

Ranking The Most Critical Factors to Enhance Consumers' Adoption of Chatbots Within the Banking Sector

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Abstract

The digitalization of the banking sector in South Africa has increased in the past decade. Banks are shifting from a labour-intensive approach to doing business to the use of machines, robotics, and artificial intelligence. The use of chatbots seems to be a new platform that banks are utilizing to engage customers in a meaningful and productive manner. Compared to mobile applications and social media platforms, chatbot adoption within the banking sector has not attracted many customers. The purpose of this study was to investigate and rank the most critical factors that consumers consider before adopting chatbots in the banking sector. Using an online survey, primary data was collected from respondents who possess a banking account in South Africa and who have been exposed to online banking in the past. A sample size of 200 respondents was envisaged for the study; however, a total of 151 usable questionnaires were analyzed. The data collected from the respondents was coded and captured on a Microsoft Excel spreadsheet, which was then followed by the analysis of the data using IBM SPSS version 16. The findings indicate that relative advantage, perceived usefulness, and price value were ranked in the first group of important variables that consumers will prioritize. In addition, perceived compatibility, perceived ease of use, and facilitating conditions were classified in the second group of important factors. Hedonic motivation was identified in the third significant group, while social influence was classified in the fourth significant group. Valuable recommendations have been offered in the study that could assist the banking sector in designing strategies to enhance the use of chatbots in the banking sector.

Keywords: Chatbots, banking sector, relative advantage, ranking, South Africa

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1. Introduction

The dawn of South African democracy in 1994 brought many reforms aimed at reconstructing an economy in which all South Africans have equal opportunities (National Development Plan, 2011). This was against the backdrop of a recognition that inclusivity and diversity play a pivotal role in promoting a more prosperous, stable, and resilient economy (National Treasury, 2011; Masondo, 2020). The banking sector, which is key to achieving these reforms, made meaningful progress in transforming itself and contributing to the ongoing journey of transforming the country's economy. Moreover, in 2004, the voluntary Financial Sector Charter (FSC) was introduced, and its main commitment was to promote a vibrant, transformed, and globally competitive banking sector that reflects the demographics of South Africa and establishes equitable financial access for all (Masondo, 2020; Matlabe, 2010). Besides the transformation within the banking sector in South Africa, other significant developments include, but are not limited to, lending to black small businesses and black farmers and improving funding for low-cost housing and infrastructure (Masondo, 2020).

A more efficient allocation of resources and risk diversification result in a well-functioning banking sector, which in turn contributes to economic growth (Simbanegavi et al., 2015). Critical to the well-being of the economy is a competitive and efficient banking sector, which in turn helps facilitate the efficient movement of funds from deficit to surplus units, thereby encouraging savings and the optimal allocation of resources. The industry's profitability ratios have been under strain due to a challenging operating environment aside from increased stress in the economy due to COVID-19 and the subsequent lockdown (Business Tech, 2021).

Furthermore, despite their importance to the economy, South African banks face many challenges, including those arising from globalization, an increasingly competitive industry, devaluations of banks' shares, changing client behaviour, requirements for fairness in banking fees, and new technology affecting the industry (PWC, 2021; Rootman et al., 2011). Access to technology and its penetration level among South Africa's consumers have been significant in transforming the way that businesses, including banks, respond to consumer needs and expectations (Bagley et al., 2012; BankSETA, 2018).

However, despite banking institutions' substantial progress in providing good services through the consumer digital experience, the digital banking landscape, such as the adoption of chatbots, remains underutilized. Consumers who have embraced digital banking continue to report relatively low levels of satisfaction in the banking sector (Business Tech, 2021). The purpose of this study is to investigate and rank the most critical factors that consumers perceive will influence their decision to adopt chatbots within the banking sector. The research question therefore is: What are the most critical factors that consumers perceive will influence their decision to adopt chatbots within the banking sector in South Africa? The

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ranking of these factors will assist managers in the banking sector in prioritizing the factors that will enhance consumers' adoption of chatbots.

2. Literature review

2.1 Digitalisation of retail banking services

The digitalization of society has been one of the most important processes to have happened over the past three decades; moreover, the importance of such a process increased significantly during the COVID-19 pandemic (Mosteanu et al., 2020). The innovation of automated customer-centric ecosystems has enabled the introduction of “new business processes, business models, and the entire transformation” of the value chain in banking (Sibanda et al., 2020). In addition, these changes saw the banking sector initially introduce systems such as credit cards, debit cards, and automated transmission machines (ATMs) rather than bank books and banking halls. These innovations extended to mobile applications, personal computer applications, and phone tablets (Mosteanu et al., 2020).

Banking institutions are now offering their services through an electronic banking (e-banking) channel, with the terms “online banking” or “internet banking” used interchangeably in the literature (Amin, 2016; Ayo et al., 2016; Shankar & Jebarajakirthy, 2019). Providing high-quality e-banking services is considered a basic strategy for gaining a competitive advantage in the service delivery platform (Makanyeza & Chikazhe, 2017). Digital technology innovations have brought about robust changes to the banking system and financial processes, and adoption of these technological innovations in the banking sector is based on factors such as the level of training and readiness of customers (Mosteanu et al., 2020).

South African consumers are exposed to digital omni-channels such as online banking and bank applications to redefine banking transaction processes (Fotso, 2020). Banks have been making efforts to successfully embrace digital improvement and meet the goal of what is termed the “bank of the future” (South African Reserve Bank (SARB), 2018). Some of the digital technology innovations in the banking sector include the internet of things, banking security, smart innovations, smart devices, data analytics, artificial intelligence (AI), and system architecture (SARB, 2018). These innovations have led to new digital customer experiences such as virtual communication channels, round-the-clock access to banking platforms, and the remote completion of banking transactions (Fotso, 2020). The use of chatbots by banks has also been on the rise in the past five years.

2.2 Chatbot adoption

Customer engagement with banks is steadily transforming from the personal management of business by customers in person in banking halls to virtually accessing the financial services that they need directly through technologies such as e-banking (Rahi et al., 2019). With artificial intelligence (AI) improvements and digital marketing becoming more essential, sectors such as retail, banking, and education are successfully using robotic virtual characters that assist customers through desktop interfaces (Forbes, 2019). Such robotic virtual characters include chatbots, which are AI-based computer programs that can talk to people and be in active communication, or virtual assistants that understand human capabilities (Huang & Rust, 2021; Nair & Gupta, 2021).

A chatbot is also an artificially intelligent conversational agent, a commercial tactic, or a self-service technology that simulates human-like conversation and allows users to type questions and, in turn, generates meaningful answers to these questions (Baris, 2020; Feine et al., 2019; Khan & Das, 2018). Therefore, an important element of the chatbot concept is that it communicates with consumers in a natural language about a particular subject (Baris, 2020). Within the banking sector, chatbots also assist consumers with the processing of loans, checking the customer's historical records, and even proposing good investments to the customer based on past performance and credit records (OECD, 2021).

2.3 Proposed factors of the study

This study used the technology acceptance model (TAM), the diffusion of innovation theory (DoIT), and the unified theory of acceptance and use of technology 2 (UTAUT2) to find eight (8) factors. These theories and their factors are widely used by researchers to investigate the adoption of new technology across different sectors and have been found to be reliable. The factors adopted from these theories are stated and explained in Table 1.

Table 1: Proposed factors

No.	Factor	Description	Source	Theory
1.	Perceived Usefulness	The level to which a user thinks that new technology use will positively impact his work	Anouze & Alamro (2019); Lin et al., (2020)	TAM
2.	Perceived ease of use	The degree to which a user views the use of the new technology as effortless	Anouze & Alamro (2019); Lin et al., (2020)	TAM
3.	Relative advantage	This is when consumers perceive a new technology as better or offering more advantages than an old version	Ali et al (2019); Al-Jabri & Sohail (2012)	DoIT
4.	Perceived Compatibility	If a consumer feels that an innovation is compatible with	Al-Rahmi et al (2021)	DoIT

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		their current standards, previous involvements, and desires, then the consumer is likely to adopt that innovation		
5.	Facilitating conditions	Facilitating conditions refer to the exogenous variables that can influence the use of technology, such as the availability of resources, technical support, and training	Hasibuan, (2021)	UTAUT2
6.	Price value	The degree to which a person believes that the cost of using telebanking services is reasonable	Rahman et al., (2020)	UTAUT2
7.	Hedonic motivation	The degree to which an individual is motivated to use a technology because of the enjoyment or pleasure that they derive from using it	Tamilmani et al., (2019)	UTAUT2
8.	Social influence	The degree to which other people in society can influence others to use a certain technology	Hew et al., (2015)	UTAUT2

Source: Authors own compilation

3. Research methodology

Both the positivism paradigm and quantitative research methodology were applied in this study. The target population included only South African consumers who are at least 18 years of age and above and who possess a banking account with any of the South African banks. The target respondents should have also been exposed to online banking in the past. A total of 200 respondents were targeted as the minimum recommended sample size where the total population cannot be established (Survicate, 2022; Hair et al., 2017; Roscoe, 1975). Primary data was collected through a structured questionnaire. The structured questionnaire was populated on QuestionPro, which is an online survey tool. The link to the survey was sent through the researcher's email and further shared on different social media platforms. The questionnaire contained a cover letter informing the target respondents about the purpose of the study and requesting their consent before allowing them to answer the questions. Only respondents who agreed to take part in the survey were allowed to voluntarily answer the questions. The five-point Likert scale type of question was utilized to measure the various factors in the study. Multiple questions were used to obtain the profiles of the respondents. The questionnaire had received ethical clearance from the researcher's university. The data was analyzed using SPSS version 26.

4. Results and findings

4.1 Profile of the respondents and frequency distribution

A total of 151 usable questionnaires, which represent a response rate of 75.5%, were included in the data analysis. Females, constituting 56% of the respondents, dominated the study. 9% of the respondents were between 18 and 25 years of age. Only 3% were from the age group of 56–65 years. The largest proportion of the respondents were between 26 and 55 years of age (88%). 59% had full-time employment, and 29% of the respondents had 11–15 years of banking experience. 71% of the respondents confirmed that they have used chatbots outside the banking industry. The frequency distribution of the items measuring the various factors is captured in Table 2. The data in Table 2 seems to suggest that a large proportion of the responses were positive or very positive on the five-point scale. Of importance is the social influence factor, where 17% of negative responses were recorded.

Table 2: Frequency distributions: Factors (n=151)

	Very Negative 1.00 to 1.79		Negative 1.80 to 2.59		Neutral 2.60 to 3.40		Positive 3.41 to 4.20		Very Positive 4.21 to 5.00	
Perceived Usefulness	1	1%	2	1%	7	5%	59	39%	82	54%
Perceived Ease of Use	2	1%	2	1%	14	9%	57	38%	76	50%
Facilitating Conditions	2	1%	0	0%	10	7%	78	52%	61	40%
Perceived Value	2	1%	1	1%	22	15%	55	36%	71	47%
Hedonic Motivation	2	1%	6	4%	38	25%	66	44%	39	26%
Social Influence	11	7%	25	17%	35	23%	51	34%	29	19%
Perceived Compatibility	2	1%	3	2%	8	5%	64	42%	74	49%
Relative Advantage	1	1%	1	1%	8	5%	55	36%	86	57%

Source: Based on researchers' primary data analyses (2022)

4.2 Reliability test

Cronbach's alpha coefficients were used to determine the reliability of the items measuring each of the factors in the questionnaire. The results indicate that all the items were reliable, as the Cronbach's alpha was greater than 0.80 (Thyer 2010). Social influence (0.92) recorded the greatest Cronbach alpha.

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4.3 One-sample t-tests and inferential ranking

One-sample t-tests were conducted to classify the factors based on their sample mean values, considering sampling error. In addition, inferential ranking was done in order to rank the factors from most positive to least positive based on their sample mean scores. The one-sample t-test classification and inferential ranking of the factors are reported in Table 3.

Table 3: One-sample t-test classification and inferential ranking – factors

Descriptive Statistics			One-Sample t-Test (d.f. = 150; H ₁ : $\mu \neq 3.40$)			Classification	Inferential Ranking	
Factors	Mean	S.D.	t-value	p-value	Cohen's d	Category	Rank	Significant Group
Relative advantage	4.27	0.57	18.91	<.0005	1.54	Positive	1	1
Perceived usefulness	4.23	0.60	16.99	<.0005	1.38	Positive	1	1
Price value	4.18	0.72	13.41	<.0005	1.09	Positive	1	1
Perceived compatibility	4.16	0.66	14.10	<.0005	1.15	Positive	4	2
Perceived ease of use	4.10	0.66	13.11	<.0005	1.07	Positive	4	2
Facilitating conditions	4.07	0.59	13.89	<.0005	1.13	Positive	4	2
Hedonic motivation	3.83	0.74	7.02	<.0005	0.57	Positive	7	3
Social influence	3.34	1.01	-0.78	0.44	n/a	Neutral-Positive	8	4

Note: Classification interval for the mean values (Negative, $M < 2.60$; Neutral, $2.60 \leq M \leq 3.40$; Positive, $M > 3.40$)

Source: Based on researchers' primary data analyses (2022)

In the one-sample t-tests used to classify the factors, a null hypothesis value of 3.40 was used. This was the value between neutral and positive for the 5-point response scale measurement items in the questionnaire for this study. As reported in Table 3, all the factors were classified as positive, except for social influence ($M = 3.34$), which was classified as neutral-to-positive. Regarding the inferential ranking of the factors, relative advantage, perceived usefulness, and price value were grouped together in group 1, being the factors deemed most positive by the sampled population. Significance Group 2 is comprised of perceived compatibility, perceived ease of use, and facilitating conditions, with Group 3 comprising hedonic motivation. Social influence is in group 4.

5. Conclusions and recommendations

To address the primary objective of the study and the research question, an empirical study was conducted. The findings revealed that relative advantage, perceived usefulness, and price were ranked among the first significant categories of factors that consumers would prioritize before adopting chatbots within the banking sector in South Africa. These factors should be the primary focus of banks in enhancing the adoption of chatbots. It is therefore recommended that the chatbot platform be designed in such a way that all useful financial information is available to consumers. The chatbot platform should also assist consumers in navigating the platform and having control over all transactional activities. Banks should further ensure that the chatbot platform is designed in a way that offers minimal costs for banking transactions to the consumer.

The findings further indicate that perceived compatibility, perceived ease of use, and facilitating conditions fall within the second group of significant factors. These factors could also serve as a competitive advantage to some banking sectors, as consumers also perceive them as important and significant in adopting chatbots. Therefore, the study recommends that the platform possess simple functionalities that will be easy for all customers in the various age categories in the study to use. The platform should also be designed in such a manner that it will require less or no data to interact and should be compatible with smart devices (e.g., phones, tablets, and computer devices).

Hedonic motivations and social influence were respectively ranked in significant groups three and four. Therefore, any strategies focusing aggressively on hedonic motivation and social influence should be done with caution, as consumers place little emphasis on these factors in determining their allegiance to adopting chatbots in the banking sector. The findings in the study complement the applicability of the TAM, DoIT, and UTAUT 2 models within the chatbot platform (Anouze & Alamro 2019; Hasibuan, 2021; Ali et al 2019; Al-Jabri & Sohail 2012; Al-Rahmi et al 2021; Hew et al., 2015).

6. Limitations and future research areas

The study utilized eight factors from authoritative models for the investigation and acknowledges that there could be additional factors in the literature that could add additional importance to the findings. Future researchers should consider expanding the scope of these factors. The generalization of the findings should be done with caution based on the small sample size. Future researchers should consider a larger sample size to generalize the findings.

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