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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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1 Research Background and Objective

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 in 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.

1.1 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?

1.2 Summary of the Hypotheses

In this subsection, the hypotheses for this dissertation, are summarised, 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.

- *H(1): Pre-purchase customer satisfaction has a positive impact on customer overall satisfaction with an omni-channel bank. Korte (1995); Siefke (1998); Fler (2016).*
- *H(2): Purchase customer satisfaction has a positive impact on customer overall satisfaction with an omni-channel bank. Korte (1995); Siefke (1998); Fler (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); Fler (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 and Eckardt (2010); Seck and Philippe (2013); Fler (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 and Eckardt (2010); Fler (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); Fler (2016).*
- *H(10): Purchase customer satisfaction has a positive impact on customer loyalty to an omni-channel bank. Burmann (1991); Korte (1995); Fler (2016).*
- *H(11): Post-purchase customer satisfaction has a positive impact on customer loyalty to an omni-channel bank. Burmann (1991); Korte (1995).*

2 Materials and Methods

A theoretical framework in omni-channel research on customer satisfaction and loyalty, considering the purchasing process of bank customers, is not yet available. 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. 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). 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. This dissertation mainly follows a deductive approach that is based on the research objectives, 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.

2.1 Methodological Choice and Research Strategy

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 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 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. In order to ensure that only those bank customers were administered the survey who are very likely to be able to handle digital banking in the purchasing process, an Internet questionnaire, which was supported by e-mails from banks, was selected as the survey method.

2.2 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. 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. 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**. 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. The translated questionnaire has been included in **Appendix 3b**. The questionnaire

is structured over eight thematic sectors (A–H), which investigate different sub-areas. The structure and logic of the questionnaire are shown in the **Appendix 3a**. 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) and was elaborated and subsequently examined in sub-area D (sub-area D1 of the questionnaire) (Appendix 3a). 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. 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 complex financial service where they had an interest in information and had obtained information on this from the VR bank. 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**.

2.3 Sampling Strategy

The questionnaire was developed on the *SurveyMonkey* platform. 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. 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. Missing data by design was applied intentionally in this dissertation as filter questions and navigation questions were used in the questionnaire. 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. 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, 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). The

research survey started at the end of July 2020, and the questionnaire was closed at the end of September 2020. The study was also published and distributed on social networks and platforms 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.

2.4 Data Analysis and Analytical Strategy

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 structured equation model (SEM). To analyse this data set and to clarify the research questions, *SmartPLS 3* 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. 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).

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). 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).

2.4.1 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. 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). Most commonly, *Measure of Sampling Adequacy (MSA)*¹ is used at the variable level to verify how far variables belong together, but also *communalities*² 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*³ and the *Bartlett test*⁴ 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 and values less than 0,5 need to be rejected (Backhaus et al., 2018, p. 379). With regard to factor extraction, the *Principal Component Analysis (PCA)*⁵ is used methodically, assuming that the variance of the initial variables can be fully reproduced by uncorrelated factors (Jolliffe, 2002, p. 1). *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 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

¹ For detailed description see Cerny and Kaiser (1977).

² The influence of communality in EFA was investigated by Hogarty et al. (2005).

³ For detailed description Kaiser and Rice (1974).

⁴ For detailed description see Bartlett (1937).

⁵ PCA has been presented in greater detail by Jolliffe (2002).

acceptable. For PLS-SEM, the examination of *internal consistency reliability* by means of *composite reliability* is more consistent, since individual reliability is prioritised in PLS-SEM (Hair et al., 2017, p. 96). Composite reliability is interpreted in the same way as Cronbach's Alpha. The internal consistency of a construct can be tested using *item-total correlation (CITC)*. Indicators with low values (indicator < 0,5) can be eliminated according to Churchill (1979, p. 68). 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 (Fornell & Larcker, 1981, p. 45; Götz et al., 2010, p. 696; Hair et al., 2017, p. 97). 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 (Hulland, 1999, p. 198). In addition to the value of loading, the significance should be determined. 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). According to Henseler et al. (2015) thresholds larger than 0,9 to 1 are considered critical. Additionally, a statistical test for discriminant validity can be implemented. Finally, *content validity* cannot be determined 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.

2.4.2 Evaluation of Formative Constructs

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). *Proportion of substantive agreement (p_{sa})* can take values from 0 to 1, and *substantive-validity coefficient (c_{sv})* -1 to 1. Larger values indicates a greater validity of the content. To test multicollinearity for the indicators of a formative measurement model, a multiple regression is carried out for each indicator. Variance Inflation Factor (VIF), is usually used to test multicollinearity, according to Weiber and Mühlhaus (2014, p. 262). In PLS path modelling, Hair et al. (2017, p. 126) propose that VIF values up to five should be considered as uncritical. 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 ($Y_n^{\text{formative}}$ items) correlates positively with an alternative measurement of the

same construct based on other items ($Y_n^{\text{reflective}}$ items) (Hair et al., 2017). Path coefficient of the two constructs should have a value of, at least, .7 (Hair et al., 2017, p. 131). 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.

2.4.3 Evaluation of the Structural Model

In lieu of testing GoF⁶, a structural model was evaluated using primarily heuristic criteria that assessed the model's predictive power (Hair et al., 2017, p. 165). Initially, the latent exogenous variables in the structural model were tested for *multicollinearity* (Grewal et al., 2004, p. 519; Hair et al., 2017, p. 167). Each set of driver constructs were tested 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). 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). The significant path coefficients, which agreed in sign with the hypothesis, confirmed the hypothesis (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 (Hair et al., 2017, p. 170). Hair et al. (2017, p. 171) has identified R^2 values of 0,75 as substantial, 0,5 as moderate and values of 0,25 as weak. 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_{incl}^2) and then without (R_{excl}^2). 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). The Q^2 values > 0 indicate the prediction relevance of the path model for a reflectively measured construct. Q^2 values can be modified (path related *Stone-Geisser criterion* [q_{ij}^2]) to evaluate the predictive power of individual path relationships (Weiber & Mühlhaus, 2014, p. 330).

⁶ 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.

3 Research Findings

This chapter presents the empirical verification of the causal model established and operationalised.

3.1 Descriptive Analysis

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. 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. A generalisation of the results of this study cannot be made without any restrictions. 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. The statistical tests for univariate normal distribution include the *Kolmogorov–Smirnov test* (KS test) or the *Shapiro-Wilk test* (SW test). **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. 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).

3.1.1 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. About 36,9% of the participants chose *financing* for

this study. Examples on financial services are described in the questionnaire, **Appendix 3b, question 2**. Almost one-third (32,2%) of the participants chose *financial advice* for this study. *Payment transactions*, were selected by 16,9% of the participants. Finally, 14,1% of respondents chose *cash custody services*. 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.

3.1.2 Bank Customers' Behaviour in a Omni-Channel Environment

First, the sources of information used by bank customers in the omni-channel environment at the *pre-purchase stage* of the financial services were examined. 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. A detailed analysis of the financial services used has been carried out and is presented in **Appendix 7**. 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 (see also Appendix 7). 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.

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. 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. 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. 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, a high number of the later transactions being carried out in the branch office was remarkable. Overall it was observed that for the different financial services in an omni-channel system, the customers used different channels to close the transactions.

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

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. 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. The MANOVA ($H_0 = \text{mean vectors are equal, } p > ,05$) 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 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 ($p^* \text{-value} = p \text{-value multiplied by the number of dependent [5] variables}$) 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 (**Appendix 8**).

3.1.4 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. Results 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. In order to clarify, whether the bank change for these customers was also causally related to the pre-purchase stage, a univariate (ANOVA) was carried out. 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.

3.2 Evaluation of the Formative Measurement Model

The formative items for the customer survey were carefully selected after intensive literature research and a pre-test item sorting task as suggested by Anderson and Gerbing (1991) was carried out. 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). 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. Convergence validity for the formative items was confirmed. 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 method with a significance level of ,05 in SmartPLS. Some items showed a non-significant indicator weight but a significant loading $> 0,5$. 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 and were not rejected going by previous literature references and the pre-test results (Hair et al., 2017, p. 130). Overall (**Appendix 9**), the reliability and the validity of the formatively specified measurement models were confirmed.

3.3 Evaluation of the Reflective Measurement Model

The one-dimensionality of the indicator sets was verified by the application of an EFA (Weiber & Mühlhaus, 2014, p. 131). In a narrower sense, 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 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 (**Appendix 10**). Following this analysis, the quality criteria of the *second generation* were tested using SmartPLS. 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 AVE were analysed. 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). Furthermore, the HTMT criterion confirms the discriminant validity with the help of a statistical test. **Appendix 10** delivers the details.

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

3.4 Evaluation of the Structural Model

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). Since the limit values of 5 were not exceeded, a critical degree of collinearity between the driver constructs in the structural model was excluded. Next, the path co-efficiency in the structural model was analysed using the bootstrapping procedure in SmartPLS. 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. **Appendix 11** delivers the details. The analysis of the indirect cause-effect 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 (**Appendix 12**) effect to the direct causal effect (Weiber & Mühlhaus, 2014, p. 236). In order to determine the forecast performance of the model, the R^2 value was analysed subsequently. 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. Further to analysing the R^2 value, the f^2 -effect strength 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. 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). This was confirmed for the model for the two endogenous and reflectively measured constructs overall satisfaction and customer loyalty to the bank. 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 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.

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

3.5 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 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). 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). As the results of the segment-specific path coefficients of FIMIX-PLS did not reveal any significant differences, the results indicated that unobserved data heterogeneity in the study may not prevail to any significant extent.

3.6 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 $< 0,1$.

Table 1: 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 1 (also see Appendix 13).

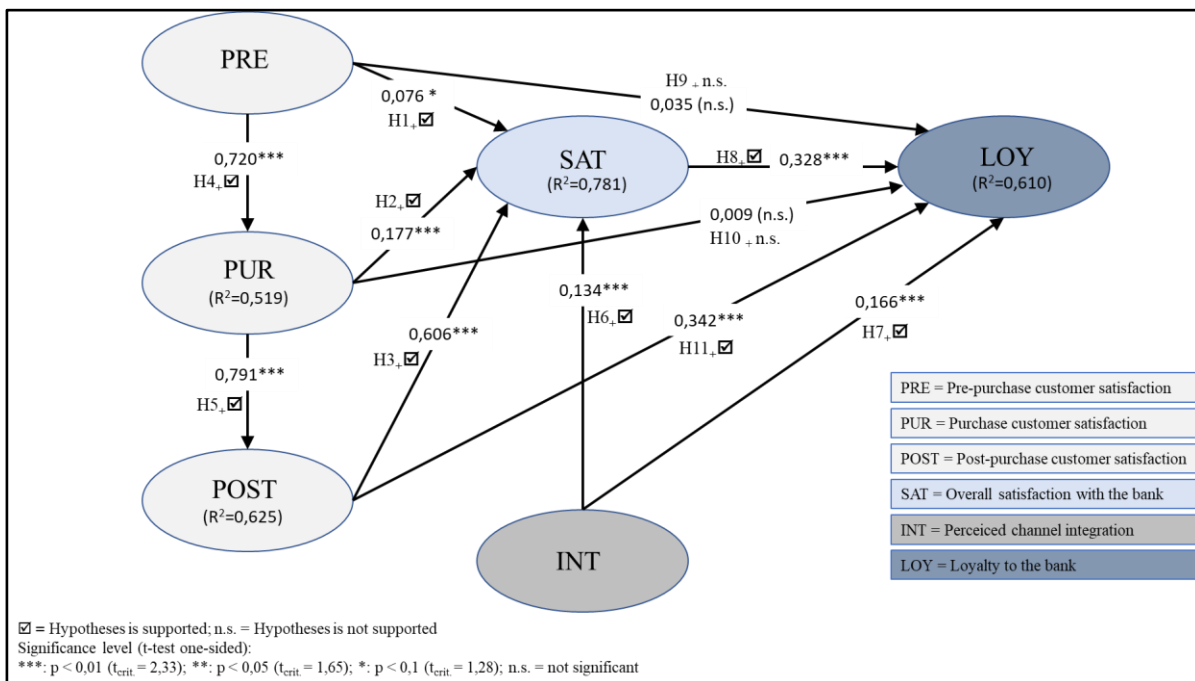


Figure 1: Results of the Structural Model

3.7 Summary of the Main Results

- 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 this dissertation, customer satisfaction is understood as the result of a process of customer evaluation that is influenced by cognitive 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 and satisfaction with personal/digital banking were examined. 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 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.

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, 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 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.

4 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. This dissertation combines the theoretical and conceptual approaches to the omni-channel system, such as those adopted 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), 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 and confirms the studies of Burmann (1991), Bloemer and Lemmink (1992), Korte (1995), Siefke (1998), and Fler (2016) all of whom examined customer satisfaction according to purchase stages but in different contexts or for different research objects. 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 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 fills the gaps in the understanding of bank customers in a highly complex banking infrastructure setup.

5 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. 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.

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Appendix 1: Key Factors of Customer Satisfaction with Banks

Category	Concept and Items (If necessary translated)		Stage:	References and further direct and indirect sources:
	FrF=Face-to-face FrS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	SQ=Service Quality; SAT = Satisfaction LOY=Loyalty; CB = Consumer behaviour	Pre-purchasing Purchase Post-purchasing	
Access	FrF FrS H	SAT: Which is your opinion about the bank's network (branches, ATM, etc.)	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
	FrF	SAT: Availability of the branch	Pre Pur	Belás/Chochořáková/Gabčová (2015)
	FrF	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)
	FrF	SQ, SAT: Convenience business hour	Pre Pur Post	Rubogora (2017)
	FrF	SAT: Bank location	Pre Pur Post	Moraru/Duhnea (2018)
	FrF	SAT: Distance to the bank	Pre Pur Post	Moraru/Duhnea (2018)
	FrF H	SAT: Operating hours convenient to all their customers	Pre Pur Post	Chavan/Ahmad (2013); Bloemer/Ruyter/Peerers (1998); Matzler/Sauerwein/Heischmidt (2003)
	FrF FrS 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)
	FrF H	SQ: Queues that move rapidly	Pre Pur Post	Bahia/Nantel (2000)
		DC SAT, LOY: Availability and access to product informations	Pre	Fleer (2016)
	FrF FrS H	SAT: What do you think about the responsiveness of their personnel	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
	FrF FrS H	SAT: What do you think about the relationship with the personnel of the bank	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
	FrF H	SQ: Waiting time for receiving services is not too long	Pre Pur Post	Hamzah/Lee/Moghavvemi (2017); Bahia/Nantel (2000)
	FrF FrS H	SAT: Which is the average waiting time	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
		FrS 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)
		FrS SAT: ATM should always be in working condition	Pre Pur Post	Chavan/Ahmad (2013)
		FrF 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 telephone (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)
		FrS SAT: Internet banking availability and functionality	Pre Pur Post	Al-Hawari/Ward (2006); Cox/Dale (2001); Bauer et al. (2005, 2006); Falk (2007); Belás/Chochořáková/Gabčová (2015); Moraru/Duhnea (2018)
		FrF SAT: Availability of services	Pur	Westbrook (1981); Deppisch (1997); Unger/Stearns/Lesser (2015)
		FrS H SAT: Availability of services	Pur	Falk (2007)
		FrS 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)
		FrS 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)
		FrS SQ: The online banking system works well	Pre Pur Post	Zeng/Wu (2020); Bauer et al. (2005, 2006)
	FrS CB: Using smartphone banking enables me to access banking services more quickly	Pre Pur Post	Susanto/Chang/Ha (2016); Venkatesh et al. (2011); Bhattacharjee and Premkumar (2004); Al-Jabri/Sohail (2012); Foroughi/Iranmanesh/Hyun (2019)	
	FrS 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); Bhattacharjee and Premkumar (2004); Al-Jabri/Sohail (2012); Baptista/Oliveira (2015); Foroughi/Iranmanesh/Hyun (2019)	

Appendix 1

Category	FrF=Face-to-face	Concept and Items (If necessary translated)	Stage:			References and further direct and indirect sources:	
	FrS=Face-to-screen		Pre-purchasing				
	H=Face-to screen - personal/digital		Purchase				
	DC=Distribution channel		Post-purchasing				
		SQ=Service Quality; SAT = Satisfaction					
		LOY=Loyalty; CB = Consumer behaviour					
Convenience / Ease of use	FrF	SAT: Convenience of location and operating hours	Pre	Pur	Post	Matzler/Sauerwein/Heischmidt (2003)	
	FrF FrS H	SQ: Bank extends its working hours in order to meet customer needs	Pre	Pur	Post	Hamzah/Lee/Moghavvemi (2017)	
	FrF	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)
	FrF 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/Narasimhan (1997)
		DC	CB: Perceived difficulty and time costs when purchasing a service using a channel		Pur		Verhoef/Neslin/Vrommen (2007) ; Baker et al. (2002); Bhatnagar/Ratchford (2004)
	FrF H	SQ: Bank staff never too busy to respond to my requests	Pre	Pur	Post	Hamzah/Lee/Moghavvemi (2017) ; Chavan/Ahmad (2013)	
	FrF FrS 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)	
	FrF H	SQ, SAT, LOY: Speed of handling at the office	Pre	Pur	Post	Bloemer/Ruyter/Peerers (1998)	
	FrF FrS H	SAT: Quickly connected to the right person			Post	Paul/Mittal/Srivastav (2016)	
	FrF FrS H	SAT: High level of acceptance of their own needs	Pre	Pur	Post	Lages/Piercy (2012)	
	FrF FrS H	SAT: Core Banking facilities is very important for me	Pre	Pur	Post	Chavan/Ahmad (2013)	
		FrS	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)
		FrS	SAT: ATM has a user-friendly system		Pur	Post	Al-Hawari/Ward (2006)
		FrS	SAT: There is ample availability to carry out operations	Pre	Pur	Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013) ; Albashrawi/Motiwalla (2020)
		FrS	SAT: The site has clear and comprehensive information	Pre	Pur	Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013)
		FrS	SAT: There is agility in the completion of transactions/queries		Pur	Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013) ; Albashrawi/Motiwalla (2020)
		FrS	SAT: Navigation and management of e-banking services are easy	Pre	Pur	Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013) ; Albashrawi/Motiwalla (2020)
		FrS	SAT: The system is adapted to electronic banking operational needs	Pre	Pur	Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013) ; Albashrawi/Motiwalla (2020)
		FrS	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)
		FrS 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)
		FrS	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)
	FrS	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)	
	FrS	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)	
	FrS	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)	
	FrS	SQ: The information provided by the website is accurate and easy to understand	Pre	Pur	Post	Zeng/Wu (2020) , Montoya-Weiss et al. (2003)	
	FrS	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); Bhattacharjee and Premkumar (2004); Al-Jabri/Sohail (2012); Baptista/Oliveira (2015); Foroughi/Iranmanesh/Hyun (2019)	
	FrS	SAT: Mobile Banking is a convenient way to manage finance	Pre	Pur	Post	Al-Jabri/Sohail (2012)	
	FrS	SAT: Mobile Banking gives greater control over finances	Pre	Pur	Post	Al-Jabri/Sohail (2012)	
	FrS	SAT: Mobile Banking is compatible with my lifestyle	Pre	Pur	Post	Al-Jabri/Sohail (2012)	
	FrS	SAT: Using Mobile Banking fits into my working style	Pre	Pur	Post	Al-Jabri/Sohail (2012)	
	FrS	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); Bhattacharjee and Premkumar (2004); Baptista/Oliveira (2015)	

Appendix 1

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

Category	Concept and Items (If necessary translated)		Stage:	References and further direct and indirect sources:
	FiF=Face-to-face FiS=Face-to-screen H=Face-to screen - personal/digital DC=Distribution channel	SQ=Service Quality; SAT = Satisfaction LOY=Loyalty; CB = Consumer behaviour	Pre-purchasing Purchase Post-purchasing	
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)
	FiF	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)
	FiF FiS H	SAT: Which is your opinion about the variety of the offered products and services	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)
	FiS 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)
	FiF FiS H	SQ: Complete gamut of services (incl. service options)	Pre Pur Post	Bahia/Nantel (2000) ; Al-Hawari/Ward (2006)
	FiF FiS H	SAT: My bank offers me a complete range of products	Pre Pur Post	Hamzah/Lee/Moghavvemi (2017)
	FiF	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)
	FiF FiS 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)
	FiF FiS H	SQ; SAT: Keeping customer informed as to when service will be performed	Pre Pur Post	Rubogora (2017)
	FiF FiS H	SQ: Are you satisfied with the bank service of sending timely bank statement?	Pre Pur Post	Siddiqi (2011)
	FiF FiS 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)
	FiF FiS H	SAT: Special offers	Pre Pur	Westbrook (1981) ; Deppisch (1997); Parasuraman/Zeithaml/Berry (1988); Unger/Stearns/Lesser (2015)
	FiF FiS H	SAT: Reverse transaction	Post	Westbrook (1981) ; Deppisch (1997); Unger/Stearns/Lesser (2015)
	DC	CB: Reverse transaction	Post	Burke (2002)
FiF FiS 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)	
FiS	SAT: Online banking facilities should be there	Pre Pur Post	Chavan/Ahmad (2013)	
FiS	SQ, SAT: The information provided in the e-banking service is useful	Pre Pur Post	Liébana-Cabanillas/Muñoz-Leiva/Rejón-Guardia (2013) ; Falk (2007)	
FiS	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)	
FiF FiS 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	FiF FiS H	SQ, SAT: Employees of this bank have the knowledge to respond to problems	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
	FiF FiS H	SAT: Knowledge and competence of personnel	Pre Pur Post	Matzler/Sauerwein/Heischmidt (2003)
	FiF FiS 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)
	FiS	SQ: Customer service staff have professional knowledge and ability	Pre Pur Post	Zeng/Wu (2020)
	FiF FiS H	SQ, SAT: Employees of this bank are experienced	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
	FiF FiS H	SQ, SAT: Employees of this bank are polite to customers	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
Quality of service / Empathy	FiF 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/Chochořáková/Gabčová (2015); Levy/Hino (2016)
	FiF FiS H	SQ: Are you satisfied by the bank service of providing the product that best suits to you?	Pre Pur Post	Siddiqi (2011)

Category	Face-to-face		Concept and Items (If necessary translated)	Stage:	References and further direct and indirect sources:		
	Face-to-screen		SQ=Service Quality; SAT = Satisfaction	Pre-purchasing			
	Face-to screen - personal/digital		LOY=Loyalty; CB = Consumer behaviour	Purchase			
	Distribution channel			Post-purchasing			
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: Solitude	Pre Pur Post	Moraru/Duhnea (2018)	
	FtF	FtS	H	DC	SQ, SAT, LOY: Efforts for the customer	Pre Pur Post	Bloemer/Ruyter/Peeters (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/Peeters (1998)	
	FtF			SQ, SAT: Personal consultant	Pre Pur	Belás/Chochofáková/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/Peeters (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/Vroomen (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/Chochofáková/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/Vroomen (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)	

Appendix 1

Category	Concept and Items (If necessary translated)		Stage:	References and further direct and indirect sources:	
	FtF=Face-to-face	SQ=Service Quality; SAT = Satisfaction	Pre-purchasing		
	FtS=Face-to-screen	LOY=Loyalty; CB = Consumer behaviour	Purchase		
	H=Face-to screen - personal/digital		Post-purchasing		
	DC=Distribution channel				
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/Chochoř/Áková/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); Bhattacharjee (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); Bhattacharjee (2001); Kim et al. (2009); San-Martín/Prodanova/Jiménez (2015)	

Category	Concept and Items (If necessary translated)		Stage:	References and further direct and indirect sources:
	FrF=Face-to-face	SQ=Service Quality; SAT = Satisfaction	Pre-purchasing	
	FrS=Face-to-screen	LOY=Loyalty; CB = Consumer behaviour	Purchase	
	H=Face-to screen - personal/digital		Post-purchasing	
Quality of services/ Empathy	FrS	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); Bhattacharjee (2001); Kim et al. (2009); San-Martín/Prodanova/Jiménez (2015); Foroughi/Iranmanesh/Hyun (2019)
	FrF FrS H	SAT, LOY: Expertise on investment funds	Pre Pur Post	Bloemer/Ruyter/Peerers (1998)
Tangibles/Enjoyment/Image	FrF FrS 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)
	FrF FrS H	SAT: Bank implement latest technology in working	Pre Pur Post	Chavan/Ahmad (2013)
	FrF	SQ, SAT: Exterior of the bank is visually appealing	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
	FrF	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)
	FrF	SAT: Allocation of the office space	Pre Pur Post	Westbrook (1981), Deppisch (1997), Unger/Stearns/Lesser (2015)
	FrF	SQ, SAT: Generosity of the overall concept	Pre Pur Post	Westbrook (1981); Parasuraman et al. (1985); Korte (1995); Deppisch (1997); Unger/Stearns/Lesser (2015)
	FrF	SQ: Maintain clean and pleasant branch facilities	Pre Pur Post	Hamzah/Lee/Moghavvemi (2017); Bahia/Nantel (2000); Moraru/Duhnea (2018)
	FrF	SQ: Decoration of facilities	Pre Pur Post	Bahia/Nantel (2000)
	FrF	SQ: Infrastructure and facilities, such as parking space and ATMs, are adequate	Pre Pur Post	Hamzah/Lee/Moghavvemi (2017); Moraru/Duhnea (2018)
	FrF FrS H	SAT: Space availability	Pre Pur Post	Paul/Mittal/Srivastav (2016)
	FrF	SQ, SAT: Interior of the bank is visually attractive	Pre Pur Post	Karatepe/Yavas/Babakus (2005); Moraru/Duhnea (2018)
	FrF	SQ, SAT: The interior of this bank is spacious	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
	FrF	SQ: The lobby area is comfortable while waiting for services	Pre Pur Post	Hamzah/Lee/Moghavvemi (2017)
	FrF FrS H	SQ: Efficacious work environment	Pre Pur Post	Bahia/Nantel (2000)
	FrF	SAT: Quick service of the branch	Pre Pur	Belás/Chochořáková/Gabčová (2015)
	FrF	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)
	FrF	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)
	FrF FrS H	SAT: Giving customers individual attention	Pre Pur Post	Chavan/Ahmad (2013)
	FrF FrS H	SAT: The behavior of employees instilling confidence in their customers	Pre Pur Post	Chavan/Ahmad (2013)
	FrF FrS H	SAT: No charges should be cut on outstation cheques	Pur Post	Chavan/Ahmad (2013)
	FrF	SQ, SAT: Employees who have a neat, professional appearance	Pre Pur Post	Rubogora (2017); Siddiqi (2011); Moraru/Duhnea (2018)
	FrF	SQ, SAT: Employees of the bank have neat appearances	Pre Pur Post	Karatepe/Yavas/Babakus (2005)
	FrF	SQ: Printed materials, such as brochures and statements are attractive	Pre	Hamzah/Lee/Moghavvemi (2017)
	FrF FrS H	SQ, SAT: Visually appealing materials associated with the service	Pre	Rubogora (2017); Albashrawi/Motiwalla (2020)
FrF FrS H	SQ: Are you satisfied with the pamphlets distributed by the bank? Are they clear and give complete information?	Pre	Siddiqi (2011)	
FrF FrS H	SAT: Selection and quality of financial offering	Pre Pur Post	Matzler/Sauerwein/Heischmidt (2003)	
FrF FrS H	SAT: Do you believe that the bank can satisfy your future needs	Pre Pur Post	Mihelis/Grigoroudis/Sikos/Politis/Malandrakis (2001)	
FrS	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)	
FrS	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)	
FrS	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)	

Appendix 1

Category	Concept and Items (If necessary translated)		Stage:		References and further direct and indirect sources:
	FtF=Face-to-face	SQ=Service Quality; SAT = Satisfaction	Pre	Pur Post	
	FtS=Face-to-screen	LOY=Loyalty; CB = Consumer behaviour			
	H=Face-to screen - personal/digital				
	DC=Distribution channel				
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/Zeitham/Berry (1985)	

Appendix 2: Key Factors of Channel Integration

Category	Concept and Items (If necessary translated)	References and further 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 possibly 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)
	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)	
Integrated product and price	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 further 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 Price information valid for all channels in all channels I can find consistent discounts in the retailer's physical store and Website Price level	Saghiri et al. (2017) Schramm-Klein (2003) Zhang et al. (2018) 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 Business hours/Access	Seck/Philippe (2013) 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 I can access my prior purchase history with the retailer
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 Adjustment of product selection, recommendations, and services based on information collected in all channels		Zhang et al. (2018) 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 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	Zhang et al. (2018) 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 Scope and quality of information	Kabadayi et al. (2017) 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 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)
Integrated customer service	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)
Integration deficits	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)
	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 3a: 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		Selection of the banking group for the final purchase of the financial service	
	Da1_1–Da1_3		Reasons for changing the bank	Insofar as a bank change occurred
Da	Da2		Selection of the touchpoint for the final purchase at the bank	Then to the sub-area H
Db	Db1	Purchase stage	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	

Appendix 3b: 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 support scientific questioning. This is part of my doctoral thesis at the Hamburger Fern-Hochschule (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)

- | | |
|---|--|
| <input type="checkbox"/> Branch office (personal contact) | <input type="checkbox"/> Telephone banking |
| <input type="checkbox"/> Online banking / online branch | <input type="checkbox"/> Personal contact at your home |
| <input type="checkbox"/> VR-BankingApp | <input type="checkbox"/> Letter or personal cover letter |
| <input type="checkbox"/> Homepage | <input type="checkbox"/> Social networks (e.g. Facebook) |
| <input type="checkbox"/> E-Mail | <input type="checkbox"/> SMS, WhatsApp, iMessage |
| <input type="checkbox"/> Service terminals & ATM | <input type="checkbox"/> 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 a 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)

- | | |
|---|--|
| <input type="checkbox"/> Branch office (personal contact) | <input type="checkbox"/> Telephone banking |
| <input type="checkbox"/> Online banking / online branch | <input type="checkbox"/> Personal contact at your home |
| <input type="checkbox"/> VR-BankingApp | <input type="checkbox"/> Letter or personal cover letter |
| <input type="checkbox"/> Homepage | <input type="checkbox"/> Social networks (e.g. Facebook) |
| <input type="checkbox"/> E-Mail | <input type="checkbox"/> SMS, WhatsApp, iMessage |
| <input type="checkbox"/> Service terminals & ATM | <input type="checkbox"/> 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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have used a variety of information sources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The informations of my VR Bank were important for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friends, acquaintances and relatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Newspaper articles, social networks (Facebook, Xing etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Field reports from customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information from competitors (online, personal contact)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In detail, how satisfied were you with

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

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

	Do not agree at all				Strongly agree
	1	2	3	4	5
In my search for information, I was <u>generally</u> satisfied with VR Bank.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The information provided fully met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My decision to contact VR Bank for this service was correct.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

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

	Do not agree at all				Strongly agree
	1	2	3	4	5
I was <u>generally</u> satisfied with the purchase at VR Bank.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The purchase by VR Bank fully met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My decision to purchase this service from VR Bank was correct.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

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

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

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

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

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

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

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

	Do not agree at all				Strongly agree
	1	2	3	4	5
I am satisfied <u>overall</u> with VR Bank.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My expectations are fully met.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Please evaluate your future behavioral intentions.

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



21. How many bank relationships do you actively use?

- 1 2 3 4 or more

22. Please indicate your current professional activity

- | | |
|---|--|
| <input type="radio"/> Working full time | <input type="radio"/> Housewife or houseman |
| <input type="radio"/> Working part time | <input type="radio"/> Retired |
| <input type="radio"/> Student / Pupil | <input type="radio"/> 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 Abitur, Hochschulreife / Grammar school
 Hauptschulabschluss / Secondary school (school year 5 to 9) Hochschulabschluss / Graduate degree
 Mittlere Reife / Secondary school

27. Please indicate your approximate monthly net household income

Up to 1.500 € 3.001 - 5.000 € More than 7.500 €
 1.501 - 3.000 € 5.001 - 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)

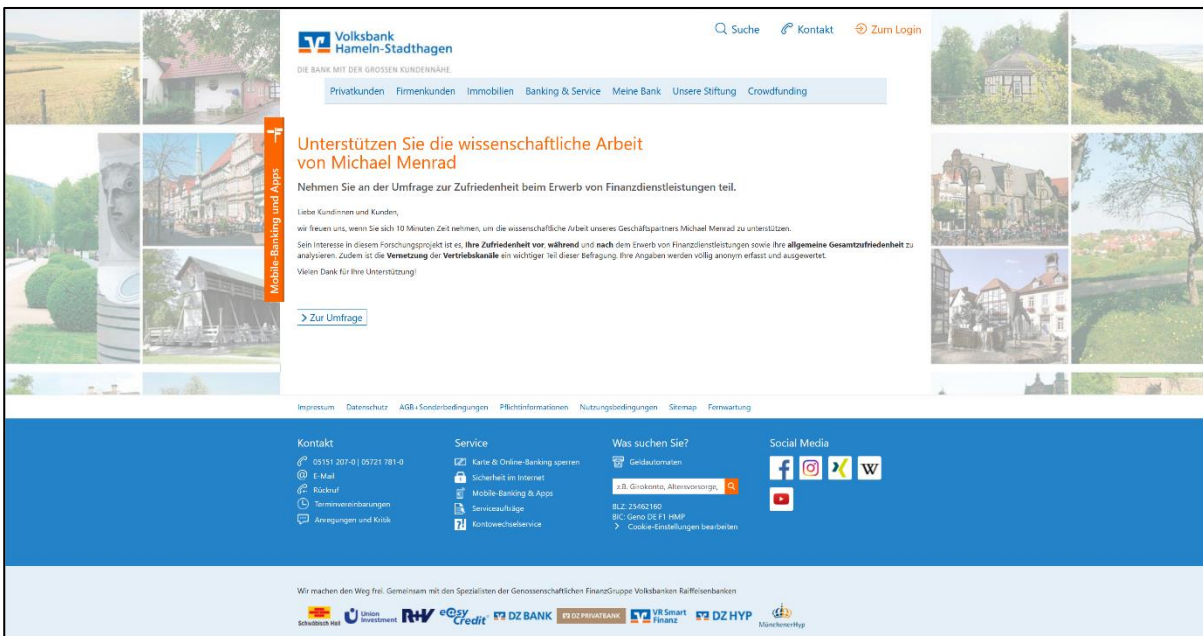
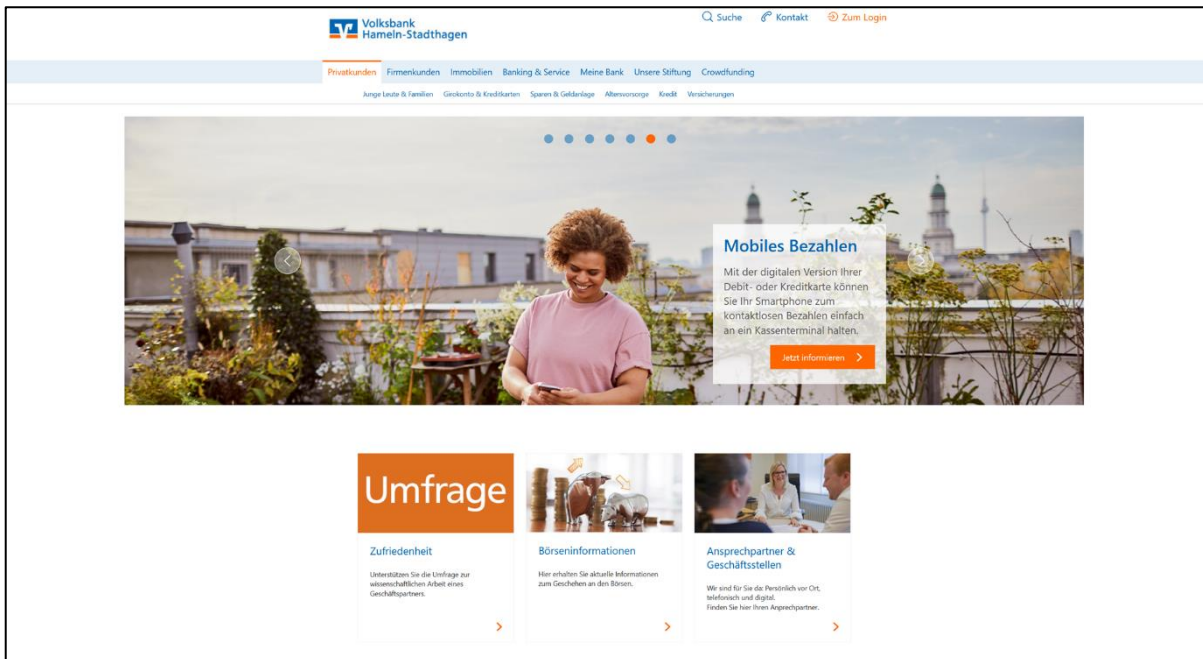
Betriebswirtschaft und Management Promotionsstudium (Ph.D.)

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								
	Mean	Median	Variance	Skewness (s_s)	Kurtosis (s_k)	Min/Max	Kolmogorov-Smirnov ^a Sig.*	df	Shapiro-Wilk 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: Information Sources for Financial Services Used by Bank Customers in the Pre-purchase Stage in an Omni-Channel System

Service	Financial advice		Cash custody		Financing		Payments		Total n=320
	n = 103 (% to service)	%age of total	n = 45 (% to service)	%age of total	n = 118 (% to service)	%age of total	n = 54 (% to service)	%age of total	
Customer channels used									
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
Comparison 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

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

Appendix 8: Influence of Banking Services on Customer Satisfaction and Loyalty

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

Appendix 9: Results for the Formative Measurement Model

n = 249	Item	Measurement methods								
		Path coefficient	R ²	VIF	Weight	t-value	p-value* (p < .05)	95% BCa-confidence interval*	Loading	Loading p-value (p < .01)
Pre-purchase satisfaction	Convergent validity		Collinearity	Significance and relevance						
	R _F	C6_1, C6_2, C6_3		[2,5%; 97,5%]						
	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-corrected and accelerated-(BCa)-bootstrapping with 5000 subsamples.
T-Statistic: Weight (Mean) / Standard deviation.
F. = Formative Items; R. = Reflective Items.
Path coefficient: $\gamma_{n}^{formativ}$; $\gamma_{n}^{reflectiv} > ,7$.
R²-value > .64 (min. .5).
Variance Inflation Factor (VIF) < 5.
Loadings > ,5.

Appendix 10: Results for the Reflective Measurement Model

First Generation Methods

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-		
Overall satisfaction		Reliability test			Validity test					
	G1_1	0,8101	0,702		0,500*	0,000	0,500*	0,922	85,10%	
	G1_2		0,702				0,500*	0,922		
Loyalty	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. H₀: 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%.

Second Generation Methods

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%		
Overall satisfaction		Convergent validity			Internal consistence reliability		Discriminant validity				
	G1_1	0,922	0,850	0,851	0,919		0,8690	No	0,7670	0,9470	
	G1_2	0,923	0,852								
Loyalty	G2_2	0,587	0,345	0,671	0,889		0,8690	No	0,7670	0,9470	
	G2_3	0,861	0,741								
	G2_4	0,882	0,778								
	G2_5	0,907	0,823								

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-corrected and accelerated-(BCa)-bootstrapping with 5.000 subsamples.

Appendix 11: 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-corrected and accelerated-(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.

Appendix 12: 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-corrected and accelerated-(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.

Appendix 13: PLS-SEM Structural Model

