubogora (2017)**

Appendix 1

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Reliability	FtF FtS H	SQ: Interruption of the service	Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SQ: No delays due to bureaucratic factors and procedures	Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SQ, SAT, LOY: Absence of errors in service delivery (e.g. accurate bills and statements)	Pur Post	**Bahia/Nantel (2000)**; Bloemer/Ruyter/Peerers (1998); Karatepe/Yavas/Babakus (2005); Chavan/Ahmad (2013); Hamzah/Lee/Moghavvemi (2017); Rubogora (2017)
	FtF H	CB: Frictionless post-purchase processes	Post	**Reith (2007)**; Gaglino/Hathcote (1994); Korte (1995)
	FtF FtS H	SQ: Bank delivers up-to-date records	Pre Pur Post	**Siddiqi (2011)**; Bahia/Nantel (2000); Hamzah/Lee/Moghavvemi (2017)
	FtF FtS H	SAT: Keeping promise to do something by a certain time	Post	**Chavan/Ahmad (2013)**
	FtF H	SQ, SAT: Providing service as promised	Post	*Rubogora (2017)* ; Pararusaman/Zeithaml/Berry (1985, 1988); Gaglino/Hathcote (1994); Korte (1995); Siddiqi (2011); Zeng/Wu (2020)
	FtF FtS H	SQ: Are you satisfied by the service of handling a problem (speed of solving the problem)?	Pre Pur Post	**Siddiqi (2011)**
	FtF FtS H	SAT: Providing the service at the time the service was promised	Post	**Chavan/Ahmad (2013)**
	FtS	SQ: The online bank provides services at the same time as promised	Post	**Zeng/Wu (2020)**
	FtF	SQ: Precision of filing systems	Post	**Bahia/Nantel (2000)**
	FtF FtS H	SQ, SAT: Employees of this bank provide customers with precise information	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SAT: Employees telling customers exactly what services will be performed	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF FtS H	SAT: Employees giving prompt service to customers	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF FtS H	SQ, SAT: Dependability in handling customers' service problems	Pre Pur Post	**Rubogora (2017)**
	FtF FtS H	SQ, SAT: Performing services right first time	Pre Pur Post	**Rubogora (2017)**
	FtS	SQ, SAT: With my online banking, when XYZBANK promises to do something by a certain time, it does so	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Han/Baek (2004)
	FtS	SQ, SAT: XYZBANK gets its online service right first time	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Han/Baek (2004)
	FtF FtS H	SQ, SAT: Readiness to respond to customers' requests	Pre Pur Post	**Rubogora (2017)**; Matzler/Sauerwein/Heischmidt (2003)
	FtS	SQ, SAT: When there is a problem with my online banking, XYZBANK shows a sincere interest in solving it	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Han/Baek (2004)
	FtF H	SQ, SAT: Employees who are consistently courteous	Pre Pur Post	**Rubogora (2017)**
	FtF FtS H	SQ, SAT, LOY: Attention of employees	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**; Paul/Mittal/Srivastav (2016)
	FtF H	SQ, SAT: Employees of this bank always help customers	Pre Pur	**Karatepe/Yavas/Babakus (2005)**; Parasuraman/Zeithaml/Berry (1985, 1988); Westbrook (1981), Gagliano/Hathcote (1994); Korte (1995); Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtF FtS H	SQ, SAT: Employees will instill confidence in customers	Pre Pur Post	**Rubogora (2017)**
	FtF H	SQ: Are you satisfied with the employee's eagerness of instilling confidence to you?	Pre Pur Post	**Siddiqi (2011)**
	FtS	SQ, SAT: The information on XYZBANK's internet banking web site is accurate	Pre	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fang (2004)
	FtS	SQ, SAT: The online transactions are accurately dealt with	Post	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fang (2004)
	FtS	SQ: The online bank provides accurate services according to customer requirements	Pre Pur Post	**Zeng/Wu (2020);** Bauer et al. (2005, 2006)
	FtF FtS H	SQ: Precision on account statements	Post	**Bahia/Nantel (2000);** Bauer et al. (2005, 2006)
	FtF FtS H	SQ, SAT, LOY: Accuracy and dependability	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**; Matzler/Sauerwein/Heischmidt (2003); Karatepe/Yavas/Babakus (2005)
	FtF	SQ: Bank staff willing to help elderly and disabled customers and give them special attention	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SAT: Credibility/Reputation for honesty and integrity	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**; Bahia/Nantel (2000); Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
	FtF FtS H	SAT: Financial strength and security	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**
Security / Privacy	FtF FtS H	SQ, SAT: Feeling of security	Pur Post	**Bahia/Nantel (2000)**; Siddiqi (2011); Chavan/Ahmad (2013); Rubogora (2017); Hamzah/Lee/Moghavvemi (2017)
	FtF FtS H	SAT: Safety of operations	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF FtS H	SAT: Trust	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF	SQ, SAT: Bank is located in secure and convenient location; Physical security at bank is adequate (e.g. security guards, CCTVs)	Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources
Security / Privacy	FtS	SQ: ATM machine is located at a secure location	Pur Post	**Hamzah/Lee/Moghavvemi (2017);** Al-Hawari/Ward (2006)
	DC	CB: Perceived uncertainty with channels (payment; lack of privacy; data security)	Pur Post	**Verhoef/Neslin/Vrommen (2007)**; Hoffmann/Novak/Peralta (1999); McKnight et al. (2002); Forsythe/Shi (2003)
	FtF H	SQ: Transaction security	Pur Post	**Parasuraman/Zeithaml/Berry (1985, 1988)**; Gagliano/Hathcote (1994)
	DC	SAT, LOY, CB: Transaction security	Pur Post	**Fleer (2016)**; Burke (2002)
	FtF FtS H	SQ: Bank is quick to alert customers to any suspicious or fraudulent transaction	Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtS DC	SAT, LOY: How secure do you feel about applying for a loan or credit inline	Pur Post	**Montoya-Weiss et al. (2003)**
	FtS DC	SAT, LOY: How secure do you feel about doing online investments activities	Pur Post	**Montoya-Weiss et al. (2003);** Cox/Dale (2001)
	FtS DC	SAT, LOY: How secure do you feel about doing online banking (view account balance, transfer funds, make payments)	Pur Post	**Montoya-Weiss et al. (2003);** Cox/Dale (2001)
	FtS	SQ, SAT: I feel the risk associated with online transactions is low through XYZBANK's internet banking web site	Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang et al. (2004)
	FtS	SQ: I think using online banking can guarantee the security of personal information	Pre Pur Post	**Zeng/Wu (2020);** Zeithaml et al. (2002); Bauer et al. (2005, 2006)
	FtS	SQ: Using online banking can ensure the security of account information	Pre Pur Post	**Zeng/Wu (2020);** Zeithaml et al. (2002); Bauer et al. (2005, 2006)
	FtS	SQ, SAT: I believe that XYZBANK will not misuse my personal information	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fung (2004)
	FtS	SQ, SAT: I feel secure in providing sensitive information for online transactions through XYZBANK's internet banking web site	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fung (2004)
	FtS	SQ: Online banking regularly provides you with tools to enhance the security of your online banking system	Pre Pur Post	**Zeng/Wu (2020)**
	FtS	SQ: Online banking has adequate security features	Pur Post	**Zeng/Wu (2020)**; Hamzah/Lee/Moghavvemi (2017), Jun/Cai (2001); Yang et al. (2004); Al-Hawari/Ward (2006); Rod/Ashill/Shao/Carruthers (2009); Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013)
	FtS	SQ, SAT: The data and the operations performed on the electronic banking service are confidential	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013)**
	FtF FtS H	SQ, SAT: Bank keeps confidentiality of account and privacy of customers	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Bloemer/Ruyter/Peerers (1998); Karatepe/Yavas/Babakus (2005)
	H	SQ: Bank always asks questions for verification in phone banking	Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtS	SQ, CB: I think this smartphone banking service has mechanisms to ensure the safe transmission of its users' information	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Casaló et al. (2007); Chang/Chen (2009)
	FtS	CB: I feel secure to perform transactions using smartphone banking	Pur Post	**Susanto/Chang/Ha (2016)**; Casaló et al. (2007); Chang/Chen (2009)
	FtS	CB: This smartphone banking is a secure services through which to send sensitive information (Information about my transactions may be tampered by others)	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Casaló et al. (2007); Chang/Chen (2009); Al-Jabri/Sohail (2012)
	FtS	CB: Overall, this smartphone banking service is a safe place to transmit sensitive information	Pre Pur Post	**Susanto/Chang/Ha (2016)**; Casaló et al. (2007); Chang/Chen (2009)
	FtS	CB: My choice to use smartphone banking was a wise one	Pur Post	**Susanto/Chang/Ha (2016)**; Suh/Han (2002); Venkatesh et al. (2011)
	FtS	CB: I trust this smartphone banking service	Pur Post	**Susanto/Chang/Ha (2016)**; Suh/Han (2002); Venkatesh et al. (2011)
	FtS	CB: This smartphone banking provides banking services in my best interest	Pur Post	**Susanto/Chang/Ha (2016)**; Suh/Han (2002); Venkatesh et al. (2011)
	FtS	CB: This smartphone banking offers access to sincere and genuine banking services	Pur Post	**Susanto/Chang/Ha (2016)**; Suh/Han (2002); Venkatesh et al. (2011)
	FtS	CB: This smartphone banking performs its role of providing banking services well	Pur Post	**Susanto/Chang/Ha (2016)**; Suh/Han (2002); Venkatesh et al. (2011)

Appendix 1

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Scope of service	DC	CB: Large range of information	Pre	**Verhoef/Neslin/Vrommen (2007)**; Alba et al (1997); Hoque/Lohse (1999); Ratchford et al. (2001); Fleer (2016)
	DC	CB: Large assortment, newest products, service/product brand	Pre Pur	**Verhoef/Neslin/Vrommen (2007)**; Kunkel/Berry (1968); Samli/Kelly/Hunt (1998); Yoo/Park/MacInnes (1998); Baker et al. (2002); Schramm-Klein (2003); Zaharia (2006)
	FtF	SAT: Range depth	Pre Pur	**Bauer/Falk/Hammerschmidt (2004)**; Westbrook (1981), Deppisch (1997), Cho/Park (2001); Falk (2007); Andersen/Swamianathan (2011); Unger/Stearns/Lesser (2015)
	FtF FtS H	SAT: Which is your opinion about the variety of the offered products and services	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtS DC	SQ, SAT: Bank provides a high and convenient (service) level of overall service through is bank side	Pre Pur Post	**Montoya-Weiss et al. (2003)**
	FtF FtS H	SQ: Complete gamut of services (incl. service options)	Pre Pur Post	**Bahia/Nantel (2000)**; Al-Hawari/Ward (2006)
	FtF FtS H	SAT: My bank offers me a complete range of products	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF	SAT: Latest products	Pre Pur	**Bauer/Falk/Hammerschmidt (2004)**; Westbrook (1981), Deppisch (1997), Unger/Stearns/Lesser (2015)
	DC	SAT, LOY: Large range of services	Pre	**Fleer (2016)**
	FtF FtS H	SQ: The range of services is consistent with the latest innovations in banking services	Pre Pur Post	**Bahia/Nantel (2000)**; Al-Hawari/Ward (2006)
	DC	CB: Product comparison options	Pre	**Burke (2002)**
	DC	CB: Easily compare options and prices	Pre	**Verhoef/Neslin/Vrommen (2007)**; Alba et al (1997); Hoque/Lohse (1999); Ratchford et al. (2001); Burke (2002)
	FtF FtS H	SQ; SAT: Keeping customer informed as to when service will be performed	Pre Pur Post	**Rubogora (2017)**
	FtF FtS H	SQ: Are you satisfied with the bank service of sending timely bank statement?	Pre Pur Post	**Siddiqi (2011)**
	FtF FtS H	SAT: What do you think about bank's special products (leasing, factoring, bank-assurance, etc.)	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF FtS H	SAT: Special offers	Pre Pur	**Westbrook (1981)**, Deppisch (1997), Parasuraman/Zeithaml/Berry (1988); Unger/Stearns/Lesser (2015)
	FtF FtS H	SAT: Reverse transaction	Post	**Westbrook (1981);** Deppisch (1997), Unger/Stearns/Lesser (2015)
	DC	CB: Reverse transaction	Post	**Burke (2002)**
	FtF FtS H DC	SQ, SAT: Settlement channels	Pur	**Westbrook (1981);** Deppisch (1997), Burke (2002); Unger/Stearns/Lesser (2015)
	DC	CB: Online-tracking of the transaction	Pur Post	**Burke (2002)**
	FtS	SAT: Online banking facilities should be there	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtS	SQ, SAT: The information provided in the e-banking service is useful	Pre Pur Post	**Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013);** Falk (2007)
	FtS	SQ, SAT: My account information on XYZBANK's internet banking web site is well documented and clear	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtF FtS H	SAT: The information you receive form the bank is complete/sufficient/should be improved	Pre	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
Quality of service / Empathy	FtF FtS H	SQ, SAT: Employees of this bank have the knowledge to respond to problems	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SAT: Knowledge and competence of personnel	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**
	FtF FtS H	SQ, SAT: Employees who have the knowledge to answer customers' questions	Pre Pur Post	**Rubogora (2017)**; Bloemer/Ruyter/Peerers (1998); Bahia/Nantel (2000); Cox/Dale (2001); Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001); Siddiqi (2011); Chavan/Ahmad (2013); Paul/Mittal/Srivastav (2016); Levy/Hino (2016)
	DC	SQ: Competent advice and friendly staff	Pre Pur Post	**Zaharia (2006)**; Burke (2002); Schramm-Klein (2003); Verhoef et al. (2007); Fleer (2016)
	FtS	SQ: Customer service staff have professional knowledge and ability	Pre Pur Post	**Zeng/Wu (2020)**
	FtF FtS H	SQ, SAT: Employees of this bank are experienced	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SQ, SAT: Employees of this bank are polite to customers	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF H	SQ; SAT, LOY: Bank staff are friendly and polite. Customer treated respectfully and courteously	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**; Westbrook (1981); Parasuraman/Zeithaml/Berry (1985, 1988); Korte (1995); Deppisch (1997); Matzler/Sauerwein/Heischmidt (2003); Chavan/Ahmad (2013); Unger/Stearns/Lesser (2015); Hamzah/Lee/Moghavvemi (2017); Belás/Chochoľáková/Gabčová (2015); Levy/Hino (2016)
	FtF FtS H	SQ: Are you satisfied by the bank service of providing the product that best suits to you?	Pre Pur Post	**Siddiqi (2011)**

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Quality of service / Empathy	FtF FtS H	SQ: Are you satisfied by the overall service quality of your bank?	Pre Pur Post	**Siddiqi (2011)**
	FtF FtS H	SAT: The personnel provide a friendly atmosphere	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SQ, SAT: Employees of this bank instill confidence in customers	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SQ, SAT: Employees of this bank are understanding of customers	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SQ: Are you satisfied by banks service of providing customers best interest at heart?	Pre Pur Post	**Siddiqi (2011)**; Paul/Mittal/Srivastav (2016), Rubogora (2017)
	FtF FtS H	SAT: Solicitude	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF FtS H DC	SQ, SAT, LOY: Efforts for the customer	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**; Cox/Dale (2001); Verhoef/Neslin/Vroomen (2007)
	FtF FtS H	SQ, SAT: Employees of this bank serve customers in good manner	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF FtS H	SQ, SAT: There is a warm relationship between employees of this bank and customers	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF	SAT: What do you think about the appearance of the stores	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF	SAT: Cleanliness of facilities	Pre Pur Post	**Westbrook (1981)**; Deppisch (1997); Unger/Stearns/Lesser (2015)
	FtF FtS H	SAT: The bank insists on error-free records	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SAT: How often the service system appears troubles (strikes, damaged ATM, etc.)	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtF FtS H	SAT: Prompt reaction of personnel	Pre Pur Post	**Moraru/Duhnea (2018)**
	FtF H	SAT: Perceived advertising	Pre	**Westbrook (1981)**, Korte (1995); Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtF FtS H	SQ, SAT, LOY: Personalised consulting	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**
	FtF	SQ, SAT: Personal consultant	Pre Pur	**Belás/Chochoľáková/Gabčová (2015)**
	FtF H	SQ, SAT: Individual problem solution	Post	**Hamzah/Lee/Moghavvemi (2017)**; Parasuraman/Zeithaml/Berry (1985; 1988); Gagliano/Hathcote (1994); Chavan/Ahmad (2013); Paul/Mittal/Srivastav (2016)
	FtF H	CB: Customized offer	Post	**Reith (2007)**; Korte (1995)
	FtF FtS H	SQ, SAT: Employees of this bank provide individualized attention to customers	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**; Rubogora (2017)
	FtF H	SQ: Valorization of the client by personnel. Bank must offer special counter for privileged customer	Pre Pur Post	**Bahia/Nantel (2000)**; Chavan/Ahmad (2013)
	FtF	SQ: Knowledge of the client on a personnel basis	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SAT: Understanding of individual customer needs	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**
	FtF FtS H	SQ, SAT: Employees who understand the needs of their customers	Pre Pur Post	**Rubogora (2017),** Hamzah/Lee/Moghavvemi (2017)
	FtF FtS H	SQ, SAT, LOY: Proactive suggestions	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**
	FtF FtS H	SAT: Follow up	Pre Pur Post	**Paul/Mittal/Srivastav (2016)**
	FtF H	SQ: No contradictions in decisions between personnel and management	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF H	SQ, SAT: Overall impression of the sales staff	Pre Pur Post	**Korte (1995)**; Parasuraman/Zeithaml/Berry (1985, 1988); Gagliano/Hathcote (1994); Deppisch (1997)
	FtF FtS H	SQ, SAT: Employees who deal with customers in a caring fashion (appearance)	Pre Pur Post	**Rubogora (2017)**; Chavan/Ahmad (2013); Paul/Mittal/Srivastav (2016)
	FtF H	SAT: Quantity of Staff	Pre Pur Post	**Westbrook (1981)**, Deppisch (1997), Unger/Stearns/Lesser (2015)
	DC	SAT, LOY, CB: Alternative settlement	Pur	**Fleer (2016)**; Burke (2002)
	DC	CB: Good information quality	Pre	**Verhoef/Neslin/Vrommen (2007)**; Alba et al (1997); Hoque/Lohse (1999); Ratchford et al. (2001); Montoya-Weiss et al. (2003); Fleer (2016)
	FtF FtS H	SAT: Quality products and services	Pre Pur Post	**Belás/Chochoľáková/Gabčová (2015)**
	FtF	SAT: Quality of services	Pre Pur	**Bauer/Falk/Hammerschmidt (2004)**; Westbrook (1981), Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtF FtS H	SAT: My bank delivers superior service in every way	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SQ: Indications (communications) of quality	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF FtS H	SAT: The services offered by my bank are high quality	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SAT: My bank always delivers excellent overall service	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	DC	CB: Service and personal advice in the channel during the purchase	Pur	**Verhoef/Neslin/Vrommen (2007)**; Baker et al (2002), Homburg/Hoyer/Fassnacht (2002), Montoya-Weiss et al. (2003); Fleer (2016)
	FtF FtS H	SAT: Which is your opinion about the service processes	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtS DC	SQ, SAT: Bank site provides the information necessary to make informed decisions	Pre	**Montoya-Weiss et al. (2003)**

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Quality of service / Empathy	FtF	SQ: Provide easy-to-read and understandable bank statement	Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SQ: Are you satisfied with the bank statement? Is it visually clear?	Post	**Siddiqi (2011)**
	FtS	SAT: Developed network of ATMs	Pre Pur	**Belás/Chocholáková/Gabčová (2015)**
	FtS	SQ, SAT: For my online banking, XYZBANK's staff have my best interests at heart	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Han/Baek (2004); Zeng/Wu (2020)
	FtS	SQ, SAT: For my online banking, XYZBANK's staff understand my specific needs	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Han/Baek (2004); Zeng/Wu (2020)
	FtS	SQ, SAT: For my online banking, XYZBANK's staff give me personal attention	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Han/Baek (2004)
	FtS	SQ, SAT: For my online banking, the help line of XYZBANK has operating hours convenient to meet my needs	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**; Han and Baek (2004)
	FtS	SQ: The online bank can provide personalized products and services	Pre Pur Post	**Zeng/Wu (2020)**
	FtS	SQ: The online bank can timely notify users of personal events	Pre Pur Post	**Zeng/Wu (2020)**
	FtS	SQ, SAT: For my online banking, XYZBANK's staff give me prompt service	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Han/Baek (2004)
	FtS	SQ, SAT: With my online banking, XYZBANK's staff tell me exactly when the service I require will be performed	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**; Han and Baek (2004)
	DC	CB: Expected quality of the service after the purchase (delivery, assistance with problems, customized service)	Post	**Verhoef/Neslin/Vrommen (2007)**; Van Kenhove/de Wulf/Van Waterschoot (1999)
	FtF H	SQ: Bank is very responsive to customer complaints (open and timely handling of customer problems)	Post	**Zeng/Wu (2020)**; Hamzah/Lee/Moghavvemi (2017); Paul/Mittal/Srivastav (2016)
	FtF H	SQ: Bank staff are polite when handling customer complaints	Post	**Hamzah/Lee/Moghavvemi (2017)**; Bloemer/Ruyter/Peerers (1998)
	FtS	SQ: Online banking is fast for making transactions	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017);** Al-Hawari/Ward (2006); Bauer et al. (2005, 2006); Falk (2007)
	FtS	SQ: The online system makes appropriate confirmation concerning the completion of transactions	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017);** Bauer et al. (2005, 2006); Al-Hawari/Ward (2006)
	FtS	SQ: I received confirmation of every online transaction by SMS	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtS	SQ: The online banking system has a user-friendly interface	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017);** Bauer et al. (2005, 2006); Al-Hawari/Ward (2006)
	FtS	SQ: The website provides a lot of detailed help information	Pre Pur Post	**Zeng/Wu (2020);** Cox/Dale (2001); Bauer et al. (2005, 2006)
	FtS	SQ, SAT: The information on XYZBANK's internet banking web site is up-to-date	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**, Jun/Cai (2001); Yang/Fung (2004)
	FtS	SQ, SAT: XYZBANK's internet banking web site is attractive	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SQ, SAT: XYZBANK provides online services with the features I want (features)	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SQ, SAT: XYZBANK provides most of the online service functions that I need (function)	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SQ, SAT: All my online service needs are included in the menu options (menu)	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SQ, SAT: XYZBANK provides a wide range of online service packages (range)	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SAT: XYZBANK provides me many useful free online services (free)	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Jun/Cai (2001); Yang/Fung (2004); Falk (2007)
	FtS	SAT: e-banking services performance	Pre Pur Post	**Moraru/Duhnea (2018);** Falk (2007)
	FtS	SAT: Using internet banking would improve the quality of the banking transactions performed	Pre Pur Post	**Foroughi/Iranmanesh/Hyun (2019);** Falk (2007)
	FtS	SAT: Information quality and information presentation with Mobile Banking	Pre	**Chung/Kwon (2009)**
	FtS	CB: My experience with using smartphone banking was better than what I had expected	Post	**Susanto/Chang/Ha (2016)**; Bhattacherjee (2001); Kim et al. (2009)
	FtS	CB: The service level provided by smartphone banking provider was better than what I had expected (I am happy with the products/services I have bought on this m-site)	Post	**Susanto/Chang/Ha (2016)**; Bhattacherjee (2001); Kim et al. (2009); San-Martín/Prodanova/Jiménez (2015)

Category	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	**Concept and Items** (If necessary translated) SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	**Stage:** Pre-purchasing Purchase Post-purchasing	**References** and futher direct and indirect sources:
Quality of service / Empathy	FtS	SQ, CB: Overall, most of my expectations from using smartphone banking services were confirmed (I am generally happy with having bought from this m-site)	Post	**Susanto/Chang/Ha (2016)**; Bhattacherjee (2001); Kim et al. (2009); San-Martín/Prodanova/Jiménez (2015); Foroughi/Iranmanesh/Hyun (2019)
	FtF FtS H	SAT, LOY: Expertise on investment funds	Pre Pur Post	**Bloemer/Ruyter/Peerers (1998)**
Tangibles/Enjoyment/Image	FtF FtS H	SQ: Modern equipment	Pre Pur Post	**Bahia/Nantel (2000)**; Bloemer/Ruyter/Peerers (1998); Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001); Matzler/Sauerwein/Heischmidt (2003); Siddiqi (2011); Rubogora (2017); Moraru/Duhnea (2018)
	FtF FtS H	SAT: Bank implement latest technology in working	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF	SQ, SAT: Exterior of the bank is visually appealing	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF	SQ: Equipment in the bank is modern and modern-looking	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Chavan/Ahmad (2013); Rubogora (2017); Moraru/Duhnea (2018); Zeng/Wu (2020)
	FtF	SAT: Allocation of the office space	Pre Pur Post	**Westbrook (1981)**, Deppisch (1997), Unger/Stearns/Lesser (2015)
	FtF	SQ, SAT: Generosity of the overall concept	Pre Pur Post	**Westbrook (1981);** Parasuraman et al. (1985); Korte (1995); Deppisch (1997); Unger/Stearns/Lesser (2015)
	FtF	SQ: Maintain clean and pleasant branch facilities	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Bahia/Nantel (2000); Moraru/Duhnea (2018)
	FtF	SQ: Decoration of facilities	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF	SQ: Infrastructure and facilities, such as parking space and ATMs, are adequate	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**; Moraru/Duhnea (2018)
	FtF FtS H	SAT: Space availability	Pre Pur Post	**Paul/Mittal/Srivastav (2016)**
	FtF	SQ, SAT: Interior of the bank is visually attractive	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**; Moraru/Duhnea (2018)
	FtF	SQ, SAT: The interior of this bank is spacious	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF	SQ: The lobby area is comfortable while waiting for services	Pre Pur Post	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SQ: Efficacious work environment	Pre Pur Post	**Bahia/Nantel (2000)**
	FtF	SAT: Quick service of the branch	Pre Pur	**Belás/Chocholáková/Gabčová (2015)**
	FtF	SQ, SAT: Attractivity	Pre Pur Post	**Parasuraman/Zeithaml/Berry (1988)**; Westbrook (1981), Gagliano/Hathcote (1994); Korte (1995); Deppisch (1997); Loevenich (2002); Reith (2007); Unger/Stearns/Lesser (2015)
	DC	CB: Shopping atmosphere	Pre	**Zaharia (2006)**; Schramm-Klein (2003)
	FtF	SAT: Clientele (Others)	Pre Pur Post	**Westbrook (1981)**, Deppisch (1997), Unger/Stearns/Lesser (2015)
	DC	CB: Perceived shopping experiences (hedonic value of shopping)	Pre Pur	**Verhoef/Neslin/Vrommen (2007)**; Babin et al. (1994); Childers et al. (2001); Mathwick et al. (2001)
	DC	CB: Perceived use of this channel for either search or purchase by relatives and acquaintances (reference groups)	Pre Pur	**Verhoef/Neslin/Vrommen (2007)**; Alba et al. (1997); Balasubramanian et al. (2005)
	FtF FtS H	SAT: Giving customers individual attention	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF FtS H	SAT: The behavior of employees instilling confidence in their customers	Pre Pur Post	**Chavan/Ahmad (2013)**
	FtF FtS H	SAT: No charges should be cut on outstation cheques	Pur Post	**Chavan/Ahmad (2013)**
	FtF	SQ, SAT: Employees who have a neat, professional appearance	Pre Pur Post	**Rubogora (2017)**; Siddiqi (2011); Moraru/Duhnea (2018)
	FtF	SQ, SAT: Employees of the bank have neat appearances	Pre Pur Post	**Karatepe/Yavas/Babakus (2005)**
	FtF	SQ: Printed materials, such as brochures and statements are attractive	Pre	**Hamzah/Lee/Moghavvemi (2017)**
	FtF FtS H	SQ, SAT: Visually appealing materials associated with the service	Pre	**Rubogora (2017);** Albashrawi/Motiwalla (2020)
	FtF FtS H	SQ: Are you satisfied with the pamphlets distributed by the bank? Are they clear and give complete information?	Pre	**Siddiqi (2011)**
	FtF FtS H	SAT: Selection and quality of financial offering	Pre Pur Post	**Matzler/Sauerwein/Heischmidt (2003)**
	FtF FtS H	SAT: Do you believe that the bank can satisfy your future needs	Pre Pur Post	**Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)**
	FtS	SQ, SAT: XYZBANK's internet banking web site provides me with valuable information	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Cox/Dale (2001); Han/Baek (2004); Albashrawi/Motiwalla (2020)
	FtS	SQ, SAT: XYZBANK's internet banking web site allows me to find information easily	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009);** Cox/Dale (2001); Han/Baek (2004); Albashrawi/Motiwalla (2020)
	FtS	SQ, SAT: XYZBANK's internet banking web site (interface) is visually appealing	Pre Pur Post	**Rod/Ashill/Shao/Carruthers (2009)**; Cox/Dale (2001); Zeithaml et al. (2002); Han/Baek (2004); Zeng/Wu (2020); Albashrawi/Motiwalla (2020)

Category				**Concept and Items** (If necessary translated)	**Stage:**	**References** and futher direct and indirect sources:
	FtF=Face-to-face FtS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel			SQ=Service Quality; SAT = Satisfation LOY=Loyalty; CB = Consumer behaviour	Pre-purchasing Purchase Post-purchasing	
Tangibles/Enjoyment/Image		FtS		SQ: The online banking service product description can be well illustrated	Pre Pur Post	**Zeng/Wu (2020);** Albashrawi/Motiwalla (2020)
		FtS		SQ: System quality of Mobile Banking	Pur Post	**Chung/Kwon (2009)**
	FtF	FtS	H	SQ, SAT, LOY: Trouble-free cash dispenser	Post	**Bloemer/Ruyter/Peerers (1998)**
	FtF	FtS	H	LOY: Say positive things about Banks..... to other people	Post	**Siddiqi (2011)**
	FtF	FtS	H	LOY: Encourage friends and relatives to do business with Bank.....	Post	**Siddiqi (2011)**
	FtF	FtS	H	LOY; Intend to continue doing business with Bank.....	Post	**Siddiqi (2011)**
	FtF	FtS	H	LOY; Have strong preference on this Bank	Post	**Siddiqi (2011)**
	FtF	FtS	H	LOY; Consider Bank..... as my primary Bank	Post	**Siddiqi (2011)**
		FtS		SQ: The entity bank that this net bank relies on has very good brand image	Pre Pur Post	**Zeng/Wu (2020)**
			DC	SAT, LOY: Design of the product information (positive look and feel)	Pre	**Fleer (2016);** Montoya-Weiss et al. (2003)
			DC	SAT, LOY: Design of the online interface	Pre	**Fleer (2016);** Montoya-Weiss et al. (2003)
	FtF		H	SQ: Reputation risk	Pur Post	**Pararusaman/Zeithaml/Berry (1985)**

Appendix 2: Key Factors of Channel Integration

Category	**Concept and Items** (If necessary translated)	**References** and futher direct and indirect sources:
Strategic integration	Implementing cross-functional and transversal management (convergence process)	**Picot-Coupey et al. (2016);** Saghiri et al. (2017)
	Blurring channels into a unique one with various touch points	**Picot-Coupey et al. (2016)**
	Moving from a web culture to a web/ physical culture	**Picot-Coupey et al. (2016)**
	Encouraging more flexibility and cooperation	**Picot-Coupey et al. (2016)**
	Breaking silos and barriers between touch points	**Picot-Coupey et al. (2016)**
	Developing a shared internal culture, common to any touch point	**Picot-Coupey et al. (2016)**
	Focussing on one goal: the success of the brand	**Picot-Coupey et al. (2016)**
	Holistic management	**Picot-Coupey et al. (2016);** Saghiri et al. (2017)
	Decision-making style	**Picot-Coupey et al. (2016)**
	Convincing the staff	**Picot-Coupey et al. (2016)**
	Mutualizing operational modes	**Picot-Coupey et al. (2016)**
	Favoring mutual understanding	**Picot-Coupey et al. (2016)**
	Developing new methods of evaluation	**Picot-Coupey et al. (2016)**
	Finding sales person support	**Picot-Coupey et al. (2016)**
	Defining the level of flexibility of the retailing mix across channels and touch points	**Picot-Coupey et al. (2016)**
	Leveraging financial resources to support the operations necessary to overcome the challenges	**Picot-Coupey et al. (2016)**
Integrated promotion	Clear and visible association of brand names (incl. logos and possiblys logans) across channels (either by using same name or cross-branding)	**Goersch (2002);** Schoenbachler & Gordon (2002)**;** Schramm-Klein (2003); Kwon/Lennon (2009); Bauer/Eckardt (2010); Yan et al. (2010); Picot-Coupey et al. (2016); Saghiri et al. (2017); Zhang et al. (2018)
	I can find the promotions that are taking place in the physical store on the retailer's Website	**Zhang et al. (2018);** Picot-Coupey et al. (2016)
	Each channel should be utilized to actively cross-promote other channels and so create a sense of a ubiquitous brand identity	**Saghiri et al. (2017)**
	I can find advertisements of the retailer's Website on the pamphlets, receipts, and carrying bags in its physical store	**Zhang et al. (2018)**
	Web site name (URL should be found by typing the name of the company)	**Goersch (2002)**
	Advertising	**Schramm-Klein (2003)**
	Design/layout/atmosphere	**Schramm-Klein (2003);** Goersch (2002)
	Implementing a flexible replication of the physical and electronic stores layouts	**Picot-Coupey et al. (2016)**
	I can find the address and contact information of the physical store on the retailer's Website	**Zhang et al. (2018)**
	Encouraging channel switching: explicit advice on services available offline or in other channels; advertisement of offline events; easy print-out of product information	**Goersch (2002)**
	Availability of references to alternative channels in all channels	**Schramm-Klein (2003);** Bendoly et. al (2005)
Integrated product and price	I can find consistent product descriptions in the retailer's physical store and Website	**Zhang et al. (2018);** Emrich (2015); Saghiri et al. (2017)
	Product information valid for all channels in all channels	**Schramm-Klein (2003);** Goersch (2002); Bendoly et. al (2005); Seck/Philippe (2013); Saghiri et al. (2017)
	I can find consistent product category classifications in the retailer's physical store and Website	**Zhang et al. (2018);** Emrich (2015); Picot-Coupey et al. (2016)
	Offering most products that can be obtained in other channels	**Goersch (2002);** Seck/Philippe (2013)
	Product range	**Schramm-Klein (2003);** Bauer/Eckardt (2010), Beck/Rygl (2015)
	When I use different channels of my bank, I receive consistent quality for my banking needs	**Kabadayi et al. (2017)**
	When I switch from one channel to another for my banking needs, my experience is usually seamless.	**Kabadayi et al. (2017)**
	Regardless of the channel that I use for my banking needs, I can still fulfil my banking needs	**Kabadayi et al. (2017)**
	Orientation possibilities in all channels through awareness of product ranges and services	**Schramm-Klein (2003); Emrich (2015)**
	Online offering of additional product types	**Goersch (2002); Emrich (2015)**
	I can find consistent product price in the retailer's physical store and Website	**Zhang et al. (2018);** Picot-Coupey et al. (2016)

Category	**Concept and Items** (If necessary translated)	**References** and futher direct and indirect sources:
Integrated product and price	Synchronized products' prices, changes in them (e.g. discounts) are visible for consumers and other members of the omni-channel system	**Saghiri et al. (2017)**
	Price information valid for all channels in all channels	**Schramm-Klein (2003)**
	I can find consistent discounts in the retailer's physical store and Website	**Zhang et al. (2018)**
	Price level	**Schramm-Klein (2003);**Bauer/Eckardt (2010); Hsiao et al. (2012); Beck/Rygl (2015)
	Degree to which a customer receives the same response to a query posed through different channels	**Sousa/Voss (2006)**
Integrated order placement and fulfillment	I can do a large number of remote transactions	**Seck/Philippe (2013)**
	Business hours/Access	**Schramm-Klein (2003);** Hsiao et al. (2012)
	Encouraging cross-channel purchases	**Goersch (2002)**
	Degree to which customers can choose alternative channels for a given service	**Sousa/Voss (2006);** Seck/Philippe (2013), Herhausen et al. (2015)
	Degree to which customers can accomplish preferred tasks through individual channels	**Sousa/Voss (2006);** Picot-Coupey et al. (2016)
	Degree to which customers are aware of the existence of all available channels and associated services	**Sousa/Voss (2006);** Picot-Coupey et al. (2016)
	Degree to which customers are aware of differences between service attributes across different channels	**Sousa/Voss (2006);** Seck/Philippe (2013)
	I can redeem the retailer's gift coupons or vouchers in its physical store or Website	**Zhang et al. (2018)**
	I can self-collect my online purchases in the retailer's physical store	**Zhang et al. (2018)**
	I can pick up my online purchases in any physical store of the retailer	**Zhang et al. (2018)**
	I can make payment for my online purchases in the retailer's physical store	**Zhang et al. (2018)**
	I can place orders for out-of-stock items in the retailer's physical store through its Internet kiosks	**Zhang et al. (2018)**
	Allowing the persistent customer basket	**Picot-Coupey et al. (2016)**
	Multiplying touch points	**Picot-Coupey et al. (2016)**
	Payment instruments such as cash, check, cards, coupons, gift cards, postal orders, and electronic transfer, and linking them with authorization mechanisms such as PIN number, verification code, and signature	**Saghiri et al. (2017)**
	Transaction integration may also imply a secure accessibility to consumer transaction data via various channels	**Saghiri et al. (2017)**
Integrated transaction information	I can access both my online and offline purchase history with the retailer	**Zhang et al. (2018)**
	I can access my prior purchase history with the retailer	**Zhang et al. (2018)**
	Providing customers with access to personal information pertaining also to other channels (e.g., information on past purchases, email news letters)	**Goersch (2002)**
	On the site of the bank, I can communicate with a person of the bank if need be there	**Seck/Philippe (2013)**
	Provision of information on offline transactions; pending offline transactions modifiable and cancelable	**Goersch (2002)**
	I can receive future purchase recommendations from the retailer	**Zhang et al. (2018)**
	Adjustment of product selection, recommendations, and services based on information collected in all channels	**Goersch (2002)**
	Traceability, tractability, and changeability of product, consumer, stock keeping point(s), delivery point(s), and transport mode(s) across all channels.	**Saghiri et al. (2017)**
	Provision of information on order and delivery status (also for products ordered offline)	**Goersch (2002)**
	I can receive a customized Web page	**Zhang et al. (2018)**

Category	**Concept and Items** (If necessary translated)	**References** and futher direct and indirect sources:
Integrated information access	I can search for products in the retailer's physical store through its Website	**Zhang et al. (2018)**
	Provision of information on other channels: store addresses, opening hours, and phone numbers; information on how to get in touch with customer support in different channels; store locators; information on call centers	**Goersch (2002);** Picot-Coupey et al. (2016)
	When I switch from one channel to another for my banking needs, I find my information readily available in all channels	**Kabadayi et al. (2017)**
	Scope and quality of information	**Schramm-Klein (2003);** Bauer/Eckardt (2010)
	I can check of the retailer's inventory status at the physical store through its Website	**Zhang et al. (2018)**
	I can access the information and functionalities on the retailer's Website through the Internet kiosks in its physical store	**Zhang et al. (2018)**
	I can find answers through the Internet kiosks in the retailer's physical store without making enquiries from in-store service assistants	**Zhang et al. (2018)**
	Degree to which an interaction taking place through one channel takes into account eventual past interactions through other channels	**Sousa/Voss (2006)**
	Allow consumers to receive nonproduct information on their stores (e.g., driving directions) via e-mail contact or other electronic communication made available through their Web sites.	**Bendoly et. al (2005)**
	Developing bridges	**Picot-Coupey et al. (2016)**
Integrated customer service	Integrated delivery/pickup processes	**Schramm-Klein (2003);** Burke (2002); Bendoly et. al (2005); Bauer/Eckardt (2010); Goersch (2010); Beck/Rygl (2015); Herhausen (2015); Bernon et al. (2016); Saghiri et al. (2017)
	I can return, repair or exchange of products purchased online in the retailer's physical store	**Zhang et al. (2018)**
	I can get post-purchase services support for the products purchased at the retailer's physical stores from its Website	**Zhang et al. (2018)**
	Regardless of the channel that I use for my banking needs, I get the same quality of service	**Kabadayi et al. (2017)**
	I can access to the service assistant through a real-time chat program through the retailer's Website	**Zhang et al. (2018)**
	Online offering of accessories and product support	**Goersch (2002)**
	Consulting	**Schramm-Klein (2003)**
	Courtesy hold-on	**Goersch (2002)**
	All service providers should be aware of and communicate the consumer expectation and service standards properly	**Saghiri et al. (2017)**
	Degree of consistency in relevant and comparable process attributes (relative to expectations) across channels (e.g., service's feel, image, waiting times, employee discretion levels, prices, discounts, customer support, and policies)	**Sousa/Voss (2006);** Goersch (2002); Chiu et al. (2011)
	Same or compatible service standards which are delivered by all members of the omni-channel, whether the service is provided prior to the purchase, during the purchase, in the product delivery, or in the product return stage	**Saghiri et al. (2017)**
	Implementing a flexible replication of services	**Picot-Coupey et al. (2016)**
	Have employees at their stores that are knowledgeable and helpful regarding the use of their Web sites.	**Bendoly et. al (2005)**
	Provision of informational services supporting a customers value creation	**Goersch (2002)**
	Provision of convenience services	**Goersch (2002)**
	Developing a holistic CRM (better exploitation of databases)	**Picot-Coupey et al. (2016)**
Integration deficits	The simultaneous use of shops and online shop in the purchase process is not seamless and rather complicated.	**Bauer/Eckardt (2010);** Fleer (2016)
	Understandment that online shop and business do not support each other, but compete with each other	**Bauer/Eckardt (2010);** Fleer (2016)
	Available distribution channels do not complement easily in the purchasing process	**Bauer/Eckardt (2010);** Fleer (2016)

Appendix 3: Questionnaire Translated into English

This survey is directed at customers with a banking relationship with a Volksbank Raiffeisenbank (VR-Bank).

Thank you very much for giving me about 20 minutes of your time to to support scientific questioning. This is part of my doctoral thesis at the Hamburger Fernhochschule (HFH) in cooperation with the University of Kaposvár.

My interest in this research project is to analyse your satisfaction before, during and after the purchase of financial services as well as your general overall satisfaction.
Furthermore, integration of distribution channels is an important part of this survey. Your data will be collected and evaluated completely anonymously.

If you have any questions, please do not hesitate to contact me at: omni-channel-banking@web.de

With kind regards,

Michael Menrad

1. Which VR Bank touchpoints have you used generally in the last 12 months (multiple answers possible)

- ☐ Branch office (personal contact)
- ☐ Online banking / online branch
- ☐ VR-BankingApp
- ☐ Homepage
- ☐ E-Mail
- ☐ Service terminals & ATM
- ☐ Telephone banking
- ☐ Personal contact at your home
- ☐ Letter or personal cover letter
- ☐ Social networks (e.g. Facebook)
- ☐ SMS, WhatsApp, iMessage
- ☐ Video consultation/video chat

2. Please select one financial service for the further progress of this survey where your contact with VR Bank has been most intensive in the **last 12 months** due to your need for information.

- ○ **Financial advice** e.g. financial investments, certificates, equities, funds, insurance, building society savings, leasing
- ○ **Cash custody** e.g. overnight money, time deposits, savings deposits, deposit services, safe deposit boxes, account opening
- ○ **Financing** e.g. loans, mortgage financing, consumer credits, current account credit, guarantees, sureties
- ○ **Payment transactions** e.g. issue of an credit card, Apple Pay, paydirekt, foreign exchange, Foreign bank transfer (Not Euro!)

3. Which touchpoints did you use for this specific search for information? (multiple answers possible)

- [ ] Branch office (personal contact)
- [ ] Online banking / online branch
- [ ] VR-BankingApp
- [ ] Homepage
- [ ] E-Mail
- [ ] Service terminals & ATM
- [ ] Telephone banking
- [ ] Personal contact at your home
- [ ] Letter or personal cover letter
- [ ] Social networks (e.g. Facebook)
- [ ] SMS, WhatsApp, iMessage
- [ ] Video consultation/video chat

4. Which of the statements apply to your search for information?

	Do not agree at all 1	2	3	4	Strongly agree 5
I informed myself in detail before the purchase.	○	○	○	○	○
I have used a variety of information sources.	○	○	○	○	○
The informations of my VR Bank were important for me.	○	○	○	○	○

5. How important were other sources of information?

	Do not agree at all 1	2	3	4	Strongly agree 5
Comparison portals (e.g. check24, verivox)	○	○	○	○	○
Friends, acquaintances and relatives	○	○	○	○	○
Newspaper articles, social networks (Facebook, Xing etc.)	○	○	○	○	○
Field reports from customers	○	○	○	○	○
Information from competitors (online, personal contact)	○	○	○	○	○

6. In detail, how satisfied were you with

	Completely dissatisfied 1	2	3	4	Completely satisfied 5
the availability and quantity of information.	○	○	○	○	○
the content quality and visual design of the information.	○	○	○	○	○
the convenience of access to the information.	○	○	○	○	○
the scope of the product range.	○	○	○	○	○
the professional competence, the competence impression of the employees.	○	○	○	○	○
the design of the branch, online branch, VR-BankingApp.	○	○	○	○	○
the information provided on opportunities and risks arising from the financial products.	○	○	○	○	○
the friendliness, politeness and interest of employees.	○	○	○	○	○

7. How do the statements apply to the search for information at your VR Bank?

	Do not agree at all 1	2	3	4	Strongly agree 5
In my search for information, I was generally satisfied with VR Bank.	○	○	○	○	○
The information provided fully met my expectations.	○	○	○	○	○
My decision to contact VR Bank for this service was correct.	○	○	○	○	○

8. From which bank did you finally purchase the financial service?

- ◯ Volksbank Raiffeisenbank (VR Bank)
- ◯ Savings bank
- ◯ Private bank
- ◯ Online bank
- ◯ None of these banks

9. What are the reasons for your decision to switch to another bank?

1 _____

2 _____

3 _____

10. Which touchpoint did you select for the final purchase at the bank?

- ◯ Branch office (personal contact)
- ◯ Online banking / online branch
- ◯ BankingApp
- ◯ E-Mail
- ◯ Service terminals & ATM
- ◯ Telephone banking
- ◯ Personal contact at your home

11. Which touchpoint did you select for the final purchase at VR Bank?

- ◯ Branch office (personal contact)
- ◯ Online banking / online branch
- ◯ VR-BankingApp
- ◯ E-Mail
- ◯ Service terminals & ATM
- ◯ Telephone banking
- ◯ Personal contact at your home

12. In detail, how satisfied were you with

	Completely dissatisfied 1	2	3	4	Completely satisfied 5
the access to your selected touchpoint.	○	○	○	○	○
the comfortable and uncomplicated order execution.	○	○	○	○	○
the accuracy of the execution.	○	○	○	○	○
the customer friendliness and further support.	○	○	○	○	○
the general atmosphere and the lifestyle of the bank.	○	○	○	○	○
the credibility and creditworthiness (deposit protection) of the bank.	○	○	○	○	○
the data protection and security standards.	○	○	○	○	○
the professional competence, the competence impression of the employees.	○	○	○	○	○

13. How do the statements apply to the purchase at your VR Bank?

	Do not agree at all 1	2	3	4	Strongly agree 5
I was generally satisfied with the purchase at VR Bank.	○	○	○	○	○
The purchase by VR Bank fully met my expectations.	○	○	○	○	○
My decision to purchase this service from VR Bank was correct.	○	○	○	○	○

14. What reasons were primarily decisive for the purchase at your VR Bank? (multiple selection possible)

- [ ] VR Bank is my principal bank and I have had positive experience with it.
- [ ] Advice and comprehensibility of the offers were convincing.
- [ ] The extensive range of services meets the requirements.
- [ ] The Cooperative Financial Group is convincing to me.
- [ ] The conditions were right.
- [ ] Despite better offers, I still chose VR Bank.

15. How satisfied were you in detail after the purchase with

	Completely dissatisfied 1	2	3	4	Completely satisfied 5
the commitment and interest of the employees even after the confirmation of the transaction.	○	○	○	○	○
the customer friendliness and the comprehensibility of the confirmation of the transaction.	○	○	○	○	○
the professional competence, the impression of competence of the employees (also when solving problems).	○	○	○	○	○
the accessibility and prompt transfer to the right person or solution.	○	○	○	○	○
the further arrangement of conditions (no hidden costs).	○	○	○	○	○
the further support (VR Bank contacts me if it is necessary and important for me)	○	○	○	○	○
the data security, confidentiality and discretion.	○	○	○	○	○
the error-free execution of orders.	○	○	○	○	○

16. How do the statements in the after-sales service apply to your VR Bank?

	Do not agree at all 1	2	3	4	Strongly agree 5
Even after purchasing the financial services, I am still satisfied with VR Bank.	○	○	○	○	○
Also in the aftercare my expectations are fully met.	○	○	○	○	○
Aftercare also confirms my purchase decision.	○	○	○	○	○

17. How intensively do you perceive the integration of the touchpoints at VR Bank?

	Do not agree at all 1	2	3	4	Strongly agree 5
I can obtain product information on all touchpoints.	○	○	○	○	○
I get a consistently high quality on all touchpoints.	○	○	○	○	○
Orders can be placed and changed across all channels.	○	○	○	○	○
I can track order completion and order status transparently across all channels.	○	○	○	○	○
My order history is available at every channels.	○	○	○	○	○

18. How do the statements apply to your perception of channel integration?

	Do not agree at all 1	2	3	4	Strongly agree 5
I perceive the touchpoints as one seamless unit.	○	○	○	○	○
The distribution channels complement each other easily in the purchasing process and I gain more flexibility.	○	○	○	○	○
The simultaneous use of different channels at VR Bank is uncomplicated.	○	○	○	○	○

19. How do the statements apply to your overall satisfaction with VR Bank?

	Do not agree at all 1	2	3	4	Strongly agree 5
I am satisfied overall with VR Bank.	◯	◯	◯	◯	◯
My expectations are fully met.	◯	◯	◯	◯	◯

20. Please evaluate your future behavioral intentions.

	Do not agree at all 1	2	3	4	Strongly agree 5
If I purchase a financial service in the future, I will use the same VR Bank touchpoint again.	◯	◯	◯	◯	◯
If I purchase a financial service in the future, I will use one of the VR Bank touchpoints again.	◯	◯	◯	◯	◯
I will also request future financial services from VR Bank.	◯	◯	◯	◯	◯
I will continue to use VR Bank's range of services at least to the same extent.	◯	◯	◯	◯	◯
I will recommend VR Bank to friends, relatives or acquaintances.	◯	◯	◯	◯	◯

21. How many bank relationships do you actively use?

◯ 1 ◯ 2 ◯ 3 ◯ 4 or more

22. Please indicate your current professional activity

◯ Working full time
◯ Working part time
◯ Student / Pupil
◯ Housewife or houseman
◯ Retired
◯ None of the information is correct

23. Please indicate your age

◯ Up to 20 ◯ 20-29 ◯ 30-39 ◯ 40-49 ◯ 50-59 ◯ 60-69 ◯ Over 70 ◯ None specified

24. Please indicate your gender

◯ female ◯ male

25. How many people belong to your household?

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 or more

26. Please indicate your highest school leaving certificate

◯ No school-leaving qualification

◯ Hauptschulabschluss / Secondary school (school year 5 to 9)

◯ Mittlere Reife / Secondary school

◯ Abitur, Hochschulreife / Grammar school

◯ Hochschulabschluss / Graduate degree

27. Please indicate your approximate monthly net household income

◯ Up to 1.500 €

◯ 1.501 - 3.000 €

◯ 3.001 - 5.000 €

◯ 5.001 - 7.500 €

◯ More than 7.500 €

◯ None specified

If you have any questions regarding this survey, please contact me at: omni-channel-banking@web.de

Kind regards,
Michael Menrad

Appendix 4: Cover Letter to Participation

Information for participants in the survey „***Omni-channel banking in context to customer satisfaction and loyalty along the financial services process" in brief "Omni-channel banking"***

In the context of my doctoral thesis I kindly appreciate your support by answering the following questionnaire.

My name is Michael Menrad, I am a doctoral student in the Ph.D. program in Business Administration and Management, which is jointly operated by the Hamburger Fernhochschule (HFH) and the University of Kaposvár. In my doctoral thesis I will examine **your satisfaction and loyalty as a bank customer** in the distribution channels of the banks.

Bank distribution channels that are today integrated to your advantage are called omni-channels. Ultimately, this means all touchpoints available at your bank, either in the *local branch*, through *online banking*, *mobile apps*, *telephone banking* or any other *direct or indirect touchpoints* with your bank.

My interest in this research project is to analyse your **satisfaction before**, **during** and **after** the **purchase** (thus the use) of financial services.

The survey is available under the following link until TT.MM.2020.

Link

I would like to point out explicitly that this research project serves exclusively scientific purposes. The results of the study will be published in a scientific paper and presented at conferences. The survey service provider naturally also complies with the General Data Protection Regulation (GDPR). The data transmitted will be treated in strict confidence and will not be passed on to third parties. The evaluation is completely anonymous. You will not need more than 15 minutes to answer all questions.

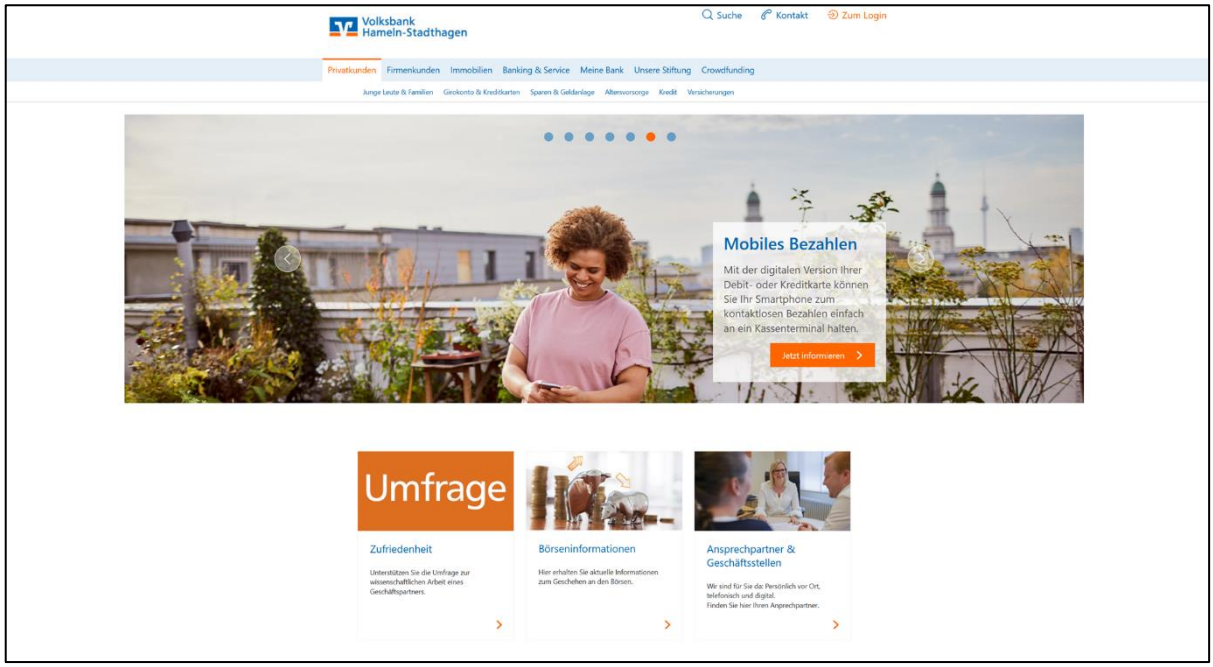
I would be very pleased if you would spend the time for me to support my scientific work. If you have any questions regarding this investigation, please contact me by e-mail at:

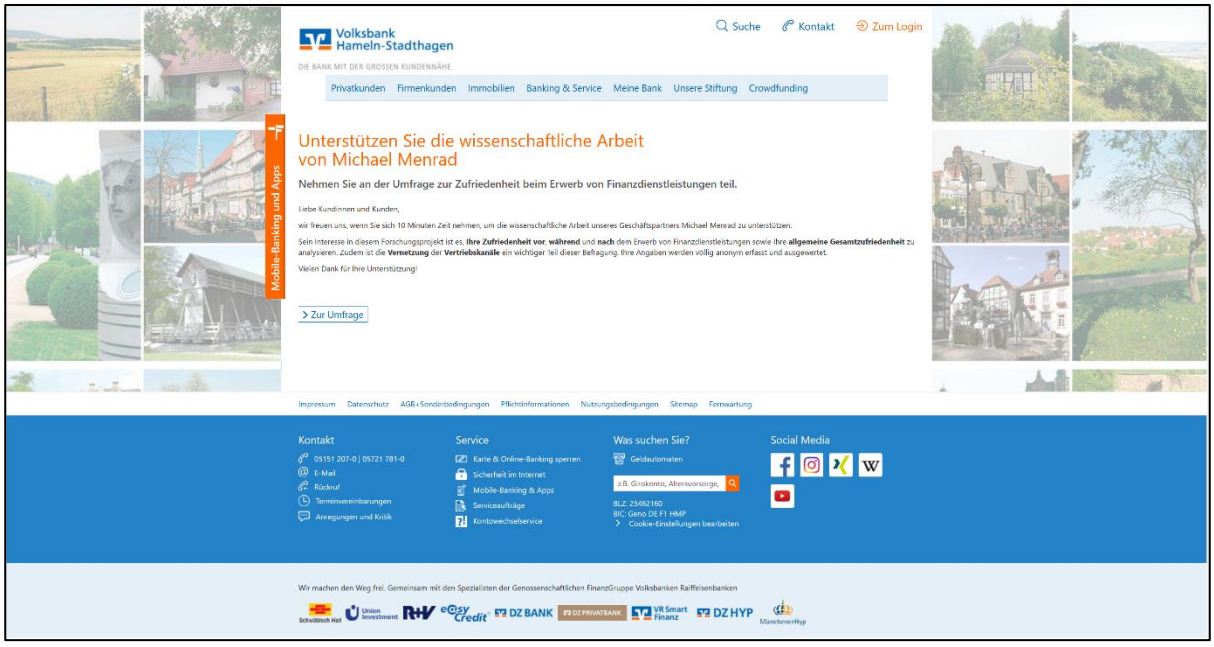
omni-channel-banking@web.de.

Kind regards,
Michael Menrad
Hamburger Fernhochschule (HFH)
Betriebswirtschaft und Management Promotionsstudium (Ph.D.)
Alter Teichweg 19
22081 Hamburg

Appendix 5: Survey Marketing and Survey Multipliers

https://www.volksbank-hameln-stadthagen.de/privatkunden-startseite.html





Appendix 6: Test for Normal Distribution

Tests of Normality									
							Kolmogorov-Smirnov[a]		Shapiro-Wilk
	Mean	Median	Variance	Skewness (s_S)	Kurtosis (s_K)	Min/Max	Sig.*	df	Sig.*
C5_1	3,780	4,000	0,636	-0,502	0,492	1/5	0,000	250	0,000
C5_2	3,420	3,000	0,806	-0,081	0,351	1/5	0,000	250	0,000
C5_3	3,920	4,000	0,816	-0,624	-0,133	1/5	0,000	250	0,000
C5_4	3,670	4,000	0,727	-0,333	-0,071	1/5	0,000	250	0,000
C5_5	3,740	4,000	0,932	-0,430	-0,279	1/5	0,000	250	0,000
C5_6	3,900	4,000	0,661	-0,584	0,528	1/5	0,000	250	0,000
C5_7	4,190	4,000	0,804	-0,986	0,543	1/5	0,000	250	0,000
C5_8	4,190	4,000	0,686	-0,756	0,072	1/5	0,000	250	0,000
C6_1	3,740	4,000	0,488	-0,527	1,234	1/5	0,000	250	0,000
C6_2	3,720	4,000	0,774	-0,481	0,106	1/5	0,000	250	0,000
C6_3	3,970	4,000	0,558	-0,570	0,551	1/5	0,000	250	0,000
Db2_1	3,650	4,000	1,169	-0,608	-0,571	1/5	0,000	250	0,000
Db2_2	3,830	4,000	0,850	-0,458	-0,437	1/5	0,000	250	0,000
Db2_3	4,000	4,000	0,707	-1,063	1,970	1/5	0,000	250	0,000
Db2_4	3,960	4,000	0,886	-0,743	0,134	1/5	0,000	250	0,000
Db2_5	3,680	4,000	0,750	-0,031	-0,388	1/5	0,000	250	0,000
Db2_6	4,390	5,000	0,665	-1,148	0,634	1/5	0,000	250	0,000
Db2_7	4,070	4,000	0,710	-0,584	-0,150	1/5	0,000	250	0,000
Db2_8	3,690	4,000	1,041	-0,564	0,009	1/5	0,000	250	0,000
Db3_1	3,720	4,000	0,574	-0,537	0,750	1/5	0,000	250	0,000
Db3_2	3,660	4,000	0,836	-0,672	0,431	1/5	0,000	250	0,000
Db3_3	3,960	4,000	0,669	-0,762	1,075	1/5	0,000	250	0,000
E1_1	3,480	4,000	1,174	-0,740	-0,043	1/5	0,000	250	0,000
E1_2	3,700	4,000	0,828	-0,637	0,359	1/5	0,000	250	0,000
E1_3	3,560	4,000	1,002	-0,602	0,255	1/5	0,000	250	0,000
E1_4	3,430	4,000	1,283	-0,491	-0,446	1/5	0,000	250	0,000
E1_5	3,830	4,000	0,703	-0,252	-0,373	1/5	0,000	250	0,000
E1_6	3,780	4,000	1,345	-0,933	0,195	1/5	0,000	250	0,000
E1_7	4,160	4,000	0,633	-0,584	-0,139	1/5	0,000	250	0,000
E1_8	3,860	4,000	1,096	-1,022	0,847	1/5	0,000	250	0,000
E2_1	3,620	4,000	0,846	-0,744	0,637	1/5	0,000	250	0,000
E2_2	3,560	4,000	1,074	-0,794	0,400	1/5	0,000	250	0,000
E2_3	3,780	4,000	1,050	-0,826	0,493	1/5	0,000	250	0,000
F1_1	3,800	4,000	0,908	-0,601	-0,007	1/5	0,000	250	0,000
F1_2	3,520	4,000	0,933	-0,313	-0,365	1/5	0,000	250	0,000
F1_3	3,540	4,000	0,916	-0,505	0,082	1/5	0,000	250	0,000
F1_4	3,280	3,000	1,198	-0,223	-0,685	1/5	0,000	250	0,000
F1_5	3,580	4,000	0,927	-0,663	0,298	1/5	0,000	250	0,000
F2_1	3,440	4,000	0,850	-0,613	0,231	1/5	0,000	250	0,000
F2_2	3,760	4,000	0,842	-0,543	0,118	1/5	0,000	250	0,000
F2_3	3,580	4,000	0,887	0,553	0,161	1/5	0,000	250	0,000
G1_1	3,640	4,000	0,641	-0,773	0,755	1/5	0,000	250	0,000
G1_2	3,600	4,000	1,053	-0,745	0,104	1/5	0,000	250	0,000
G2_1	3,210	3,000	1,322	0,145	-0,935	1/5	0,000	250	0,000
G2_2	4,190	4,000	0,855	-1,098	0,835	1/5	0,000	250	0,000
G2_3	4,150	4,000	0,844	-1,089	0,921	1/5	0,000	250	0,000
G2_4	3,780	4,000	1,029	-0,649	0,003	1/5	0,000	250	0,000
G2_5	3,900	4,000	1,443	-1,003	0,172	1/5	0,000	250	0,000

a. Lilliefors Significance Correction

* Significance level α for H_0: p>0,05

Appendix 7: PLS-SEM Structural Model