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Factors Influencing the Use of Digital Personal Banking in South Africa

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ABSTRACT

Financial technology improvements have simplified personal banking, allowing a range of services to be accessed anytime and anywhere. But the impact of digital financial technology on the use by consumers of digital personal banking in developing economies has been little researched. The purpose of this study is, therefore, to examine the link between the use of digital personal banking by consumers and the various drivers of digital banking use in a developing economy, namely South Africa. An online survey of 400 digital banking users in the iLembe district of KwaZulu-Natal, South Africa, was used to collect data. Of the eight drivers identified initially from extant literature, Online service quality, Usability, and Branch service quality were the most important, with Usability and Online service quality having the greatest positive influence, and Branch service quality having a large negative influence, on use of digital banking by the respondents.

Keywords: Digital banking, Financial technology, Online banking, Internet banking, Consumer behavior, South Africa

1. INTRODUCTION

Constant technological advancement has allowed banks to offer new banking methods and new and exciting product and service offerings to customers. This is classified as digitization of banking. Such products and services include cashless services, e-commerce, and digital bank advertising [1]. According to Kolodiziev et al. [2], this digitalization process has led to the rapid spread of the availability of e-commerce and electronic payment, resulting in greater customer engagement and thus providing competitive advantages. Internationally, digital banking has created new business opportunities, attracted business from both new and existing customers, expanded a bank's geographic market, and presented a modern image. The latter is especially important when targeting a young audience [3]. According to Gleason [4], the impact of the digitization of banking applies to both the technological changes and how customers

adapt and live with such changes. Despite the dramatic growth in the use of mobile devices during the twenty-first century [5], it is clear that people will only adopt new technologies that benefit them. Fedorko et al. [6] explain that multiple factors influence how and when users decide to accept new technologies. Therefore, identifying and analyzing the obstacles (barriers) to effective digital transformation of banks and the drivers contributing to their effective performance are essential for banks to compete successfully in such environments.

In addition to the various drivers of banking digitization, the global spread of COVID-19 in 2020 led to further and quicker transitions to remote banking. Although internet banking has been available in South Africa since about 1996 [7], it was only with COVID-19 that internet banking grew rapidly in South Africa. Capitec Bank, since its establishment 20 years ago, is SA's largest digital bank. It saw the COVID-19 pandemic as an opportunity for a fundamental shift in how clients bank, which resulted in Capitec becoming South Africa's largest digital bank, with over 8.7 million digital clients [8]. Also, during this period, three digital banks without physical branches were established, namely Bank Zero, Discovery Bank, and TymeBank. The former recently ranked amongst the world's top 30 'neobanking' fintech companies by CNBC and Statista [9], while the latter is the largest internet-only bank in SA, with 5 million customers [10].

Although there is significant research on the core factors of digital banking in many other countries, no such literature was found for SA. The literature that there is points out that, while SA does have an advanced banking system, including digitized banking, the lack of empirical research on digital banking is due mainly to the slow growth and adoption of digital banking in SA. Therefore, there is a need for more research into digitization of banking in SA, and into the factors that encourage, or discourage, the adoption of digital banking from the consumer viewpoint. Therefore, this study aims to develop a better understanding of the reasons for the adoption, or lack of adoption, of digital banking in South Africa, from the customer's perspective. To achieve this aim, the following two objectives were set:

1. To identify the constructs driving consumers' use of digital personal banking.
2. To assess the relationship between consumers' use of digital personal banking and the constructs driving use of digital banking

The paper is structured as follows – first, a review of relevant, extant literature, followed by a description of the methodology adopted. Then, the results are presented, first via a profile of the sample and a justification for the validity and reliability of the findings. These findings first explain the correlations between the dependent variable ('*Usage of digital banking'*) and the various identified independent variables, culminating in presenting these relationships in a structural equation model. Lastly, conclusions are drawn, suggestions for bank marketing improvements are made, limitations of the study are explained and recommendations for further research are made.

2. LITERATURE REVIEW

This section discusses the dependent and independent variables, including a rationale for their inclusion. The specific questions for each of the independent variable constructs are shown in Appendix A.

Previous studies, such as by Harchekar [11] and Torkelsson [12], have identified reasons behind the growth and use of digital personal banking (mobile banking, e-commerce, self-service banking) in a robust and thriving economy. These reasons include the increase in the use of smartphone devices, direct initiatives by corporations to open bank accounts for previously un-banked individuals, increased automation and capacity of critical banking services, and a focus on customer value creation. However, studies within a growing, but unstable, economy like South Africa's, which consists of significant demographic inequalities [13], have not identified (a) how the growth and use of digital banking contribute to consumer perceptions and satisfaction (or a lack thereof) and (b) how demographic inequalities in such an economy affect the digitized use of personal banking.

The research aim of comparing the usage of digital banking (dependent variable) against the factors that contribute to adopting digital banking (independent variables) is now discussed in terms of the extant literature.

2.1 Usage of Digital Banking (Dependent Variable)

Financial technology improvements have greatly improved how consumers bank [14, 15]. However, what impact the growth of financial technology has had on the perception and use of digital personal banking has not yet been established. Despite the widespread adoption of digital banking, there are still significant challenges and gaps in the understanding of how these technologies impact consumer behavior, financial inclusion, and acceptance in developing countries.

2.2 Convenience

One of the core features that digital banking offers to clients is its convenience [16, 17]. Clients can use nearly full line of banking services without visiting a bank. Online banking simplifies banking by saving consumers time and money as they do not have to travel to a branch or process lengthy paperwork [18, 19]. It also allows consumers to use services after banking hours and to open new accounts independently and without extra charges. Most banks offer the same core digital banking services, i.e., making payments, checking account balances and transferring funds. Each bank also offers other unique services or products to attract customers to its brand. These unique offerings, however, need to differentiate from competitors' offerings to keep customers satisfied and loyal. For instance, Revathi [20] says that digital banking is beneficial in a monopolistic competitive environment, because technological trends and changes in banking lead clients to change their service providers for what they feel offers more convenience to them individually.

2.3 Practical Quality

The practical ability to use internet banking has not been as easily achieved as has the successful use of digital advertising, which did not need to change consumers' perceptions and feelings about traditional advertising methods [21]. Digital banking takes time for users to familiarize themselves with the application before deciding to use it. This means that banks need to understand the process and difficulties that their clients go through when trying to access digital banking.

Furthermore, Ameme [22] and Sheeba and Gomathi [23] suggest that education has a significant influence on digital banking adoption, as customers with lower education levels, or no education, may have difficulty operating computers and technology comfortably. The implication is that those with higher levels of education should be targeted as potential digital banking users, or alternatively more effort should be made to simplify the use of digital banking for those with lower levels of education.

2.4 Branch Service Quality

As banks and other companies increase their use of technology advancements due to the 4IR, consumer-to-employee interaction has decreased. This is due to automated machines being able to provide the required service at a significantly lesser cost without the input of an employee. Such impersonal service has disadvantages in terms of the human and social interaction that customers often seek when shopping, and when banking especially. For instance, Uddin et al. [24] state that employee-client interaction can be positive for the company, because clients seek companies whose staff are attentive. Ultimately, the service quality received from the company forms the basis for how clients respond to the service received, often speaking positively about the company and their services to friends and colleagues.

Consumer expectations have resulted in a significant change in consumer behavior. Since customers are now more aware of products and services and are more cautious monetarily, they feel that the best companies should deliver both excellent service and excellent value. Johnston and Kong [25] maintain that service encounters give companies a chance to engage in emotional connections with customers. Trust in digital banking is critical because the nature of a digital transaction is very different from a transaction conducted at a bank's branch [26, 27, 28]. Personal interaction helps to build trust, which confirms the importance of branch service quality.

2.5 Usability

Khrais [29] states that perceived ease of use has a direct, significant, positive effect on behavioral intention to use Internet banking, while Selvanathan et al. [30] state that there is a positive relationship between ease of use and service delivery via online banking.

Pankomera and Greunen [31] maintain that one of the downsides of traditional banking is the time-consuming nature of the customer's physical presence in the bank premises, and the bank branch staff engaging with the customers. Perceived usefulness and perceived ease of use influence attitudes towards using, intention to use, and ultimately

influence actual system use. Ting et al. [32] discuss uses of digital banking, such as SMS messaging, Internet-based online billing, PIN transmission, mobile web, direct-to-subscriber billing, and direct to credit card transactions through mobile phones. Bidarra et al. [33] found that perceived usefulness correlates with the actual usage of online banking. This correlation happens when customers are more interested in the benefits supplied by online banking than the benefits provided by regular branch banking channels.

Most banking applications run on the latest smartphone software. While smartphone usage in South Africa has increased considerably in recent years, there remains a significant gap between those who have access to online banking and those who do not. The practical ability to use Internet banking has not been achieved by many potential customers, which is a contributing factor to why digital banking has not been adopted more quickly. Nevertheless, although digital banking adoption is slow, multiple forms of non-cash transactions have become available in recent years, offering numerous ways for consumers to purchase goods and services.

2.6 Safety

Lakshmi and Kavitha [34] discuss safety as a significant determinant of a positive perception of digital banking. Carrying large sums of cash can be dangerous to consumers, especially those who need to travel far distances to withdraw or deposit cash at a bank. Khando et al. [35], Ordu and Anyanwakoro [36], and Parmar [37] discuss the safety and peace of mind for consumers, noting that cashless societies experience a reduction of robberies and theft at cash machines and other public spaces. Other benefits include the speed of non-cash transactions, as consumers can easily and quickly transfer or pay money (via debit and credit cards) without having to physically count cash. Some companies also offer online-only deals, encouraging customers to shop online rather than visit a store.

However, there is a debate about the potential drawbacks of cashless transactions. Deora [38] points out that identity theft is high in cashless transactions such as through unauthorized cellular contracts. Furthermore, cashless transactions can be damaging to small businesses as these businesses are dependent on high liquidity, and cashless transactions reduce liquidity. Kirobo et al. [39] and Abbas [40] state that a significant challenge currently facing the growth of cashless transactions is cybercrime, where people's bank accounts, savings, and credit cards are used without their consent. Cashless transactions also pose a challenge for people employed in the informal economy, as they mostly depend on cash generated by informal transactions, for example, recycling and selling of scrap metal.

2.7 Online Service Quality

Service characteristics are the vital components that comprise much of the digital banking experience, namely intangibility, heterogeneity, inseparability, and perishability [41]. Moon and Lee [42] argue that even with quick, innovative, technological advances in online shopping, the significant drawback of e-shopping is that consumers cannot examine or use a product or service before purchasing it. This drawback also applies to online banking, which cannot be 'tried' without committing to purchase it. Products and services that require higher rates of personal face-to-face interactions between customers and companies will show more relational advantages to clients than products and services that require much less private or face-to-face interactions between clients and the company [43]. Thus, making the online banking process as straightforward and easy as possible will expand digital banking to even more customers.

2.8 Risk

There are significant ways in which a breach of privacy can impact digital banking. Such breaches include fraud and hacking, the sharing of private and confidential information with third parties, and the inappropriate recording of details like mobile phone numbers and addresses [44]. Bigne and Blesa [26], Lee and Turban [27], and Mbama and Ezepue [28] highlight the risks involved in digital banking and the importance of trust because of the differing natures of digital versus in-person transactions between bank and client. For instance, in traditional branch banking, client documents are kept private and are not distributed to third parties. With online banking, a client may need to submit confidential documentation through an online channel (such as email), which could breach a client's privacy if the bank experiences cyber hacking. However, few studies have considered the growth and use of advanced security features available on most smartphone devices and online banking channels today.

2.9 Consumer Experience

Consumer expectations have resulted in a significant change in consumer behavior. Customers today are more aware of products and services, often due to online searches, and are more financially cautious. Therefore, customers feel that the best companies should not only deliver excellent service but also should provide excellent value. Since service encounters offer banks the opportunity to engage in emotional connections [25], it is important for banks to build a relationship with customers. If banks intend to push more clients towards digital banking, they must ensure that the clients have positive experiences every time they visit the bank online. Walls et al. [45] reveal that from an advertising perspective, customers want more than just products and services. They also seek consumption encounters to accompany the products and services that create memorable moments. Experiential offers deliver additional advantages to the business, for example, increased customer satisfaction, brand loyalty, dedication to repurchase, and positive social and verbal reviews of the product or service used [46]. South Africa does have a very advanced banking system. While digital banking has grown exponentially in recent years, much of the desire to use digital banking depends on several factors that

relate to how customers have experienced banking with a specific bank and how willing they are to adopt a new service offering. Interestingly, from a value creation perspective, banks, not their clients, drive the technology-based service usage by pushing customers towards digital banking, which is a cost efficient service [47].

2.10 Summary

This brief review has explained what the relevant literature says about consumer usage of digital banking and possible factors that may influence it. Figure 1 summarizes these variables.

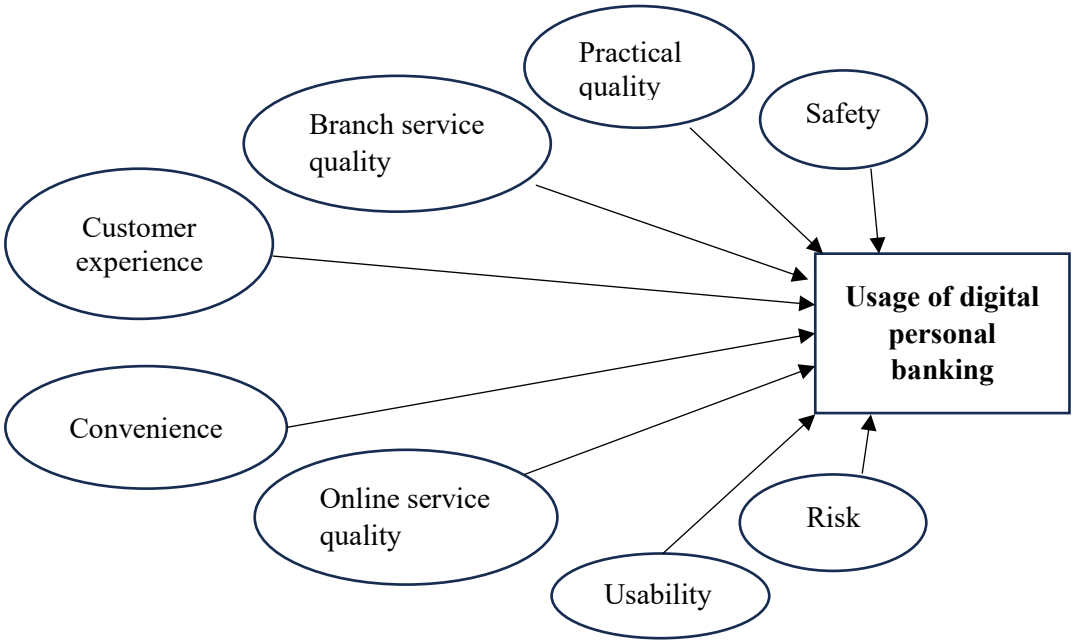

Figure 1: Factors possibly contributing to use of digital personal banking
Source: [48]

3. METHODOLOGY

3.1 Research Design

A deductive approach [49] was used to conduct the study, namely the application of a cross-sectional, quantitative survey of respondents' opinions.

3.2 Respondents

The target population was all citizens who receive salaries in the four municipal areas in the iLembe District of KwaZulu-Natal, South Africa, comprising 657 613 people [50]. This location was selected as it contains a diverse demographic profile [51] and allowed for accurate, quick, and cost-effective data collection, especially since collection was during the COVID-19 pandemic. The iLembe population was the fastest-growing population in KwaZulu-Natal between 2007 and 2016, with a 15,7% share of the population changes in the province [52]. The target population included those who can access digital personal banking, including active users, new adopters, and non-users.

Although the study focused mainly on users, the target population had to include all with access to digital banking as a sample frame of users was not available. Since the iLembe district has a young population with a median age of 23 [50], the target population was primarily focused on Generation Y, also known as Millennials, but also incorporated the Boomer and Z Generations.

The sampling method used was non-probability [53]. The study location was selected using judgmental sampling, while knowledgeable members of the population, i.e., those who use digital banking, were selected via purposive sampling. Furthermore, the sampled individuals decided whether to respond or not, and therefore the sample was effectively self-selected, which implies a convenience sample. Since a sampling frame was not available, an email posted on the iLembe Public Matters and News Group Facebook pages was used to recruit respondents. Since iLembe has a population of 657 612, and based on an assumed standard deviation of 1, an allowed error of 0,1, and a significance level of 95%, the required sample size was 384 [54, 55]. The target sample was increased to 400 to allow for any unusable or incomplete questionnaires.

3.3 Data Collection

The data collection instrument was developed using theory obtained from extant literature. Appendix B explains the questionnaire derivation process. The questionnaire was composed of 38 questions. Of the 38 questions, seven are screening questions to factor out all ineligible participants, five are demographic-based, and 26 are related to the research objectives. The questions are closed-ended, using symmetric, 5-point Likert-type scales [56]. A subject matter expert and a statistician pilot tested the questionnaire, which was then pre-tested with 20 people who matched the population criteria. As a result, corrections to the directionality of some questions and to the wording of the education and ethnicity questions were made to provide a simpler understanding. Reliability testing of the pre-test questionnaire, using Cronbach's alpha, showed that all constructs scored above the usually required alpha of 0.7, except one, which scored 0.495. Overall, the coefficient alpha was 0.942, so the questionnaire was deemed adequate for data collection. The main sample excluded the 20 pre-test respondents.

The problems of personal gatherings and social distancing due to the COVID-19 pandemic complicated the administration of the collection instrument. Consequently, the questionnaire was administered online through Google Forms. A link to the questionnaire was posted on Facebook, under an iLembe District Public Matters and Newsgroup, and also emailed to respondents. A letter, placed on Facebook and attached to each email, indicated that only current residents of the iLembe District should complete the questionnaire. A screening question mentioned the four local municipalities of iLembe, and any respondents who selected the "other" answer were excluded from the study. Only residents who answered positively about having an active bank account and earning a salary, were qualified to answer the questionnaire. Exclusion criteria also covered those residents who had relocated and were no longer permanent residents of the iLembe region. An isiZulu-translated questionnaire was available for respondents who wished to answer in isiZulu. Data collection took eleven months (15th February 2021 to 14th January 2022),

with multiple mailings, each receiving between 45 and 50 responses. The questionnaire on Google Forms was structured so that respondents needed to complete each section sequentially (demographics → screening → objective-based questions), with each question needing to be completed to continue to the next page. Data cleaning ensured duplicate responses were not included.

3.4 Data Analysis

Analyses included univariate, bivariate, and multivariate statistics. Univariate analyses presented descriptive statistics, including the use of tables. Bivariate analyses included cross tabulations and correlations. Multivariate analyses included cross-tabulations, multiple regression analysis, factor analysis, and structural equation modelling (SEM).

3.5 Validity and Reliability

Face and content validity were assessed by a subject matter expert and a statistician and then checked via the pre-test as discussed previously. Construct validity was checked via exploratory factor analysis, which confirmed the factor structure of the constructs in the questionnaire.

Cronbach's coefficient alpha was used during the pre-test to assess reliability as discussed previously, and then again to evaluate the reliability of the questionnaire after the final data collection. The Results section of the paper presents the outcome of the Cronbach test.

3.6 Ethical Issues

The Durban University of Technology's Faculty Research Ethics Committee (FREC) provided ethics approval. Respondents were informed that their participation was voluntary and that they could withdraw from the survey at any point without having their responses recorded and without having to provide a reason. In addition, respondents were informed that the questionnaire did not collect confidential information and that their participation would be anonymous.

4. RESULTS AND DISCUSSION

4.1 Sample Profile

Table 1 reflects the profile of the 400 usable responses, split by gender, age, ethnicity, education, and gross income.

Table 1: Sample profile

Dimension	Category	Total sample		Population [50]
		n	%	%
Gender	Female	229	57.3	52
	Male	171	42.8	48
Age	18-23	159	39.8	+-37
	24-29	136	34.0	
	30-40	55	13.8	+-23
	41+	57	12.4	+-40
Ethnicity	African	119	29.7	89
	Colored	23	5.8	1
	Indian/Asian	233	58.2	7
	White	25	6.3	3
Education	Some high school	5	1.3	+-55
	High school (HS)/Matric	68	17.0	+-39
	Post HS certificate/diploma	61	15.2	+-2
	University diploma/degree	205	51.3	
	Post graduate qualification	61	15.2	+-2
Gross income	0 – R3500	139	34.7	+-22
	R3501 - 8000	67	16.7	
	R8 001 – 20000	104	26.1	+-28
	R20001 +	90	22.5	+-44
Total		**400**	**100.0**	

Overall, the ratio of males to females (42.8%:57.3%) is consistent with the population profile for the iLembe District [51]. The age categories under 30 had the highest concentration of respondents, confirming that the Millennial and Z generations are the most frequent users of digital banking as they have the highest level of digital literacy, as indicated by the literature [22, 57, 58]. Regarding ethnicity, the 'Indian' component of the sample is dominant, as expected, because iLembe was an "Indian area" in the pre-1994 Apartheid era [59]. Furthermore, the Indian demographic tend to be more highly educated and in better paid employment than the African demographic, which is underrepresented in the sample. A high proportion of the respondents in this study had a high school or post-school qualification, which was to be expected since the more educated would probably have bank accounts and be more digitally savvy. This indicates that the sample was an informed (learned) source, but also indicates that a digital literacy barrier may exist. The income results match the 2016 Community Survey by Statistics South Africa in iLembe, which showed that the majority earn below R4 800 [50]. This suggests that low-income earners may not have the financial means to access digital banking through smartphones and because of Internet costs. It can be concluded from this discussion that the sample is a reasonable representation of the study population.

4.2 Reliability Analysis

Reliability was computed via Cronbach's coefficient alpha. Reliability coefficients of 0.60 or higher are considered as "acceptable" for newly developed constructs [60]. Table 2 reflects the Cronbach's alpha scores for the items in the questionnaire that comprised the eight constructs.

Table 2: Reliability statistics

Section	Number of Items	Cronbach's Alpha
Convenience	3	0.943
Practical quality	2	0.889
Branch service quality	4	0.816
Usability	3	0.767
Safety	3	0.841
Online service quality	3	0.896
Risk	3	0.629
Consumer experience	4	0.913
Overall	**26**	**0.941**

The scores for all constructs exceed the usually recommended Cronbach's alpha value of 0.7, except for 'risk', which scored 0.629. Daud, et al. [60] suggest that coefficients above 0.60 are significant and acceptable, especially for a newly designed instrument. The decision to retain the construct 'risk' in the model for analysis is supported by the Cronbach alpha value being above 0.6, the construct showing a clear allocation in the factor analysis, and 'risk' being a common, validated, and well-established scale in previous research about banking.

4.3 Exploratory Factor Analysis

Exploratory factor analysis, with principal component analysis as the extraction method and varimax rotation with Kaiser normalization, was used to check that the constructs and questions, as shown in Appendix A, accurately represent the study issues. The Kaiser-Meyer-Olkin (KMO) and Bartlett's tests indicate the suitability of data for structure detection. As shown in Table 3, all of the conditions for factor analysis are satisfied, namely, the KMO value is greater than 0.50 and the Bartlett's test of sphericity significance value is less than 0.05 [61].

Table 3: KMO and Bartlett's test

Construct	KMO measure of sampling adequacy	Bartlett's test of sphericity		
		Approx. chi-square	df	Sig.
Convenience	0.756	1133.179	3	0.000
Practical quality	0.508	410.782	3	0.000
Branch service quality	0.783	538.624	6	0.000
Usability	0.618	447.251	3	0.000
Safety	0.710	508.212	3	0.000
Online service quality	0.730	747.526	3	0.000
Risk	0.585	211.838	3	0.000
Consumer experience	0.836	1434.384	6	0.000

The results of the rotated component matrix for the eight constructs are shown in Appendix B. The statements constituting all constructs loaded perfectly along single components, which implies that the statements comprising these constructs measured what they set out to measure.

4.4 Relationship Between Constructs and Usage of Digital Banking

Table 4 displays the relationship between the eight constructs (independent variables) and consumers' Usage of digital banking (dependent variable). Interpretation of these correlations is done according to the criteria suggested by Pallant [62], namely, a small correlation is .1 to .29; medium is .3 to .49; and large is .5 to 1.0.

Table 4: Correlation between constructs and usage of digital banking

	Usage of digital banking	
Constructs	**Correlation**	**Significance**
D - Convenience	.331	0.000
E - Practical quality	.133	0.008
F - Branch service quality	-.239	0.000
G - Usability	.363	0.000
H - Safety	.309	0.000
J - Online service quality	.417	0.000
K - Risk	.238	0.000
L - Consumer experience	.358	0.000

The first construct, *Convenience,* has a moderate impact on the respondents' use of digital banking (.331), with the highest correlated questions being "I can use online banking at any hour" (.315) and *Online banking is faster* (.276). This finding supports Chigada and Hirschfelder [18] who state that the time-saving provided by online banking and the ability to use it at any hour increases respondents' use of digital banking.

The second construct, *Practical quality,* has a low positive correlation (.133), indicating that it does not have a prominent influence on respondents' use of digital banking. However, the question "I understand how to use online banking" has a medium correlation (.341), indicating that use of digital banking will increase with an increase in understanding of how to use digital banking.

Branch service quality has a low negative correlation (-.239), indicating that it does not have much influence on the respondents' use of digital banking. However, if *Branch service quality* is perceived to decline, then there would be a tendency to increase digital banking use. This relationship can be explained by the increasing development and use of the internet, which has altered the lives of consumers such that their behaviors toward product and service purchasing have begun to change [63].

Usability, with a correlation of .363, is moderately correlated. With the second highest correlation, *Usability* of digital banking applications influences respondents' Usage of digital banking, i.e., the more useable the application is perceived to be, the more respondents are likely to use digital banking. For instance, "I use online banking regularly", with the highest correlation of .456, indicates that using online banking regularly increases the Usage of digital banking. This finding supports the literature that shows perceived usefulness correlating with usage of online banking because consumers are more interested in the benefits of online banking than in those of regular branch banking [33].

The fifth construct, *Safety*, has a moderate correlation (.309), indicating that as digital banking safety is perceived to increase, the use of digital banking would increase. Although the question "when paying physically, I prefer paying with my bank card" was agreed or strongly agreed to by 77.3% of respondents, the moderate correlation with usage of digital banking (.326) suggests that improvements to the security of digital banking could increase its use even more. These findings support those Lakshmi and Kavitha [34].

Online service quality has the highest correlation score (.417) of the eight constructs. This moderately high correlation shows that the *Online service quality* of digital banking has the largest influence on the use of digital banking and is therefore of most importance. The question "Online banking is clear and easy to use" has the highest individual correlation (.405), indicating that the easier online banking is to use, the greater the Usage of digital banking will be, which supports Khrais' [29] finding that perceived ease of use has a direct significant positive effect on intention to use internet banking and Selvanathan et al.'s [30] finding of a positive relationship between ease of use and online banking service delivery.

Risk, with a low correlation (.238), does not have much influence on the use of digital banking. Bigne and Blesa [26], Lee and Turban [27], and Mbama and Ezepue [28], in discussing trust in digital banking, note that the nature of digital transactions is different from transactions done at a branch. Although highlighting the impact on a client's privacy, they do not cover the advanced security features available on today's smartphones and online banking channels, which could explain our finding of a low correlation.

The final construct, *Consumer experience*, has the third highest correlation (.358). This moderately high correlation indicates that *Consumer experience* has an influence on respondents' use of digital banking, which supports the findings of McColl-Kennedy, et al. [46] and Reddy and Reinartz [47]. The question with the highest correlation (.362) is "I prefer to not travel to a bank to process simple transactions", which probably means that, for most interactions, customers are happy to transact online.

These findings indicate that *Online service quality*, *Usability*, and *Consumer experience* are the most important factors encouraging consumers to use digital banking, thus satisfying Objective 1 (To identify the constructs driving the usage by consumers of digital personal banking).

4.5 Structural Equation Model (SEM)

The SEM model was developed using factor analysis and multiple regression analysis techniques to analyze the structural relationship between the measured variable (Usage of digital banking) and the eight latent constructs. The minimum requirements for an SEM analysis were achieved - Chi-square = 375.399, Degrees of freedom = 174, and Probability = .000. Figure 2 presents the resultant path diagram.

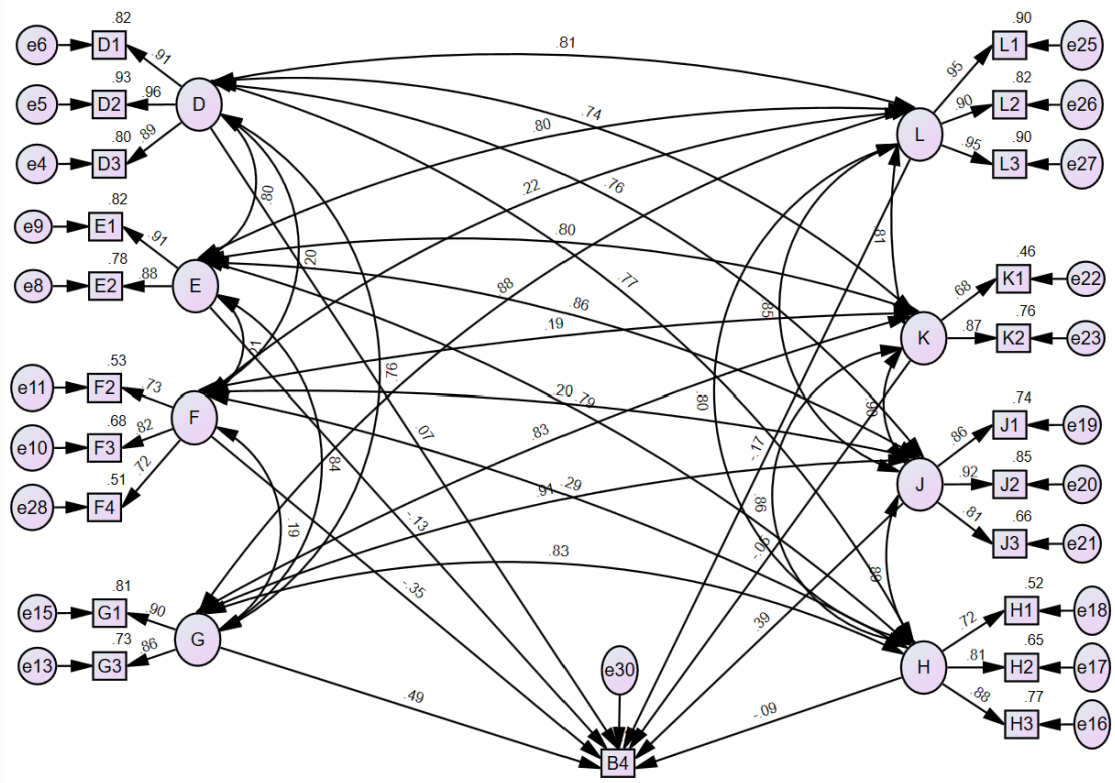

Figure 2: The path diagram for the modified SEM.
(For a key to the meaning of individual question numbers, e.g., D2: Online banking is faster, G1: I use online banking regularly, etc., see Appendix)

Maximum likelihood estimation determines the likelihood that the values of the model parameters accurately describe the data that is observed. Most variables loaded strongly along their various factors, thus verifying the previous EFA. All coefficients were above the suggested value of 0.600. Three statements that loaded poorly were omitted from the model. These statements were "I prefer to visit a bank for new information or for more complicated queries" (E3), "There are more services available when going to a branch than are offered online" (F1), and "I would prefer a more personalized online banking experience" (G2).

The various interactions between the measured dependent variable and the latent independent variables were further analyzed via regression.

4.6 Regression Analysis

First, the correlation covariances between the independent variables were tested. All relationships were significant ($p < 0.001$), including that between *Branch service quality* and *Usability* ($p = 0.002$) and between *Branch service quality* and *Risk* ($p = 0.003$). The results indicate a strong, directly proportional relationship between the latent variables, with each of the *r* estimates being positive. There are a few weaker correlations associated with *Branch service quality*. In addition to testing the covariances between the latent constructs, the correlations between the observed (measured) construct (dependent variable) and the latent constructs were also assessed, showing correlations between all of the latent constructs, with most of them being very strong (0.735 and above).

The regression between the dependent variable and the latent variables (independent variables) shows that there is a statistically significant correlation between the dependent variable (Usage of digital banking) and each of *Branch service quality*, *Usability* and *Online service quality*, as shown in Table 5.

Table 5: Regression analysis statistics

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.538[a]	.290	.275	.70602

Dependent Variable: Usage of digital banking; Predictor variables: (Constant), Consumer experience, Branch service quality, Risk, Practical quality, Safety, Usability, Digital banking convenience, Online service quality

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	79.493	8	9.937	19.935	<.001[b]
Residual	194.897	391	.498		
Total	274.390	399			

Coefficients[a]

	Unstd		Std	t	Sig	Tolerance	VIF
	B	S E	Beta				
(Constant)	2.934	.221		13.269	<.001		
Convenience	.063	.066	.069	.947	.344	.343	2.917
Practical quality	-.109	.076	-.100	-1.436	.152	.376	2.662
Branch service quality	-.250	.043	-.298	-5.746	<.001	.677	1.476
Usability	.227	.074	.226	3.081	.002	.339	2.952
Safety	.004	.071	.004	.057	.955	.319	3.131
Online service quality	.276	.087	.280	3.170	.002	.233	4.290
Risk	-.040	.063	-.038	-.624	.533	.492	2.033
Consumer experience	.050	.084	.050	.595	.552	.254	3.932

a. Dependent variable: Usage of digital banking

The model summary in Table 5 shows that there is a high correlation between the predictors (independent variables) and the dependent variable (r = 0.538), with approximately 30% of the variation in the dependent variable being explained by the predictors (r^2 = 0.290). As shown in the ANOVA analysis in Table 6, the model is significant ($p < 0.001$), which means that the predictors (independent variables or latent constructs) influence the dependent variable. In addition, a variance inflation test (VIF) to assess multi-collinearity indicated that the VIF condition of below 10 was met (VIF < 5), i.e., there was low multi-collinearity.

The three statistically significant dimensions reflected in Table 6 all have coefficients that are considerably different from zero – their Beta scores are the largest. There is a negative relationship between *Branch service quality* and Usage of digital banking, which means that an increase in one unit of *Branch service quality* results in a decrease of 0.250 units of the dependent variable. The remaining two significant relationships with Usage of

digital banking are for *Usability* and *Online service quality*. These are positive, implying that an increase in one (an independent variable) is accompanied by an increase in the other (the dependent variable).

4.7 Model Fit Summary

As this was a newly developed model, it is expected that the structural relationships may not fit perfectly. However, the required criteria are met, and the model is a good fit. The CMIN/DF of 2.157 is less than the acceptable value of 5 and thus meets the CMIN condition. The normed fit index (NFI) is 0.954, more than the recommended value of 0.90, indicating a good fit. The comparative fit index (CFI), which should be between 0 and 1, with 0.90 indicating a good fit, is 0.974, also implying a good fit. The root mean square error of approximation (RMSEA) of 0.054 indicates an adequate fit, and finally, regarding 90% confidence intervals, the model is a reasonably good fit, with the PCLOSE value (0.192) above the recommended 0.050.

5. CONCLUSIONS

5.1 Summary of Findings

The first objective was 'to identify the constructs that drive the use and growth of digital personal banking'. This objective was accomplished by analyzing the relationship between the eight constructs (independent variables) and Usage of digital banking (dependent variable). All the constructs, except one, had significant positive correlations with the Usage of digital banking – *Branch service quality* had a negative correlation. However, the findings also showed that the constructs of *Online service quality*, *Usability*, and *Consumer experience* are the most important factors encouraging consumers to adopt digital banking because they had the highest positive correlations.

The second objective, 'To assess the relationship between consumers' usage of digital personal banking and the constructs driving digital banking', was achieved via the SEM and the regression analysis. The path diagram from the SEM, illustrated in Figure 2, was an accurate indication of the relationships between the dependent variable (Usage of digital banking) and the independent variables (*Convenience, Practical quality, Branch service quality, Usability, Safety, Online service quality, Risk,* and *Consumer experience*), with all these independent variables influencing the Usage of digital banking. However, the Beta values in Table 6 indicate that *Branch service quality, Usability* and *Online service quality* have the biggest impact. If *Branch service quality* declines, more consumers will migrate to digital banking, or those who already use digital banking will probably increase their use of digital banking. Regarding the other two high impact constructs, the more *Useable* the bank's website and the better the *Online service quality*, the more people will migrate to digital banking, or current digital banking customers will do even more of their banking digitally.

These identified crucial drivers in South Africa (*Branch service quality, Usability, Online service quality*) suggest possible differences between the drivers in developing nations from those in developed nations. The decline in branch services, starting with the

introduction of Automatic Teller Machines in the 80s decade and leading to digital banking today, plus the effect of COVID-19, has been pushing many South African customers towards digital banking. This movement may be less prevalent in developed nations where mainstream banking services are still widely provided via physical facilities. This shift in banking has, therefore, emphasized the necessity for excellence in online service quality since so many customers now conduct their banking only online. The second factor, usability, may be more important in developing nations than developed nations because of the generally lower level of education and the lower computer expertise and experience in developing nations. Since this was not a comparative study, the suggestions of differences between developed and developing nations should only be considered as indicative.

5.2 Recommendations for Practitioners

Although reducing branch service quality could lead to a rise in digital banking usage, it would undoubtedly increase customers' overall dissatisfaction with the bank. Therefore, it is recommended that branch service quality should be improved by staff being trained to be even more helpful, friendly and able to assist customers with their more complex queries. At the least, branch service quality should be maintained at the current level.

Since improving usability increases adoption of digital banking, banks should take steps to improve access to financial services, especially by the currently unbanked and by those clients not using digital banking. By integrating the latest financial technology, including smartphones, into their processes, banks can help customers to reduce risk by facilitating digital payments through smart phones and via local partners such as supermarkets. Thus, the currently unbanked and non-digital bank users could have their earnings deposited to a bank account, as opposed to carrying large sums of cash, which is a safety hazard. So as to facilitate such improvements, bank websites should be designed with clarity and ease of use for the non-digitally savvy in mind by providing clear information and guidance that users can access 24/7 and which incorporates self-help facilities such as live chat and even video chats to enhance the usability of the service.

Without excellent online service quality, banks are unlikely to attract significant numbers of currently unbanked potential clients or non-digital bank users. Therefore, banks need to introduce in-app customer support, such as a live-chat option, to ensure that their customers experience excellent online service through applications that are simple and clear. Such real time assistance can prove a crucial factor in building loyalty and can help banks to gain further insights into how to improve customer service by understanding emerging and changing digital preferences. The live-chat option could be an artificial intelligence (AI) system to answer simple questions, which could lead to personal contact (a chat site or a call back option) with a specialized consultant. Such personal contact could be for more complicated questions when the client is not satisfied with the online information received. Types of services that could be offered in this manner include loan applications, credit checks, debit order management, card replacements (by scheduling deliveries), and appointment setting to see a bank consultant.

5.3 Contribution of This Research

This study has added to existing theory by evaluating the constructs that contribute to the perception of digital banking. Previous research has mostly omitted the customer view [64, 65] and the link between customer perceptions and the use of digital services [66, 67, 68, 69]. The study findings have thus created new insights regarding digital personal banking and how perceptions about its implementation are viewed.

5.4 Limitations of The Research

The study was constrained to a specific, limited geographic location, which could lead to coverage bias, with some populations being excluded. For example, since the research instrument was an electronic questionnaire, respondents who did not have access to the Internet would effectively be excluded. The wide spread of the sample and its similarity to the population indicate that this was probably not a significant problem. Nevertheless, the results should be extrapolated beyond the sample with extreme care.

The potential selection bias of convenience sampling was avoided by posting the questionnaire on a public platform (through social media) and thus to people unknown to the researchers. This avoided any danger of the sample being consciously or sub-consciously "chosen" by the researchers.

The impact of COVID-19 resulted in significant delays in data collection as the concurrent implementation of the POPI Act in South Africa made people more wary of sharing information online. To overcome this limitation and to obtain a suitable sample, the questionnaire was posted multiple times over a year. Furthermore, mailings, responses, and the data collected were completely anonymous, and so follow-up to encourage responses was not possible.

5.5 Recommendations for Further Research

Although this research has contributed to new knowledge and to understanding of consumers' attitudes towards, and use of, digital banking, there are several issues that would benefit from further research.

- Since this study was in only one geographic region, broader research is needed, with larger samples, to generalize findings to the whole South African population. Since the findings for a developing nation in comparison to developed nations are not conclusive, further comparative research between such nations (developed/ developing) is required.
- To understand attitudes to digital banking even better, research should be conducted with different consumer groups (demographic, sociographic, heavy versus light users, etc.). This research could identify and differentiate attitudes between and among such groups.
- Qualitative research could be conducted to study the extent to which consumers use, and really understand, digital banking and its possibilities.
- This study focused on selected factors (the independent variable constructs) that potentially influence digital personal banking use. Further research, probably qualitative, is needed to identify and examine the other factors covering the +- 70% of the variance not studied in this research. Such research could include the influence on

digital banking use of factors such as the state of the economy, access to unlimited data, the cost of data, the reliability of internet infrastructure, whether friends and family use digital banking, distance from a bank branch, availability of transport to travel to a branch, attitude to computers in general (i.e., fear of technology) and other similar issues.

6. REFERENCES

[1] P. Ajibade and S. Mutula, "Big data, 4IR and electronic banking and banking systems applications in South Africa and Nigeria," *Banks and Bank Systems*, vol. 15, no. 2, pp. 187-199, 2020, doi:10.21511/bbs.15(2).2020.17.

[2] O. Kolodiziev, M. Krupka, N. Shulga, M. Kulchytskyy and O. Lozynska, "The level of digital transformation affecting the competitiveness of banks," *Banks and Bank Systems*, vol. 16, no. 1, pp. 81-91, 2021, doi:10.21511/bbs.16(1).2021.08.

[3] Z. Zamir, "The Impact of Knowledge Capture and Knowledge Sharing on Learning, Adaptability, Job Satisfaction and Staying Intention: A Study of the Banking Industry in Bangladesh," *International Journal of Entrepreneurial Knowledge*, vol. 7, no. 1, pp. 46-64, 2019, https://doi.org/10.2478/ijek-2019-0004.

[4] N.W. Gleason, Ed. *Higher Education in The Era of The Fourth Industrial Revolution.* Singapore: Palgrave MacMillan, 2018.

[5] X. Carbonell, U. Oberst and M. Beranuy, "Chapter 91 - The Cell Phone in the Twenty-First Century: A Risk for Addiction or a Necessary Tool?," in *Principles of Addiction: Comprehensive Addictive Behaviors and Disorders*, P.M. Miller, Ed.. San Diego, CA: Elsevier, pp. 901-909, 2013, http://dx.doi.org/10.1016/B978-0-12-398336-7.00091-7.

[6] I. Fedorko, R. Bačik and B. Gavurova, "Effort expectancy and social influence factors as main determinants of performance expectancy using electronic banking," *Banks and Bank Systems*, vol. 16, no. 2, pp. 27-37, 2021, doi:10.21511/bbs.16(2).2021.03.

[7] A. Maniraj Singh, "Trends in South African Internet banking," *Aslib Proceedings*, vol. 56, no. 3, pp. 187-196, 2004, https://doi.org/10.1108/00012530410539368.

[8] Capitec, "How Capitec became SA's biggest digital bank," 27 July 2022. Accessed 12 August 2023. [Online]. Available: https://www.capitecbank.co.za/blog/articles/experiences/how-capitec-became-sas-biggest-digital-bank/

[9] S. Jacobs, "Three South African tech companies ranked among the world's best," *MYBROADBAND*, 7 August 2023. Accessed: 12 August 2023. [Online]. Available: https://mybroadband.co.za/news/investing/503450-three-south-african-financial-tech-companies-ranked-among-the-worlds-best.html

[10] H. Labuschagne, "South African Digital banking battle," *MYBROADBAND*, 13 January 2023. Accessed: 12 August 2023. [Online]. Available: https://mybroadband.co.za/ news/banking/476201-south-african-digital-banking-battle.html

[11] J.S. Harchekar, "Digitalization in banking sector," *International Journal of Trend in Scientific Research and Development*, October, pp. 103-109, 2018. Accessed: 12 August 2023. [Online]. Available: https://www.ijtsrd.com/papers/ijtsrd18681.pdf

[12] S. Torkelsson, "Digitalisation in consumer banking: how will digitalisation affect consumer banking in 10 years?," MSc dissertation, Reykjavik University, Iceland, 2017. Accessed: 12 August 2023. [Online]. Available: https://skemman.is/bitstream/1946/29610/1/Msc._Digitalisation%20in%20Consumer%20Banking_Sigurlaugur%20%C3%9Eorkelsson.pdf

[13] Statistics South Africa, *South African Community Survey 2016. Indicators derived from the full population Community Survey,* 2016. Accessed: 12 August 2023. [Online]. Available: https://wazimap.co.za/profiles/district-DC29-ilembe/

[14] R. Sharma, "A Study on Innovation in Banking and its Impact on Customer Satisfaction," *Integrated Journal for Research in Arts and Humanities*, vol. 2, no. 3, pp. 67-71, 2022. Accessed: 12 August 2023. [Online]. Available: https://ijrah.com/index.php/ ijrah/article/download/38/28

[15] N. Tunay, S. Yuksel and K.B. Tunay, "The Effects of Technology on Bank Performance in Advanced and Emerging Economies: An Empirical Analysis," in *Handbook of Research on Managerial Thinking in Global Business Economics*, H. Dinçer and S. Yüksel, Eds., Hershey PA: IGI Global, pp. 263-280, 2019. DOI: 10.4018/978-1-5225-7180-3.ch015.

[16] S.K. Chitungo, and S. Munongo, "Extending the technology acceptance model to mobile banking adoption in rural Zimbabwe," *Journal of Business Administration and Education,* vol. 3, no. 1, pp. 51-79, 2013. Accessed: 23 September 2024. [Online]. Available: https://lib.manaraa.com/books/Extending%20the%20Technology%20Acceptance%20Model%20to%20Mobile%20Banking%20Adoption%20in%20Rural%20Zimbabwe.pdf

[17] P. Dhanalakshmi, "A study on impact of digital banking in Madurai City," *Journal of The Gujarat Research Society,* vol. 21, no. 13, pp. 751-759, 2019. Accessed: 07 October 2020. [Online]. Available: http://gujaratresearchsociety.in/index.php/JGRS/article/view/1521

[18] J.M. Chigada and B. Hirschfelder, "Mobile banking in South Africa: A review and directions for future research," *South African Journal of Information Management*, vol. 19, no. 1, pp. 1-9, 2017. https://doi.org/10.4102/sajim.v19i1.789.

[19] N.R. Mosteanu, A. Faccoa, L.P.L. Cavaliere and S. Bhatia, "Digital technologies' implementation within financial and banking system during socio distancing restrictions – back to the future," *International Journal of Advanced Research in Engineering and Technology,* vol. 11, no. 6, pp. 307-315, 2020. Accessed: 07 October 2020. [Online]. Available: https://ssrn.com/abstract=3650810

[20] P. Revathi, "Digital banking challenges and opportunities in India," *EPRA International Journal of Economic and Business Review,* vol. 7, no. 12, pp. 20-23, 2019. DOI: 10.36713/epra2985.

[21] Y. Durmaz and I.H. Efendioglu, "Travel from traditional marketing to digital marketing," *Global Journal of Management and Business Research: E Marketing*, vol. 16, no. 2, pp. 34-40, 2016. https://doi.org/10.34257/GJMBREVOL22IS2PG35.

[22] B.K. Ameme, "The impact of customer demographic variables on the adoption and use of internet banking in developing economies," *Journal of Internet Banking and Commerce*, vol. 20, no. 2, pp. 1-30, 2015. Accessed: 12 August 2023. [Online]. Available: http://www.icommercecentral.com/open-access/the-impact-of-customer-demographic-variables-on-the-adoption-and-use-of-internet-banking-in-developing-economies.pdf

[23] E. Sheeba and S. Gomathi, "Customers perception towards digital banking with reference to Coimbatore City," *Aut Aut Research Journal*, vol. 11, no. 8, pp. 119-131, 2020. Accessed: 2 October 2020. [Online]. Available: https://autrj.com/index.php/volume-11-issue-8-2020/

[24] M. Uddin, M.A. Khan and N. Farhana, "Banking services and customer perception in some selected commercial banks in Bangladesh: a comparative perspective," *Indonesian Management and Accounting Research*, vol. 13, no. 1, pp. 1-5, 2014. https://doi.org/10.25105/imar.v13i1.1160.

[25] R. Johnston and X. Kong, "The customer experience: a road-map for improvement," *Managing Service Quality,* vol. 21, no. 1, pp. 5-24, 2011. DOI:10.1108/09604521111100225.

[26] E. Bigne and A. Blesa, "Market orientation, trust, and satisfaction in dyadic relationships: A manufacturer-retailer analysis," *International Journal of Retail and Distribution Management*, vol. 31, no. 11, pp. 574–590, 2003. DOI: 10.1108/09590550310503302.

[27] M.K. Lee and E. Turban, "A trust model for consumer internet shopping," *International Journal of Electronic Commerce*, vol. 6, no. 1, pp. 75–91, 2001. https://doi.org/10.1080/10864415.2001.11044227.

[28] C.I. Mbama and P.O. Ezepue, "Digital banking, customer experience and bank financial performance: UK customers' perceptions," *International Journal of Bank Marketing*, vol. 36, no. 2, pp. 230-255, 2018. DOI:10.1108/IJBM-11-2016-0181.

[29] L.T. Khrais, "Framework for measuring the convenience of advanced technology on user perceptions of internet banking systems," *Journal of Internet Banking and Commerce*, vol. 22, no. 3, pp. 1-18, 2017. Accessed: 12 August 2023. [Online]. Available: https://www.icommercecentral.com/open-access/framework-for-measuring-the-convenience-of-advanced-technology-on-user-perceptions-of-internet-banking-systems.pdf

[30] M. Selvanathan, P.J. Tan, T.F. Bow and N. Supramaniam, "The impact of cost, customer experience, ease of use, and trust towards adoption of online banking," *International Business Research*, vol. 9, no. 11, pp. 235-241, 2016. http://dx.doi.org/10.5539/ibr.v9n11p235.

[31] R Pankomera and D.V. Greunen, "Challenges, benefits, and adoption dynamics of mobile banking at the base of the pyramid (BOP) in Africa: a systematic review," *The 176 African Journal of Information and Communication*, vol. 21, no. 1, pp. 21-49, 2018. https://doi.org/10.23962/10539/26113.

[32] H. Ting, Y. Yacob, L. Lona and W.M. Lau, "Intention to use mobile payment system: a case of developing market by ethnicity," *Procedia – Social and Behavioral Sciences*, vol. 224, pp. 368-375, 2016. https://doi.org/10.1016/j.sbspro.2016.05.390.

[33] S. Bidarra, S. Henrique, M.L. Francisco and L.C. Francisco, "Analysis and modeling of the determinants of mobile banking acceptance," *The International Journal of Management Science and Information Technology*, vol. 8, pp. 1-27, 2013. Accessed: 12 August 2023. [Online]. Available: http://hdl.handle.net/10419/97874

[34] M. Lakshmi and D.M Kavitha, "A study on customer satisfaction on digital banking," *Journal of Xi'an University of Architecture & Technology*, vol. 12, no. 3, pp. 727-734, 2020. Accessed: 12 August 2023. [Online]. Available: https://drive.google.com/file/d/1CwmDuqyVHWimWvx63maD5xlokZKH-lBX/view

[35] K. Khando, M S. Islam and S. Gao, "Factors Shaping the Cashless Payment Ecosystem: Understanding the Role of Participating Actors," in *Proceedings of.35th Bled eConference – Digital Restructuring and Human (Re)action*, Bled, Slovenia, June 26–29 2022. https://doi.org/10.18690/um.fov.4.2022.10.

[36] M.M. Ordu and M. Anyanwaokoro, "Cashless economic policy in Nigeria: a performance appraisal of the banking industry," *Journal of Business and Management*, vol. 18, no. 10, pp. 1-17, 2016. DOI:10.9790/487X-1810030117.

[37] R. Parmar, "A study of cashless system and cashless society: its advantages and disadvantages," *Indian Journal of Applied Research*, vol. 8, no. 4, pp. 10-11, 2018. Accessed: 12 August 2023. [Online]. Available: https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/fileview/April_2018_1522924122__135.pdf

[38] M. Deora, "A study on impact of cashless economy on banking and finance," *International Journal of Advanced Research in Commerce, Management & Social Science*, vol. 1, no. 1, pp. 28-36, 2018. Accessed: 12 August 2023. [Online]. Available: http://www.inspirajournals.com/uploads/Issues/2019780645.pdf

[30] A. Kirobo, J. Lissah and M.M. Govella, "Adoption of Cashless Economy in the World: A Review," *IOSR Journal of Economics and Finance*, vol. 13, no. 2, pp. 37-48, 2022. DOI: 10.9790/5933-1302083748.

[40] A.E. Abbas, "Literature review of a cashless society in Indonesia: evaluating the progress," *International Journal of Innovation, Management and Technology*, vol.8, no. 3, pp. 193-196, 2017. Accessed: 12 August 2023. [Online]. Available: http://www.ijimt.org/vol8/727-DT0028.pdf

[41] S. Moeller, "Characteristics of services – a new approach uncovers their value," *Journal of Services Marketing*, vol. 24, no. 5, pp. 359-368, 2010. https://doi.org/10.1108/08876041011060468.

[42] H. Moon and H-H. Lee, "The effect of intangibility on the perceived risk of online mass customization: utilitarian and hedonic perspectives," *Social Behavior and Personality: An international journal*, vol. 43, no. 3, pp. 457-466, 2015. https://doi.org/10.2224/sbp.2015.43.3.457.

[43] T.F. Srihadi and D. Setiawan, "The influence of different level of service characteristics and personal involvement towards consumer relational response

behaviors," *Procedia - Social and Behavioral Sciences*, vol. 210, pp. 378-387, 2015. https://doi.org/10.1016/j.sbspro.2015.11.385.

[44] B. Menon, "Personal trust institution trust and consumerism attitudes towards mobile marketing and banking services in India," *Academy of Marketing Studies Journal*, vol. 23, no. 3, pp. 1-13. 2019. Accessed: 12 August 2023. [Online]. Available: https://www.abacademies.org/articles/Personal-trust-institution-trust-and-consumerism-attitudes-towards-mobile-marketing-and-banking-services-in-india-1528-2678-23-3-209.pdf

[45] A.R. Walls, F. Okumus, R. Wang and D.J. Kwun, "An epistemological view of consumer experience," *International Journal of Hospitality Management,* vol. 30, no. 1, pp. 10-21, 2011. DOI: 10.1016/j.ijhm.2010.03.008.

[46] J.R. McColl-Kennedy, et al., "Fresh perspectives on customer experience," *Journal of Services Marketing*, vol. 29, no. 6/7, pp. 430-435, 2015. DOI: 10.1108/JSM-01-2015-0054.

[47] S. Reddy and W. Reinartz, "Digital transformation and value creation: sea change ahead," *Value in the Digital Era*, vol. 9, no. 1, pp. 11-17, 2017. https://doi.org/10.1515/gfkmir-2017-0002.

[48] A. Ramsundra and R.B. Mason, "Consumer Perspective of Financial technology and Digital Personal Banking in South Africa: A Literature Review," *Expert Journal of Marketing,* vol. 11, no. 2, pp. 136-155, 2023. Accessed: 20 October 2023. [Online]. Available: https://marketing.expertjournals.com/ark:/16759/EJM_1110mason136-155.pdf

[49] S.K. Msosa, "Service failure and service recovery strategies in the context of higher education: a provincial perspective in South Africa," PhD thesis, Durban University of Technology, Durban, South Africa, 2017. Accessed: 12 August 2023. [Online]. Available: http://openscholar.dut.ac.za/bitstream/10321/3325/1/MSOSASK_2019.pdf

[50] South Africa, iLembe District Municipality, "iLembe District Community Survey 2016, iLembe District: Wazimap," 2016. Accessed: 12 August 2023. [Online]. Available: https://wazimap.co.za/profiles/district-DC29-ilembe/#demographics

[51] South Africa, iLembe District Municipality, "Annual Report 2019/2020," KwaZulu Natal, Government Printer. 2020. Accessed: 23 September 2024. [Online]. Available: https://lg.treasury.gov.za/supportingdocs/DC29/DC29_Annual%20Report%20Final_2021_Y_20230124T151020Z_sphesihle_mhlongo.pdf

[52] South Africa, Department of Co-Operative Governance and Traditional Affairs, "Declaration of a National State of Disaster," Government Gazette 43096, 15 March 2020, Department of Co-Operative Governance and Traditional Affairs, Cape Town. Accessed: 12 August 2023. [Online]. Available: https://www.gov.za/sites/default/files/gcis_document/202003/43096gon313.pdf

[53] A. Wisniowski, J.W. Sakshaug, D.A.P. Ruiz and A.G. Blom, "Integrating Probability and Nonprobability Samples for Survey Inference," *Journal of Survey Statistics and Methodology*, vol. 8, pp. 120–147, 2020. http://dx.doi.org/10.1093/jssam/smz051.

[54] S. Ogubazghi, and W. Muturi, "The Effect of Age and Educational Level of Owner/Managers on SMMEs' Access to Bank Loan in Eritrea: Evidence from Asmara City," *American Journal of Industrial and Business Management*, vol. 4, no. 11, pp. 632-643, 2014. doi: 10.4236/ajibm.2014.411069.

[55] U. Sekaran, and R. Bougie, *Research methods for business: a skill business approach*. 7th ed. Chichester: Wiley, 2016.

[56] A. Joshi, S. Kale, S. Chandel and D.K. Pal, "Likert scale: explored and explained," *British Journal of Applied Science & Technology,* vol. 7, no. 4, pp. 396-403, 2015. DOI:10.9734/BJAST/2015/14975.

[57] C. Linnes and B. Metcalf, "iGeneration and Their Acceptance of Technology," *International Journal of Management & Information Systems*, vol. 21, no. 2, pp. 11-26, 2017. DOI https://doi.org/10.19030/ijmis.v21i2.10073.

[58] E. Venter, "Bridging the communication gap between Generation Y and the Baby Boomer generation," *International Journal of Adolescence and Youth*, vol. 22, no. 4, pp. 497-507, 2017. https://doi.org/10.1080/02673843.2016.1267022.

[59] S. Khan, "Cross provincial migration amongst the South African Indian community," *Nordic Journal of African Studies*, vol. 26, no. 2, pp. 88-106, 2017. Accessed: 12 August 2023. [Online]. Available: https://njas.fi/njas/article/view/89/82

[60] K.A.M. Daud, N.Z. Khidzir, A.R. Ismail and F.A. Abdullah, "Validity and reliability of instrument to measure social media skills among small and medium entrepreneurs at Pengkalan Datu River," *International Journal of Development and Sustainability*, vol. 7, no. 3, pp. 1026-1037, 2018. Accessed: 12 August 2023. [Online]. Available: https://isdsnet.com/ijds-v7n3-15.pdf

[61] N. Shrestha, "Factor analysis as a tool for survey analysis," *American Journal of Applied Mathematics and Statistics*, vol. 9, no. 1, pp. 4-11, 2020. DOI: 10.12691/ajams-9-1-2.

[62] J. Pallant, *SPSS Survival Manual: A step by step guide to data analysis using SPSS for windows,* 3rd Ed., New York: McGraw Hill Open University Press, 2007.

[63] K.M. Makhitha and K. Ngobeni, "The influence of demographic factors on perceived risks affecting attitude towards online shopping," *South African Journal of Information Management*, vol. 23, no. 1, pp. 1-9, 2021. https://doi.org/10.4102/sajim.v23i1.1283.

[64] K. Talke and G.C. O'Connor, "Conveying effective message content when launching new industrial products," *Journal of Product Innovation Management*, vol. 28, no. 6, pp. 943-956, 2011. https://doi.org/10.1111/j.1540-5885.2011.00852.x.

[65] M. Ali, M.A. Khan and M.A. Kalwar, "Challenges for online banking in customers` perspective: a review", *International journal of business education and management studies,* 2021. Accessed: 29 August 2023. [Online]. Available: https://www.researchgate.net/publication/353760937_CHALLENGES_FOR_ONLINE_BANKING_IN_CUSTOMERS_PERSPECTIVE_A_REVIEW

[66] S.P. Kazmi, "Consumer perception and buying decisions (The Pasta Study)," *International Journal of Advancements in Research & Technology*, vol. 1, no. 6, pp. 1-10, 2012. Accessed: 23 September 2024. [Online]. Available:

https://www.researchgate.net/publication/258650208_Consumer_Perception_and_Buying_DecisionsThe_Pasta_Study

[67] C.C. Yee and R. Yazdanifard, "How customer perception shape buying online decision," *Global Journal of Management and Business Research: E Marketing*, vol. 14, no. 2, pp. 13-20, 2014. Accessed: 29 August 2023. [Online]. Available: https://globaljournals.org/GJMBR_Volume14/3-How-Customer-Perception-Shape.pdf

[68] S. Winter, "Customers' perceptions of self-service quality – A qualitative case study in the Swedish banking sector", Master thesis in Forest Science, Swedish University of Agricultural Sciences, Uppsala, Sweden, 2019. Accessed: 29 August 2023. [Online]. Available: https://stud.epsilon.slu.se/15177/1/winter_s_191025.pdf

[69] M.M. Shamil, H.M.T.S. Herath and W.M.O. Sumatirate, "The Influence of e-Banking Service Quality on e-Customer Satisfaction and Loyalty: A Sri Lankan Study," *International Conference on Business and Information*, University of Kelaniya, Sri Lanka, pp. 574-590, 2022. Accessed: 29 August 2023. [Online]. Available: https://www.researchgate.net/publication/372577251

[70] COEFS Fintech Report, "The impact of the 4th industrial revolution on the South African financial services market," Centre of Excellence in Financial Services, 2018. Accessed: 22 February 2020. [Online]. Available: https://www.coefs.org.za/download/90/fintech/1972/the-impact-of-the-fourth-industrial-revolution-on-financial-services-in-south-africa-final.pdf

[71] J.E. Kinsman, "Cardless banking in the Nelson Mandela Metropole: A means of financial inclusion for the excluded," *Journal of Economic and Financial Sciences,* vol. 12, no. 1, Art. No. a182, 2019. https://doi.org/10.4102/jef.v12i1.182.

[72] I. Al-Jabri and M. Sohail Sadiq, "Mobile Banking Adoption: Application of Diffusion of Innovation Theory," *Journal of Electronic Commerce Research*, vol. 13, no. 4, pp. 379-391, 2012. Accessed: 4 January 2020. [Online]. Available: https://www.researchgate.net/publication/258515458_Mobile_Banking_Adoption_Application_of_Diffusion_of_Innovation_Theory

[73] A. Nkoyi, M. Tait and F. Van der Walt, "Predicting the attitude towards electronic banking continued usage intentions among rural banking customers in South Africa," *South African Journal of Information Management*, vol. 21, no. 1, a1016. 2019. https://doi.org/10.4102/sajim.v21i1.1016.

[74] T. Ramavhona and S. Mokwena, "Factors influencing internet banking adoption in South African rural areas," *South African Journal of Information Management*, vol. 18, no. 2, pp. 1-8, 2016. http://dx.doi.org/10.4102/sajim.v18i2.642.

[75] H.M.M. Fairooz and C.N. Wickramasinghe, "Innovation and development of digital finance: a review on digital transformation in banking & financial sector of Sri Lanka," *Asian Journal of Economics, Finance and Management*, vol. 1, no. 2, pp. 69-78, 2019. Accessed: 29 August 2023. [Online]. Available: https://www.researchgate.net/publication/334168524

[76] A. Schoombee, "South African Banks and The Unbanked: Progress and Prospects," *South African Journal of Economics*, vol. 72, no. 3, pp. 581-603, 2004. https://doi.org/10.1111/j.1813-6982.2004.tb00127.x

[77] A. Adefulu and L. van Scheers, "Consumer perceptions of banking services: factors for bank's preference," *Risk Governance & Control: Financial Markets & Institutions,* vol. 6, no. 4, pp. 375-379, 2016. https://doi.org/10.22495/rcgv6i4c3art2.

[78] S.V. Dalvi, "Digitization in banking," *International Journal of Trend in Scientific Research and Development*, Conference Issue: ICDEBI-2018, October, pp. 197-203, 2018. https://doi.org/10.31142/ijtsrd18704.

[79] J. Coetzee, "Strategic implications of Fintech on South African retail banks," *South African Journal of Economic and Management Sciences*, vol. 21, no. 1, Art. No. a2455, 2018. http://dx.doi.org/10.4102/sajems.v21i1.2455.

[80] Y. Saini, G. Bick and L. Abdulla, "Consumer awareness and usage of Islamic banking products in South Africa," *South African Journal of Economic and Management Sciences,* vol. 14, no. 3, pp. 298-313, 2011. DOI: https://doi.org/10.4102/sajems.v14i3.193.

[81] N. Saidi and F. Scacciavillani, "The Institutional Framework of the Gulf Central Bank," *SSRN*, 1 September 2008. Accessed: 9 October 2020. [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1528889

[82] D.K. Maduku, M. Mpinganjira and H. Duh, "Understanding mobile marketing adoption intention by South African SMEs: A multi-perspective framework," *International Journal of Information Management*, vol. 36, no. 5, pp. 711-723, 2016. https://doi.org/10.1016/j.ijinfomgt.2016.04.018.

[83] A. Redelinghuis and C. Rensleigh, "Customer perceptions on internet banking information protection," *South African Journal of Information Management*, vol. 12, no. 1, pp. 1-6, 2010. DOI: 10.4102/sajim.v12i1.444.

[84] J. Nel and C. Boshoff, "Enhancing the use of internet banking in an emerging market," *South African Journal of Economic and Management Sciences*, vol. 17, pp. 624-638, 2014. Accessed: 4 June 2020. [Online]. Available: http://www.scielo.org.za/pdf/sajems/v17n5/08.pdf

[85] J. Serrao and L. Jansen Van Vuuren, "A Cashless Society in Africa: Spotlight on the South African and Zimbabwean environments," The Institute and Faculty of Actuaries, February 2019. Accessed: 23 September 2024. [Online]. Available: https://www.actuaries.org.uk/system/files/field/document/A%20Cashless%20Society%20in%20Africa%2020190226%202040%20FINAL%20-%20disc.pdf

[86] C. Rootman, M. Tait and J. Bosch, "The influence of bank employees on bank customer relationship management," *Acta Commercii*, vol 7, no. 1, Art. No. a28, 2007. https://doi.org/10.4102/ac.v7i1.28.

[87] P. Chaturvedi, "Digitization not a Choice but a Necessity for the Indian Banking Industry," *International Research Journal of Engineering and Technology*, vol. 6, no. 9, pp. 1925-1927, 2019. Accessed: 20 October 2023. [Online]. Available: https://www.irjet.net/archives/V6/i9/IRJET-V6I9303.pdf

[88] E.R. Maziriri, "The Impact of Green Marketing Practices on Competitive Advantage and Business Performance among Manufacturing Small and Medium Enterprises (SMEs) in South Africa,". DPhil thesis in Business Science (Marketing), University of the Witwatersrand, Johannesburg, South Africa, 2018. Accessed: 4 June 2020. [Online]. Available:

https://wiredspace.wits.ac.za/server/api/core/bitstreams/d382efa7-5aa7-4554-b886-cfc9abd433e6/content

[89] C. Van Heerden and G. Van der Westhuizen, "The cost of banking services and the technical efficiency of a South African bank," *The Journal for Transdisciplinary Research in Southern Africa*, vol. 4, no. 2, pp. 401-417, 2008. Accessed: 6 June 2020. [Online]. Available: https://journals.co.za/doi/abs/10.10520/EJC111863

[90] The World Bank, "South Africa Economic Update – Innovation for productivity and inclusiveness," 2017. Accessed: 4 June 2020. [Online]. Available: https://documents1.worldbank.org/curated/en/779551505322376708/pdf/119695-WP-PUBLIC-SA-EU-2017-Digital-Version-Sep-19.pdf

[91] S.V. Mohana Sujana, "Digitalization in Banking Sector," *International Journal of Research and Analytical Reviews*, Vol. 5, no. 3, 2 August 2018. Accessed: 4 June 2020. [Online]. Available: https://ssrn.com/abstract=3897629

APPENDIX A: COLLECTION INSTRUMENT DERIVATION

Vari-ables	Con-structs	Questions	Sources
B4 = DV	Usage of digital banking	Do you use internet banking?	Own
		My preference towards banking is…	
		How often do you use the following in a month?	
		Which online banking services do you use?	
D = IV 1	Conve-nience	D1: Online banking is more convenient than visiting a branch	[18, 70]
		D2: Online banking is faster	[70, 71, 72]
		D3: I can use online banking at any hour	[73]
E = IV 2	Practical quality	E1: I understand how to use online banking	[74, 75]
		E2: Online information and content offered by my bank is clear and easy to understand	[73, 76]
		E3: I prefer to visit a bank for any information I am unaware of	[77]
F = IV 3	Branch service quality	F1: There are more services available when going to a branch than offered online	[24]
		F2: I visit my bank to fix issues such as replacing a lost or stolen card	[20, 78]
		F3: I can ask about new products & services when I visit bank	
		F4: Human interaction (speaking to tellers/sales consultants) is important for banking relationship	[24, 79]
G = IV 4	Usability	G1: I use online banking regularly	[80, 81]
		G2: I prefer a more personalized online banking experience	
		G3: My smartphone banking app covers all my basic banking requirements	
H = IV 5	Safety	H1: Internet banking is safer in terms of online fraud and theft	[11, 82, 83, 84]
		H2: When paying physically, I prefer paying with bank card	[789, 85]
		H3: I am happy with safety regulations from my bank	[78]
J = IV 6	Online service quality	J1: I had positive experiences using online banking	[76, 86]
		J2: Online banking is clear and easy to use	
		J3: Online banking has sufficient services	[28]
K = IV 7	Risk	K1: Online banking saves on banking fees and is cost efficient	[76, 85]
		K2: I have more control of my banking when I bank online	[87]
		K3: Branch Banking charges are reasonable	[76. 88, 89]
L = IV 8	Consumer experi-ence	L1: Online banking saves time	[70, 71,72]
		L2: I prefer to not travel to bank to process simple transactions	[90]
		L3: Online banking is more convenient due to its 24/7 operation	[73, 745]
		L4: Online banking has no delays in processing	[91]

APPENDIX B: ROTATED COMPONENT MATRIX

Constructs/Questions	Component			
D - Convenience	**1**			
D1 Online banking is more convenient than visiting a branch	0.943			
D2 Online banking is faster	0.962			
D3 I can use online banking at any hour	0.939			
E - Practical quality		**2**		
E1 I understand how to use online banking		0.940		
E2 The online information offered by my bank is clear and easy to understand		0.942		
E3 I prefer to visit a bank for new information or for more complicated queries		0.433		
F - Branch service quality			**3**	
F1 There are more services available when going to a branch than are offered online			0.756	
F2 I visit my bank to fix issues such as a lost or stolen card			0.803	
F3I get to ask about new products/services when I visit bank			0.836	
F4 Human interaction (speaking to consultants/ tellers) is important for my banking relationship			0.816	
G - Usability				**4**
G1 I use online banking regularly				0.906
G2 I prefer a more personalised online banking experience				0.689
G3 My smartphone banking application covers all my basic banking requirements				0.893

H - Safety							**5**
H1 Internet banking is safer in terms of online fraud and theft						0.846	
H2 When paying physically, I prefer paying with my card						0.868	
H3 I am happy with the safety regulations from my bank						0.903	
J - Online service quality					**6**		
J1 I have had positive experiences using online banking					0.903		
J2 Online banking is clear and easy to use					0.936		
J3 Online banking has sufficient services					0.893		
K - Risk				**7**			
K1 Online banking saves banking fees and is cost efficient				0.843			
K2 I have more control of my banking when I bank online				0.851			
K3 Branch banking charges are reasonable				0.592			
L - Consumer experience							**8**
L1 Online banking saves time							0.944
L2 I prefer to not travel to a bank for simple transactions							0.929
L3 Online banking is more convenient due to 24/7 operation							0.946
L4 Online banking has no delays in processing							0.760

Extraction Method: Principal Component Analysis. a. 1 components extracted