



# A trust framework to improve adoption of mobile banking by university students

DOI: <https://doi.org/10.35683/jcm21066.184>

**ROBYN VAN HEERDEN**

Department of Information Systems, University of Fort Hare, South Africa

Email: [robynkvh@outlook.com](mailto:robynkvh@outlook.com)

ORCID: <https://orcid.org/0000-0001-7998-8987>

**LIEZEL CILLIERS\***

Department of Information Systems, University of Fort Hare, South Africa

Email: [Lcilliers@ufh.ac.za](mailto:Lcilliers@ufh.ac.za)

ORCID: <https://orcid.org/0000-0001-9493-4311>

*\*corresponding author*

**NAOMI ISABIRYE**

School of Business Sciences, University of Witwatersrand, South Africa

Email: [naomi.isabirye@wits.ac.za](mailto:naomi.isabirye@wits.ac.za)

ORCID: <https://orcid.org/0000-0002-0060-6649>

## ABSTRACT

**Background:** In today's fast-paced society, technologies have evolved to provide services that are convenient and benefit both the customer and service provider; these include mobile banking (m-banking). University students are a big segment of the future income earners and adopters of technology; thus, it is imperative for them to adopt and become regular m-banking users as this will impact the revenue of banking institutions.

**Purpose of the study:** The aim of this research was to develop a trust framework to improve the adoption of mobile banking by university students.

**Design/methodology/approach:** The study adopted a positivist approach utilising the quantitative methodology to survey a sample of 471 university students.

**Findings:** The findings show the existence of a positive and significant relationship between several factors, such as perceived usefulness, perceived ease of use, and perceived risk, when investigating trust and its influences on m-banking adoption amongst university students.

**Recommendations/value:** Based on these findings, the study recommends that banks should consider the above-mentioned factors in order to improve trust and increase m-banking adoption among university students.

**Managerial implications:** In addressing the reasons why university students do not adopt mobile banking, the study encourages continued efforts to promote m-banking amongst university students to include them in the banking sector and become financially inclusive.



### Keywords

Adoption intention; M-banking; Perceived ease of use; Perceived risk; Perceived usefulness; Trust; University students

---

**JEL Classification: G20**

## 1. INTRODUCTION

The mobile device is proclaimed as the most omnipresent personal device worldwide owing to its ability to execute simple and complex computer functions (Masiu & Chukwuere, 2018). The expansion of the functions of mobile devices creates opportunity for an increase in the demand of mobile commerce (Hussain *et al.*, 2017) and, thus, mobile banking (M-banking) was introduced to satisfy the market. M-banking is an essential application derived from mobile commerce. M-banking is a term that is commonly defined as a channel that enables consumers to interact with a banking institution using a mobile device at any given moment (Sakala & Phiri, 2019). M-banking permits consumers to access financial records with the help of mobile phones to complete bank-related transactions, for instance, checking account statuses, transference of money and the selling of stocks (Nawaz *et al.*, 2018). Technologies such as m-banking can help mitigate issues surrounding financial inclusion in developing countries such as South Africa. M-banking is a service that benefits both the customers and the banking institution that offers such services, as it helps retain customers by providing cost-effective services (Sethi & Acharya, 2018).

Financial inclusion allows individuals and businesses to have access to financial products and services and further permits them to partake in the financial sector to improve their livelihoods (Grant, 2020). Financial inclusion in South Africa is considered to be high because 77 percent of South Africans are considered to be financially included, thus allowing them to partake in financial activities (Department of National Treasury, 2019). However, it has been stated that the financial inclusion percentage includes South Africans that receive grants from the South African Social Security Association (SASSA). It stands to reason then that if the SASSA grant recipients are excluded, the financial inclusion percentage of South Africans decreases to 58 percent (Department of National Treasury, 2019). Despite the high rate of financial inclusivity in South Africa, an article in World Economic Forum noted that cash is still preferred by many South African communities as many distrust digital banking platforms (Rumney, 2019). Rumney (2019) further posits that only 24 percent of South Africans make use of their bank accounts more than thrice a month as they withdraw most of the funds upon receipt. Findings from the Digital 2020 report on South Africa show that only 54 percent of South African citizens, from the age of 15 use mobile banking applications (Kemp, 2020).

In South Africa, the adoption of mobile banking by its citizens has been deemed unsuccessful in comparison to other countries such as Kenya and Zimbabwe (Chigada & Hirschfelder, 2017). According to Nyantakyi and Sy (2015), m-banking is more successful in East Africa, with Kenya being the key player, as a result of Safaricom's M-Pesa rollout in 2007. The adoption of M-Pesa mobile banking services has reached over 72 percent of the population in this country. In neighbouring countries, such as Namibia and Botswana, mobile banking has seen an uptake of 80 percent which is more than that of South Africa. Therefore, it is evident that mobile banking adoption is significantly lower in South Africa when compared to other developing countries in Africa (Runde, 2015). Literature indicates that the slow adoption of m-banking is a result of a lack of trust (Pamungkas & Kusuma, 2017; Van Deventer, 2019) and a lack of knowledge regarding this service (Richard & Mandari, 2018). Van Deventer *et al.* (2017) cited a lack of trust and awareness as a barrier against the adoption of m-banking. Financial literacy and trust are among the key reason why users are reluctant to adopt mobile banking (Jenkin & Naude, 2019).

According to prior research, m-banking was found to be especially low among university students (Ramille & Nel, 2012; Govender & Sihlali, 2014). However, a study recently conducted in South Africa among generation Y students found that they are more likely to adopt m-banking based on their predisposition to trust and willingness to accept risks (Van Deventer *et al.*, 2019). The author further posits that m-banking adoption by students and young adults is especially important as they are the future income earners and adopters of technology. Students are expected to enter the marketplace after graduation and will become users of mobile banking. Two studies conducted amongst students in developing countries found that banks have to focus on winning trust amongst students if they wish to retain them as clients. In a study conducted in Azerbaijan amongst students, the research study found that trust is a significant factor in the intention to adopt mobile banking amongst students (Chang & Hajiyev, 2017). Furthermore, Malaquias and Hwang (2016) found that Brazilian undergraduate students from courses focusing on technology have a better understanding of secure E-Commerce environments. Therefore, without sufficient knowledge from banks regarding security in m-banking, their trust in this technology is more likely to be lower. Moreover, Ramille and Nel (2012) and Govender and Sihlali (2014) suggest that the adoption of m-banking is the slowest amongst the youth. In a study conducted amongst individuals where 93 percent of the population were between the ages of 21 to 40 years, the findings revealed that 44 percent were non-users of mobile banking. Therefore, it indicates that there is a gap to explore in order to improve m-banking adoption amongst students. According to Stats SA (2019), South Africa has a population of 58.78 million people and a third of the population are young adults from ages 18-34 years. Therefore, university students are an ideal

market segment as they are the future adopters of technologies and the potential income earners that could improve m-banking adoption. As a result, this study seeks to develop a trust framework to improve m-banking adoption by university students.

The rest of this article follows a specific structure. Firstly, the theoretical and empirical literature is presented, bearing in mind the variables under investigation. Thirdly, the research methodology and design are presented. A discussion of the findings of the research follows, and finally, the article concludes by presenting the implications of the research findings for the banking context.

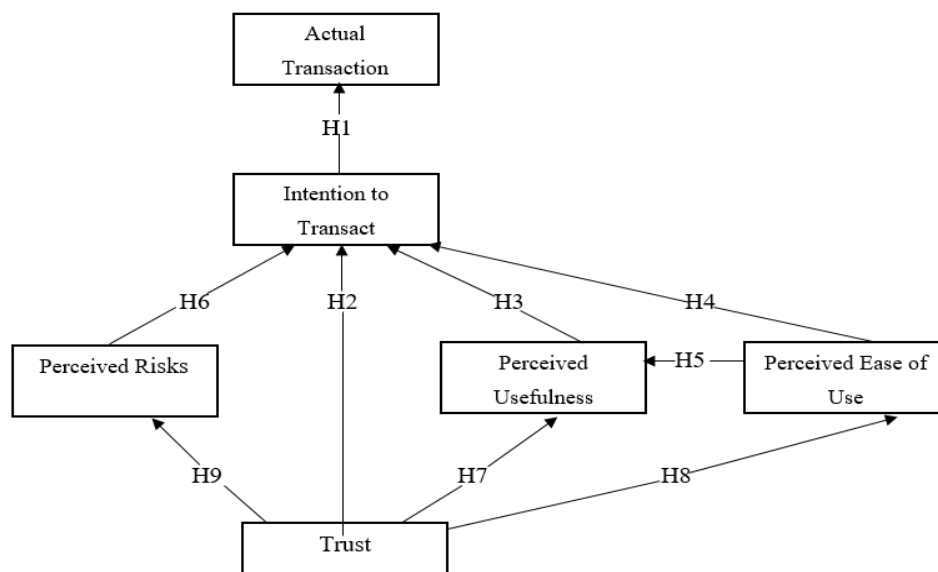
## **2. LITERATURE REVIEW**

Although mobile banking is well-known for its perceived benefits, Ramille and Nel (2012) and Malaquias and Hwang (2016) found that young adults are still unaware of the benefits associated with mobile banking. Furthermore, the lack of disclosure from banks results in lower levels of trust among young adults (Department of National Treasury, 2019). Trust is commonly cited as an antecedent of mobile banking adoption and behavioural intention. Trust is at the forefront of innovative financial products and services adoption and is defined as having confidence, reliance, objectivity, integrity and ability in something or someone. Therefore, trust plays a vital role in the adoption of m-banking. According to Van Deventer et al. (2019), it is important to understand the notion of trust in m-banking amongst students as it could assist policy makers, marketers and strategists within the financial service industry in promoting trust and increasing m-banking adoption by students.

### **2.1 Theoretical foundation**

The E-Commerce Acceptance Model (EAM) illustrated in Figure 1 was utilised in this study to provide a comprehensive understanding of the challenges that students are faced with when adopting a new technology (Pavlou, 2003). These issues include trust, perceived risks (PR), perceived usefulness (PU), Perceived Ease of Use (Perceived Ease of USE) and usage intention. The theoretical perspective proposes that scales such as PR, PU, Perceived Ease of USE, and Trust influence adoption.

Figure 1: E-Commerce Acceptance Model by Pavlou (2003)



Source: Pavlou (2003)

The EAM uses scales from the Technology Acceptance Model (TAM) and the Integrative Model of Organisational Trust by Mayer *et al.* (1995). The Integrative Model of Organisational Trust by Mayer *et al.* (1995) is used to understand the notion of trust and the components (ability, benevolence, and integrity) that form part of the scale and are applied in the context of m-banking. These scales are discussed in more detail in the next section.

## 2.2. Perceived usefulness

Perceived usefulness is identified as “*the degree to which a person believes that using a particular system would enhance his or her job performance*” (Davis, 1989:320). In terms of mobile banking it reveals how convenient mobile banking is for banking customers to carry out banking-related tasks (Maroofi *et al.*, 2013). Consumers will consequently develop a positive attitude as they discover that mobile banking in general, is very advantageous. Perceived usefulness has a close association with subjective probability, which refers to the idea that the utilisation of m-banking is beneficial, making banking an easier task (Maroofi *et al.*, 2013). Koenig-Lewis *et al.* (2010) found that compatibility, perceived usefulness, and perceived risk are important indicators in the adoption of mobile banking services.

As stated earlier, mobile banking is an alternative financial service delivery platform. Therefore, according to Kazi and Mannan (2013), as soon as consumers recognise the significance of alternative technology-based service methods, such as mobile banking, the

intention to adopt such a service will escalate. Pavlou (2003) theorised that perceived usefulness has a positive influence on trust and on the intention to transact. In the case of mobile banking, perceived usefulness will therefore increase a student's intention to transact, which will influence actual mobile banking transactions taking place. Furthermore, Lin (2011) states that a consumer will continue using mobile banking services if their beliefs over its usefulness are confirmed by the ongoing user experience. In a study involving 435 university students in Turkey, Akturan and Tezcan (2012) found that perceived usefulness affected the student's behaviour towards mobile banking and that attitude was a major influential factor in mobile banking usage intention. Perceived usefulness acts as a crucial factor in encouraging the use of m-banking (Hassan & Wood, 2020). Therefore, in order to change a student's perceptions towards mobile banking, banking institutions need to embrace awareness campaigns to promote the benefits and ease of using m-banking. This will provide students with the knowledge and guidance to transact.

Furthermore, a study by Ramos *et al.* (2018), states that when consumers recognise the usefulness of m-banking, they are more likely to have their trust positively affected as perceived usefulness has a positive influence on trust in m-banking. The authors further posit that time coupled with the consumer's standard of living in today's society demonstrates the awareness of the usefulness of applications that allow individuals to be more productive and increase performance. According to Daud *et al.* 2011, awareness of mobile banking benefits is crucial among existing and potential banking customers in the initial adoption of this service. Measures should be put in place to increase awareness via advertising and promotion of m-banking, allowing banks to create a mobile banking frenzy which will increase the interests of future adopters. Moreover, Ifeonu and Ward (2015) concluded in a study based in Nigeria that mobile banking adoption is based on three factors, namely technology trust, perceived usefulness and perceived ease of use. The authors found that, of those three factors, perceived usefulness was the most influential factor contributing to the intention to adopt mobile banking. Therefore, as mentioned earlier, South African banks should promote awareness with regard to the ease of use and benefits associated with m-banking to increase adoption among their customers.

Alsheikh and Bojei (2014) inspected factors encouraging consumers' intention to adopt m-banking in Saudi Arabian commercial banks. Their study revealed that out of the 403 respondents, 95.5 percent have an educational background that ranges from a high school certificate to doctoral degrees. In addition, the study found that 18.9 percent of the respondents were students and determined that 'awareness of service' and mobile device familiarity are significant when understanding m-banking and related functionalities and



benefits, where as a lack of information and knowledge increase risk perception. Students are often easily influenced. Therefore, according to Al-Jabri and Sohail (2012), once a consumer is aware of the distinct benefits of mobile banking, the likelihood of adopting the service increases. An increase in awareness of mobile banking benefits will increase a student's perceived usefulness of m-banking services and ultimately increase a student's decision to trust this service and adopt m-banking. In order to test the relationship between perceived usefulness and trust, the following hypothesis was derived based on the proposed model:

**H<sub>1</sub>:** *Perceived usefulness significantly influences trust in mobile banking adoption among university students.*

### **2.3 Perceived ease of use**

As consumers become conscious of how easy it is to learn and adopt mobile banking, their positive perception of usefulness becomes enhanced (Maroofi *et al.*, 2013). Perceived ease of use refers to a system that is easier to use when accomplishing tasks as compared to a more challenging system (Chuchuen, 2016). This is consistent with the assessment made by Mehrad and Mohammadi (2016), stating that consumer awareness regarding Perceived Ease of use allows consumers to identify the rapid rate at which they can operate m-banking. Therefore, this service would be more appreciated. Extant literature indicates that Perceived Ease of use is a strong predictor of mobile banking adoption. Studies found that perceived ease of use is a determining factor in a consumer's attitude and usage intention of a product or service, such as mobile payment services and internet banking (Ali *et al.*, 2014; Dlodlo, 2015). Additionally, Jeong and Yoon (2013) identified perceived ease of use as a key influential factor explaining the attitude difference concerning adopters and non-adopters toward m-banking.

In a study based on university students, Akturan and Tezcan (2012) found that perceived ease of use positively affects the perceived usefulness towards using mobile banking. According to Zhou (2012), a well-designed m-banking user interface with powerful navigation reflects a retail bank's ability and benevolence and, as a result, influences a user's trust. As a student's awareness increases regarding the perceived ease of use concerning mobile banking, they will be able to identify a retail bank's ability and benevolence, which will either increase or decrease their trust.

In addition, Mehrad and Mohammadi (2016) found that perceived ease of use and perceived usefulness have a positive influence on a consumer's behaviour regarding their intention to continue using the service. However, Jeong and Yoon (2013) state that perceived ease of use has minimal implications on the intention to adopt m-banking, suggesting instead that

consumers strive for a simpler, easier, faster process and environment for bank-related tasks. Perceived ease of use has also been found to have a significant effect on perceived usefulness (Mehrad & Mohammadi, 2016). According to Shaikh and Karjaluoto (2015), perceived ease of use and perceived usefulness are one of the most frequently cited factors in determining mobile banking adoption.

Jeong and Yoon (2013) further suggest that the steep mobile device penetration rate has promoted the use of mobile banking. However, the use of a mobile device poses many challenges that affect the perceived ease of use of mobile banking. Challenges of a mobile device that contribute to the non-adoption of mobile banking include compatibility issues such as screen size, complex texting mechanisms, requirements for high data storage, and shorter battery life appear to be restrictions that impact perceived ease of use. However, as stated earlier, usability and compatibility issues may arise, affecting the perceived ease of use and perceived usefulness. In order to overcome usability issues, banking institutions must focus on providing a service that is beneficial to all, as perceived ease of use influences adoption (Luo *et al.*, 2010). In order to test the relationship between perceived ease of use and trust, the following hypothesis was derived based on the proposed:

**H<sub>2</sub>:** *Perceived ease of use significantly influences trust in mobile banking adoption among university students.*

## 2.4 Perceived risk

Perceived risk is frequently associated with trust and risk-taking in relationships (Schoorman *et al.*, 2007). Perceived risk is described as “a combination of uncertainty plus seriousness of outcome involved and the expectation of losses associated with purchase and acts as an inhibitor to purchase behaviour” (Bauer, 1960:389). In addition, it is viewed as hesitancy regarding the usage of a product/service such as mobile banking (Malhotra, 2012). Moreover, Malhotra (2012) posits that perceived risk is one of several aspects that need to be taken into consideration when launching technology applications, as consumers are more likely to be reluctant. Furthermore, Daud *et al.* (2011) concur by stating that the perceived risk associated with an innovation may result in a prospective adopter postponing the decision to either adopt or decline the innovation.

According to Kuykendall (2017), there are several risks associated with m-banking, despite the perceived benefits. For instance, banks leave a consumer’s personal information exposed to hackers due to a lack of enforcing encryption or information security measures necessary to protect m-banking platforms. Therefore, perceived risk has the ability to affect mobile banking negatively in a variety of situations. Past literature reviews conducted in developed



countries indicate that the objective of using mobile banking entails a certain amount of uncertainty (Daud *et al.*, 2011; Ha *et al.*, 2012). The additional risks perceived by consumers may result in consumers becoming wary with regard to mobile banking (Huili *et al.*, 2013). According to Abdullah *et al.* (2018), it is imperative for m-banking services to safeguard transactions between the user and the bank by ensuring that they are transmitted through a secure and safe channel. The authors further posit that this will improve trust in m-banking and their adoption of m-banking (Abdullah *et al.*, 2018). Therefore, if banks cannot provide secure environments for users to transact, it may diminish users' trust in m-banking as the user risk of financial loss may increase. Therefore, in order to test the relationship between perceived risk and trust, the following hypothesis was derived from the proposed model:

**H<sub>3</sub>:** Perceived risk significantly influences trust in mobile banking adoption among university students.

## 2.5 Perceived trust

McKnight *et al.* (2011) argue that researchers need to investigate how trust in technology relates to the value-added post-adoption use of IT. Furthermore, McKnight *et al.* (2011) state that researchers can scrutinise how trusting beliefs concerning precise attributes of technology relate to individual information technology acceptance and their post-adoption behaviour by focusing on technology itself. Technology trust is well-defined as “*an individual’s willingness to be vulnerable to an information technology, based on expectations of technology predictability, reliability and utility and influenced by the individual’s predilection to trust technology*” (Lippert & Davis, 2006:438). Moreover, the concept of trust is often associated with IT artefacts such as hardware and software that facilitate IT-related tasks (Vance *et al.*, 2008).

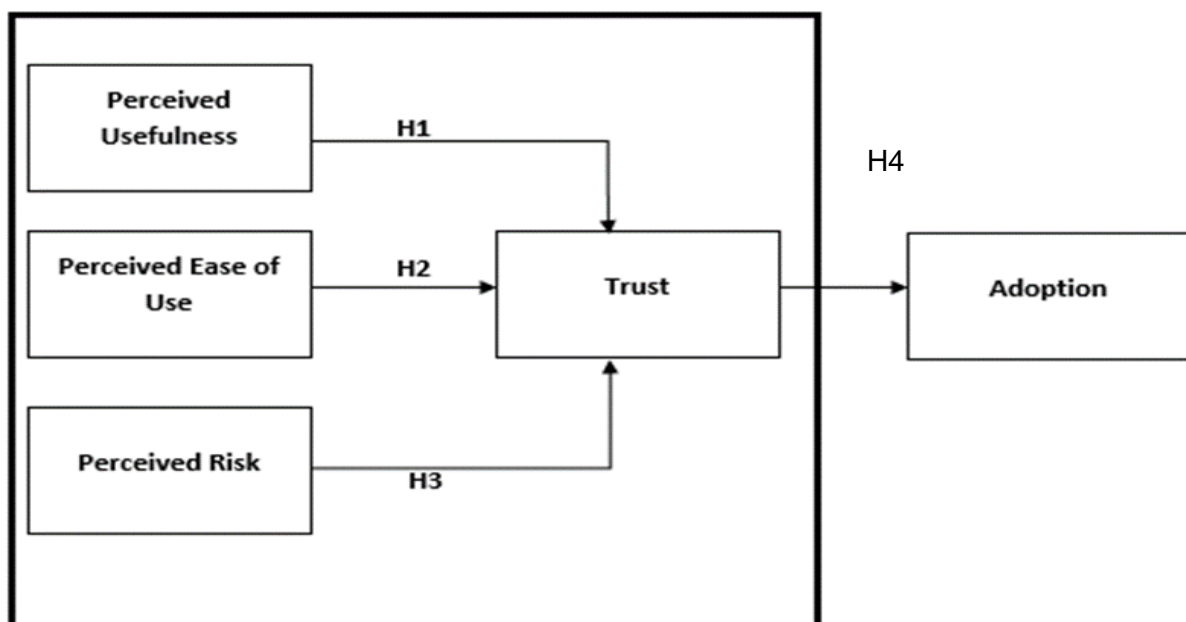
Empirical research indicates that technology trust has an influence on usage behaviour (McKnight *et al.*, 2011). In line with this, Vance *et al.* (2008) revealed that both trust and a lack thereof in an IT artefact will influence an individual’s usage intention, consequently affecting the adoption of the IT artefact. In the context of m-banking, a university student’s trust in technology may influence their trust in m-banking and its services, thus resulting in the intention to transact as well as an actual transaction or a lack of trust will result in their reluctance to transact and adopt m-banking. In terms of mobile banking, consumers may believe that the technologies they use are dependable and trustworthy, and as a result, they will be more likely to assess the overall services satisfactorily, leading to better customer satisfaction (Masrek *et al.*, 2014). As a result, university students with a high propensity to

trust will develop trust more readily in m-banking, whereas a university student with low levels of trust propensity will possibly question the reliability of m-banking.

**H<sub>4</sub>:** Perceived trust significantly influences the adoption of mobile banking among university students.

Based on the previous research and the aforementioned literature, Figure 2 depicts the proposed conceptual model of this research project.

**Figure 2: A Trust Framework to Improve Adoption of Mobile Banking by University Students**



Source: Authors own compilation

### 3. METHODOLOGY

This research adopted a quantitative approach as it seeks to test the relationship between the scales in order to test the set hypotheses and develop a trust framework to improve mobile banking adoption by university students (Saunders *et al.*, 2016). The population of this study were students in a traditional university in the Eastern Cape Province. The sample consisted of students aged 18 years and older that used m-banking as well as non-users of m-banking. All the students registered at the university were invited to participate in the study through electronic mail.

The third section measured perceived ease of use while the fourth section measured perceived risk (Pavlou, 2003). Finally, section five contained questions on adoption as the dependent variable. Table 1 presents the research scales from the four sections of the

questionnaire used for this research study and the reliability scores through the Cronbach Alpha coefficient tests, which were all found to be above the 0,70 threshold (Nunnally, 1978). The IBM Statistical Package for Social Sciences (SPSS) version 26 was used to analyse the data.

**Table 1: Cronbach's Alpha and Scale Composite Reliability**

<i>Research scales</i>	<i>Cronbach's Alpha</i>	<i>Source</i>
Perceived Usefulness	0.90	Pavlou (2003)
Perceived Ease of Use	0.90	Pavlou (2003)
Perceived Risk	0.90	Pavlou (2003)
Trust	0.89	(Bhattacharjee, 2002)

Source: Own compilation

For this research study, no persons under the age of eighteen were asked to complete the questionnaire. An ethical clearance from the University of Fort Hare's Research Ethics Committee (UREC) was obtained prior to the collection of data. Students participating in the study received full disclosure and were allowed to determine their participation, as they could withdraw from partaking in the study. Additionally, the participants partaking in this study remained anonymous.

## **4. RESULTS**

Table 2 presents the descriptive statistics based on the analysis conducted. Concerning the gender of the students, there were slightly more female students (52.7%) that participated in the study. It is evident that the majority of respondents were younger than 25 years of age (64.8%). Further, most of the respondents had a bank account (94%) and were using m-banking (76%). Most of the non-adopters did intend to use m-banking in the future (84%), while most students that did use m-banking at present did so weekly (47%) or monthly (21%). The most used channel was USSD m-banking (52%).

**Table 2: Descriptive results**

Age of student	%	Intending to use m-banking in future (non-adopters)	%
18-24	64.8%	Yes	84%
25-29	22.9%	No	16%
30-35	8.5%	<b>M-banking usage frequency (adopters)</b>	%
≥ 36	3.8%	Daily	6
<b>Gender</b>	%	Weekly	47
Male	47.3%	Monthly	21
Female	52.7%	Yearly	2
<b>Percentage of bank account holders</b>	%	Never	24
Yes	94	<b>M-banking channels used</b>	%
No	6	USSD m-banking	52
<b>Percentage using m-banking</b>	%	SMS-based banking	15
Yes	76	M-banking app	23
No	24	Internet-based m-banking	10

Note: (n=374)

Source: Authors own compilation

#### 4.1 Reliability analysis

Table 3 shows the reliability and correlation tests conducted. Concerning the former, all the Cronbach Alpha coefficient scores for perceived usefulness (0.778), perceived ease of use (0.870), perceived risk (0.753) and trust (0.921) were above the recommended threshold of 0.7 (Nunnally, 1978). Concerning the latter, Pearson correlation tests were conducted, and from the results, there was a significant positive relation between the following:

1. Perceived usefulness and trust as shown by a Pearson correlation value of 0.533, significant at  $p = 0.01$ . This supports Hypothesis 1
2. Perceived ease of use and trust as shown by a Pearson correlation value of 0.575 significant at  $p = 0.01$ . This supports Hypothesis 2
3. Perceived risk and trust as shown by a Pearson correlation value of -0.201, significant at  $p = 0.01$ . This supports Hypothesis 3.

Table 3: Pearson coefficient correlation

		Correlation				
		Perceived Usefulness	Perceived Ease of Use	Perceived Risk	Trust	
Perceived Usefulness	Pearson Correlation	1	.731**	-.132**	.533**	
	Sig. (2-tailed)		.000	.004	.000	
	N	471	471	471	471	
Perceived Ease of Use	Pearson Correlation	.731**	1	-.150**	.575**	
	Sig. (2-tailed)	.000		.001	.000	
	N	471	471	471	471	
Perceived Risk	Pearson Correlation	-.132**	-.150**	1	-.201**	
	Sig. (2-tailed)	.004	.001		.000	
	N	471	471	471	471	
Trust	Pearson Correlation	.533**	.575**	-.201**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	471	471	471	471	

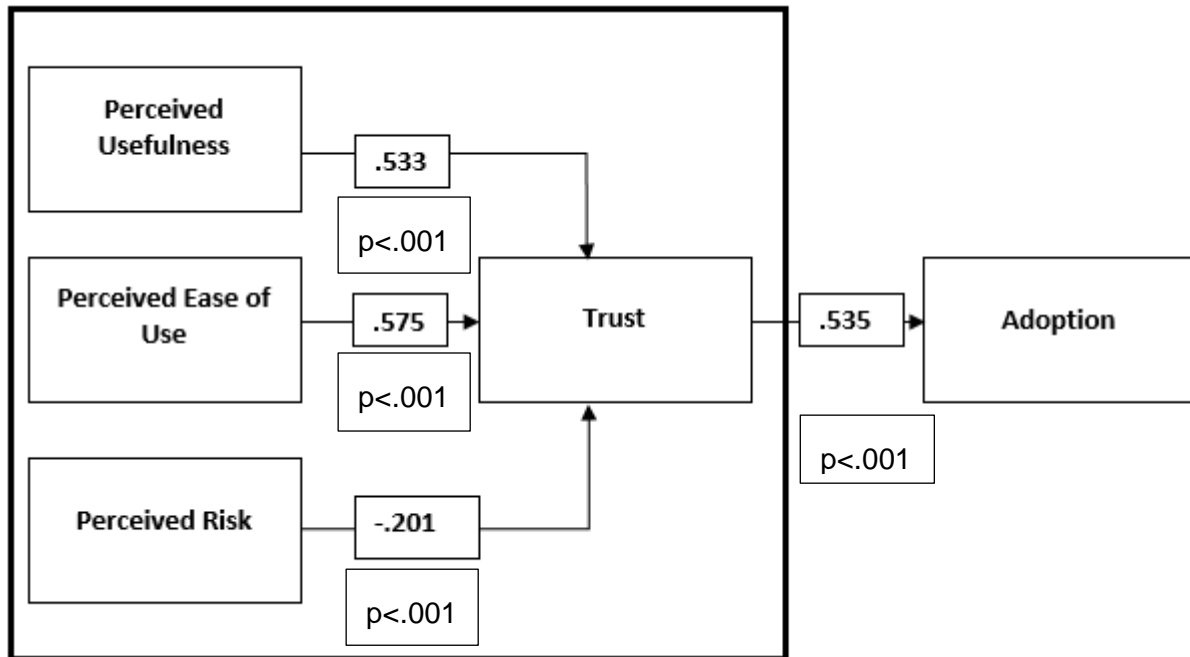
\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Authors own compilation

The Pearson product-moment correlation was utilised to test the relationship between trust and the adoption of m-banking. Trust had a confirmed score of .535 in relation to adoption, thus indicating there is a moderately positive relationship between trust and intention to transact, which was statistically significant ( $r = .535, p < .000$ )

Based on the results from the performed analysis as shown in the presented table, Figure 3 presents the models with summarised Pearson Product Moment correlation to test each hypothesis to help determine the statistical significance between the scales. The results helped determine whether to accept or reject the different hypotheses.

Figure 3: A trust framework to improve m-banking adoption by university students



Source: Authors own compilation

## 5. DISCUSSION

The results from the study suggest that there is a correlation between perceived usefulness and trust, as the correlation result was 0.533,  $p < .001$ . Therefore, a positive but medium-strength relationship exists between perceived usefulness and trust. As a result, one can accept the alternative hypothesis stating that perceived usefulness has a significant influence on trust in mobile banking among university students. The literature indicated that perceived usefulness influences trust in m-banking (Ifeonu & Ward, 2015; Hassan & Wood, 2020). Ninety-six percent of students found m-banking useful. According to the literature, perceived usefulness acts as a key factor in promoting the adoption of m-banking (Hassan & Wood, 2020). Therefore, the more useful students deem m-banking, the more likely they will be to adopt m-banking.

The findings of the study found that m-banking increased productivity as 60.9 percent indicated that they no longer had to stand in long queues to conduct banking-related tasks, thus increasing their perceptions of usefulness. The findings further indicated that students might perceive m-banking as useful, as the majority of the students indicated that they found m-banking convenient as they are allowed to make cash purchases and payments. The literature highlighted that when consumers recognise the usefulness of m-banking, they are more likely to have their trust positively affected, as perceived usefulness has a positive



influence on trust in m- banking (Maroofi *et al.*, 2013; Ramos *et al.*, 2018). In the context of this study, students might perceive m-banking as useful due to the benefits that m-banking elicits, thus influencing their trust in m-banking. As a result, the hypothesis is congruent with the literature as perceived usefulness has a significant and positive influence on trust in m-banking adoption amongst university students (Lin, 2010; Wessels & Drennan, 2010).

Shaikh and Karjaluoto (2015) state that perceived ease of use and perceived usefulness are one of the most frequently cited factors in determining mobile banking adoption. The results of this study concluded that the majority of the students found m-banking to be clear and understandable during m-banking interactions. As a result, this indicated that students perceive m-banking as easy to use. Based on the findings, perceived ease of use has been found to be efficient, as the majority of the students indicated that they were able to conduct transactions quickly and cost-effectively. Moreover, the results demonstrated that the majority of the students found it easy to learn how to navigate m-banking services. As a result, this further indicated that they were able to recover from their mistakes quickly. According to Zhou (2012), a well-designed m-banking user interface with powerful navigation reflects a retail bank's ability and benevolence and, as a result, influences a user's trust. As a student's trust increases due to the perceived ease of use concerning mobile banking, they will be able to identify a retail bank's ability and benevolence, which are contributing factors to perceived trustworthiness. As a result, one can accept the alternative hypothesis stating that perceived ease of use has a significant influence on trust in mobile banking adoption among university students. The literature and the underlying theory of this study, therefore, support the hypothesis by stating that there is a positive relationship between perceived ease of use and trust.

Hypothesis 3 found that a negative relationship exists between perceived risk and trust due to the correlation coefficient value of  $-.201$ ,  $p < .001$ . A negative correlation describes the extent to which two variables move in opposite directions. In this case, an increase in the variable risk is associated with a decrease in the variable trust.

Perceived risk alludes to the insecurity or loss that might occur as a result of a consumer using mobile banking services (Anyanwu *et al.*, 2017). Alsheikh and Bojei (2014) found that trust was inversely related to the risk perception of banking customers. The study suggested that banking institutions should provide consumers with knowledge and information regarding the mobile banking services they offer to instil trust, thereby diminishing the risk of the mobile banking services.

Perceived risk has been cited as an inhibitor of mobile banking adoption. Perceived risk has the ability to affect mobile banking negatively in a variety of situations (Ha *et al.*, 2012). Perceived risk encompasses five facets of risk that consumers need to be aware of, which include performance risk, security/privacy risk, time risk, social risk and financial risk (Luo *et al.*, 2010). The majority of the respondents believed there are risks associated with m-banking. More than half of the students indicated that they were concerned with the possibility of financial loss when conducting payments. Therefore, students may encounter financial risk. Furthermore, 83.5 percent of participants indicated that they would be less inclined to use m-banking if they were to encounter a negative experience. As a result, a negative experience may reduce a student's trust in m-banking and banking institutions, as it will diminish their ability to continue using the service. This will also change the perceptions students may have regarding the cost of conducting a transaction using m-banking.

Lin *et al.* (2014) state that trust is a difficult notion to comprehend, as many researchers attempt to define it from various perspectives and disciplines. As a result, there is no unified definition of trust. According to Huili *et al.* (2013), trust refers to the expectation of competency, benevolence and truthfulness of the trusted party, whereas distrust is expressed as the expectations of people on others' inability, undesirable motivations and negative behaviour. Consumer trust is a vital contributing factor to the success of m-banking (Kim *et al.*, 2009). As stated in the literature, there are three factors that encompass the formation of trust, which are ability, benevolence and integrity. As a result, the questionnaire for trust was tailored to identify the factors of perceived trustworthiness. The findings stated that, as a whole, more than 80 percent of the students found m-banking to be trustworthy, whereas the remainder confirmed that they did not find m-banking to be trustworthy. This may be due to the perceived risks associated with the service. In addition, the majority of the students indicated they believed that banking and m-banking service providers have their best interests in mind and ensure that they have the ability to facilitate secure banking transactions. The findings suggest that students are able to determine a bank's ability, benevolence and integrity, thus increasing trust.

In South Africa, the lack of trust and knowledge are the key reasons why South Africans are reluctant to use mobile banking services (Kaya, 2013). Extant literature indicates that a lack of trust exists in mobile banking, and it is frequently cited as a barrier for adoption to occur (Kim *et al.*, 2009; Lin, 2011; Yu, 2012; Ifeonu & Ward, 2015). Based on this study, it was found that 81.9 percent believed m-banking is secure. Furthermore, the majority of the students (84.5%) indicated that they trust m-banking. Based on the literature, trust has a significant influence on m-banking adoption. The findings from the study suggest that there is a positive

relationship that exists between trust and usage intention due to the correlation coefficient value of .535,  $p < .000$ . As a result, one can accept the alternative hypothesis stating trust has a significant influence on mobile banking adoption among university students. The literature and the underlying theory of this study, therefore, support the hypothesis. Furthermore, the literature indicated that a lack of trust influences adoption.

The E-Commerce Acceptance Model by Pavlou (2003) has been used as the underlying theory of this study. As a result, the study included the intention to transaction scale in order to determine how many non-adopters of m-banking would intend to transact in the future. The findings revealed that 115 students do not make use of m-banking. Moreover, 84 percent of the non-adopters indicated that they intend to use m-banking in the future. In a study by Pavlou (2003), it was established that there is a relation between the intention to use and the actual transaction. As a result, this study sought to identify the various ways in which university students made use of actual m-banking services. This study investigated the number of students that had adopted m-banking. The results found that 76 percent of the participants had already made use of m-banking. The findings further indicated that m-banking adoption amongst students at the university was relatively high. The study also investigated the various m-banking platforms used by students and found that USSD was the most commonly used m-banking platform. The study focused on actual transactions by highlighting subcategories within cash payments, purchases and transfers. The results revealed that the majority of the students used m-banking to purchase airtime and data bundles. Furthermore, the study revealed that university students used m-banking for cash payments, clothing account payments and payments of traffic fines.

## 6. CONCLUSION

This research study has demonstrated that there are multiple factors that influence trust in m-banking adoption among university students. It found that there was a positive relationship between trust and perceived usefulness, and perceived ease of use. It further demonstrated that there was a negative relationship between trust and perceived risk, which was congruent with the literature. The study further demonstrated that trust significantly influences intention to use when considering m-banking adoption, albeit the study found the relationship to be a positive one. Therefore, the hypotheses derived from the study were confirmed and validated. Thus, a contribution was made by adding to the body of knowledge with regard to m-banking adoption research. Based on the hypotheses in this study, A Trust Framework to Improve Adoption of Mobile Banking by University Students was formulated, and the hypotheses were confirmed. The framework highlights the factors contributing to the improvement of trust in m-

banking adoption. Furthermore, the study found that almost three-quarters of the population made use of m-banking services. Therefore, it demonstrates that there is an increasing growth in m-banking adoption among university students. However, a quarter of the respondents were found to be non-adopters of the service, in which the majority of the non-adopters stated their intention to use m-banking in the future. Based on the literature, there is a steep increase in mobile/smartphone penetration within South Africa. As a result, banks and marketers may find an opportunity to increase their reach to students to adopt m-banking services. This is essential for banks as university students are the future income earners who can contribute to the economic growth of the communities and country whilst being financially included in a digitalised manner.

The first limitation of this study was due to the fact that the study was only conducted with university students based at one university. Future research should include multiple universities within South Africa. The second constraint was that the study highlighted three key factors in order to improve trust in m-banking adoption. These factors included perceived usefulness, perceived ease of use, and perceived risk. However, there are more inhibitors of m-banking adoption that should be considered when taking trust into account. The second recommendation is that future studies need to consider other factors that may improve trust in m-banking, such as awareness, perceived benefit, structural assurances and word of mouth. This study highlighted those factors in enhancing trust, which concluded that the above-mentioned factors contribute to the intention to use m-banking services.

## REFERENCES

- Abdullah, S.M., Ahmed, B. & Ameen, M. 2018. A new taxonomy of mobile banking threats, attacks and user vulnerabilities. *Eurasian Journal of Science and Engineering*, 3(3):12–20. [<https://doi.org/10.23918/eajse.v3i3p12>].
- Akturan, U. & Tezcan, N. 2012. Mobile banking adoption of the youth market perceptions and intentions. *Marketing Intelligence & Planning*, 30(4):444–459. [<https://doi.org/10.1108/02634501211231928>].
- Al-Jabri, I.M. & Sohail, M.S. 2012. Mobile banking adoption: application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, 13(4):379-391.
- Ali, A.H., Abouhogail, R.A., Tarrad, I.F. & Youssef, M.I. 2014. Assessment and comparison of commonly used wireless technologies from mobile payment systems perspective. *International Journal of Software Engineering and Its Applications*, 8(2):255–266.
- Alsheikh, L. & Bojei, J. 2014. Determinants affecting customer's intention to adopt Mobile Banking in Saudi Arabia. *International Arab Journal of E-Technology*, 3(4):210–219.
- Anyanwu, F.A., Ubi, H.U. & Ananwude, A.C. 2017. Trust and distrust determinants of mobile banking adoption in the Nigerian banking industry: a study of First Bank Nigeria Limited. *Asian Research Journal of Arts & Social Sciences*, 3(4):1–25. [<https://doi.org/10.9734/arjass/2017/30589>].
- Bauer, R.A. 1960. Consumer behavior as risk taking. In *Proceedings of the 43rd National Conference of the*

- American Marketing Association, June 15, 16, 17, Chicago, Illinois: American Marketing Association.*
- Chang, C.T., Hajiyev, J. & Su, C.R. 2017. Examining the students' behavioral intention to use e-learning in Azerbaijan? The general extended technology acceptance model for e-learning approach. *Computers & Education*, 111:128-143. [<https://doi.org/10.1016/j.compedu.2017.04.010>].
- Chigada, J.M. & Hirschfelder, B. 2017. Mobile banking in South Africa: review and directions for future research. *SA Journal of Information Management*, 19(1):1–9. [<https://doi.org/10.4102/sajim.v19i1.789>].
- Chuchuen, C. 2016. The perception of Mobile Banking adoption: the study of behavioral, security, and trust in Thailand. *International Journal of Social Science and Humanity*, 6(7):547–550. [<https://doi.org/10.7763/IJSSH.2016.V6.708>].
- Daud, N.M., Kassim, N.E.M., Said, W.S. & Noor, M.M.M. 2011. Determining critical success factors of mobile banking adoption in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(9):252–265.
- Department of National Treasury. 2019. Fintech scoping in South Africa. [Internet: [http://www.treasury.gov.za/comm\\_media/press/2020/WB081\\_Fintech\\_Scoping\\_in\\_SA\\_20191127\\_final\(002\).pdf](http://www.treasury.gov.za/comm_media/press/2020/WB081_Fintech_Scoping_in_SA_20191127_final(002).pdf); date accessed: 11 Desember 2019].
- Davis, F.D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319–340. [<https://doi.org/10.2307/249008>].
- Dlodlo, N. 2015. The use of M-Payment services in South Africa: a value based perceptions approach. *International Business & Economics Research Journal*, 14(1):159–178. [<https://doi.org/10.19030/iber.v14i1.9038>].
- Govender, I. & Sihlali, W. 2014. A study of mobile banking adoption among university students using an extended TAM. *Mediterranean Journal of Social Sciences*, 5(7):451–459. [<https://doi.org/10.5901/mjss.2014.v5n7p451>].
- Grant, M. 2020. Financial inclusion. [Internet: <https://www.investopedia.com/terms/f/financial-inclusion.asp>; date accessed: 12 December 2020].
- Ha, K., Canedoli, A., Baur, A.W. & Bick, M. 2012. Mobile banking: insights on its increasing relevance and most common drivers of adoption. *Electronic Markets*, 22(4):217–227. [<https://doi.org/10.1007/s12525-012-0107-1>].
- Hassan, H.E. & Wood, V.R. 2020. Does country culture influence consumers' perceptions toward mobile banking? A comparison between Egypt and the United States. *Telematics and Informatics*, 46. [<https://doi.org/10.1016/j.tele.2019.101312>].
- Huili, Y.A.O., Shanzhi, L.I.U. & Yinghui, Y. 2013. A study of user adoption factors of mobile banking services based on the trust and distrust perspective. *International Business and Management*, 6(2):9–14. [<https://doi.org/10.3968/j.ibm.1923842820130602.1040>].
- Hussain, A.B., Mahmood, A.T. & Naser, R.K. 2017. Investigating the effect of m-commerce design usability on customers' trust. In *the Proceedings of the 2nd International Conference on Applied Science and Technology*, 1891(1):020077. [<https://doi.org/10.1063/1.5005410>].
- Ifeonu, R.O. & Ward, R. 2015. The impact of technology trust on the cceptance of mobile banking technology within Nigeria. *IEEE African Journal of Computing & ICTs*, 8(4):1-37.
- Jenkin, N. & Naude, R. 2019. Developing competencies for a just transition of the South African banking sector: digitalisation. [Internet: <https://www.bankseta.org.za/wp-content/uploads/2020/02/BANKSETA-REAL-Digitalisation-just-transition-FINAL.pdf>; date accessed: 12 February 2020].
- Jeong, B.K. & Yoon, T.E. 2013. An empirical investigation on consumer acceptance of mobile banking services. *Business and Management Research*, 2(1):31–40. [<https://doi.org/10.5430/bmr.v2n1p31>].
- Kaya, M.M. 2013. Trust and security risks in mobile banking. England: University of Oxford. (Master's thesis).
- Kazi, A.K. & Mannan, M. A. 2013. Factors affecting adoption of mobile banking in Pakistan: empirical evidence. *International Journal of Research in Business and Social Science*, 2(3):54–61.



---

[\[https://doi.org/10.20525/ijrbs.v2i3.73\]](https://doi.org/10.20525/ijrbs.v2i3.73).

- Kemp, J. 2020. Digital 2020: South Africa. [Internet: <https://datareportal.com/reports/digital-2020-south-africa>; date accessed: 26 April 2020].
- Kim, G., Shin, B. & Lee, H.G. 2009. Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*, 19(3):283–311. [<https://doi.org/10.1111/j.1365-2575.2007.00269.x>].
- Koenig-Lewis, N., Palmer, A. & Moll, A. 2010. Predicting young consumers' take up of mobile banking services. *International Journal of Bank Marketing*, 28(5):410–432. [<https://doi.org/10.1108/02652321011064917>].
- Kuykendall, D. 2017. Risks associated with Mobile Banking. [Internet: <https://pocketsense.com/risks-associated-mobile-banking-8171141.html>]; date accessed: 19 October 2019].
- Lin, H.F. 2011. An empirical investigation of mobile banking adoption: the effect of innovation attributes and knowledge-based trust. *International Journal of Information Management*, 31(3):252–260. [<https://doi.org/10.1016/j.ijinfomgt.2010.07.006>].
- Lin, J., Wang, B., Wang, N. & Lu, Y. 2014. Understanding the evolution of consumer trust in mobile commerce : a longitudinal study. *Information Technology and Management*, 15(1):37–49. [<https://doi.org/10.1007/s10799-013-0172-y>].
- Lippert, S.K. & Davis, M. 2006. A conceptual model integrating trust into planned change activities to enhance technology adoption behavior. *Journal of Information Science*, 32(5):434-448. [<https://doi.org/10.1177/0165551506066042>].
- Luo, X., Li, H., Zhang, J. & Shim, J.P. 2010. Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision Support Systems*, 49(2):222–234 [<https://doi.org/10.1016/j.dss.2010.02.008>].
- Malaquias, R.F. & Hwang, Y. 2016. An empirical study on trust in mobile banking: a developing country perspective. *Computers in Human Behavior*, 54:453–461.
- Malhotra, R. 2012. Factors affecting the adoption of mobile banking in New Zealand. New Zealand: Massey University. (Master's thesis).
- Maroofi, F., Kahrarian, F. & Dehghani, M. 2013. An investigation of initial trust in Mobile Banking. *International Journal of Academic Research in Business and Social Sciences*, 3(9):394–404. [<https://doi.org/10.6007/IJARBS/v3-i9/228>].
- Masiu, T.M. & Chukwuere, J.E. 2018. The effect of smartphones on students' academic life: a perceptiveness from a South African University. *International Conference on Business and Management Dynamics*, 174.
- Masrek, M.N., Mohamed, I.S., Daud, N.M. & Omar, N. 2014. Technology trust and mobile banking satisfaction: a case of Malaysian consumers. *Procedia-Social and behavioral sciences*, 129:53-58. [<https://doi.org/10.1016/j.sbspro.2014.03.647>].
- Mayer, R.C., Davis, J.H. & Schoorman, F.D. 1995. An integrative model of organisational trust. *Academy of Management Review*, 20(3):709–734. [<https://doi.org/10.2307/258792>].
- McKnight, D.H., Carter, M., Thatcher, J.B. & Clay, P.F. 2011. Trust in a specific technology : an investigation of its components. *ACM Transactions on Management Information Systems*, 2(2):1-25. [<https://doi.org/10.1145/1985347.1985353>].
- Mehrad, D. & Mohammadi, S. 2016. Word of mouth impact on the adoption of mobile banking in Iran. *Telematics and Informatics*, 34(7):1351-1363. [<https://doi.org/10.1016/j.tele.2016.08.009>].
- Nawaz, M., Motiwalla, L. & Deokar, A.V. 2018. Usage-Driven personalised Mobile Banking application: a research prototype. *In the Proceedings of the 2018 ACM SIGMIS Conference on Computers and People Research*, 159. New York, USA: ACM. [<https://doi.org/10.1145/3209626.3209736>].
- Nunnally, J.C. 1978. Psychometric theory. New York: McGraw-Hill.



- Nyantakyi, E.B. & Sy, M. 2015. The banking system in Africa: main facts and challenges. *African Economic Brief*, 6(5):1–16.
- Pamungkas, S. & Kusuma, H. 2017. Initial trust of customers and adoption of Mobile Banking: an empirical study from Indonesia. *Annals of the University of Petroșani, Economics*, 17(1):223–234.
- Pavlou, P.A. 2003. Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3):101–134. [<https://doi.org/10.1080/10864415.2003.11044275>].
- Ramille, N. & Nel, J. 2012. Understanding resistance to cell phone banking adoption through the application of the technology acceptance model (TAM). *African Journal of Business Management*, 6(1):86–97. [<https://doi.org/10.5897/AJBM11.635>].
- Ramos, F.L., Ferreira, J.B., De Freitas, A.S. & Rodrigues, J.W. 2018. The effect of trust in the intention to use m-banking. *BBR. Brazilian Business Review*, 15(2):175–191. [<https://doi.org/10.15728/bbr.2018.15.2.5>].
- Richard, E. & Mandari, E. 2018. Factors influencing usage of mobile banking services: the case of Ilala District in Tanzania. *Orsea Journal*, 7(1):42-54.
- Rumney, E. 2019. In South Africa cash is still king for the country's biggest lenders. [Internet: <https://www.weforum.org/agenda/2019/08/in-south-african-townships-unseen-businesses-catch-a-big-banks-eye/>; date accessed: 5 September 2020].
- Runde, D. 2015. M-Pesa and the rise of the Global mobile money market. [Internet: <http://www.forbes.com/sites/danielrunde/2015/08/12/m-pesa-and-the-rise-of-the-global-mobile-money-market/print/>; date accessed: 8 April 2017].
- Sakala, L. & Phiri, J. 2019. Factors affecting adoption and use of Mobile Banking services in Zambia based on TAM Model. *Open Journal of Business and Management*, 7(3):1380–1394. [<https://doi.org/10.4236/ojbm.2019.73095>].
- Saunders, M., Lewis, P. & Thornhill, A. 2016. Research methods for business students. 7<sup>th</sup> ed. England: Pearson Education Limited.
- Sethi, D. & Acharya, D. 2018. Financial inclusion and economic growth linkage; some cross country evidence. *Journal of Financial Economic Policy*, 10(3):369–385. [<https://doi.org/10.1108/JFEP-11-2016-0073>].
- Schoorman, F.D., Mayer, R.C. & Davis, J.H. 2007. An integrative model of organisational trust: past, present, and future. *Academy of Management Review*, 32(2):344–354. [<https://doi.org/10.5465/amr.2007.24348410>].
- Shaikh, A.A. & Karjaluoto, H. 2015. Mobile banking adoption: a literature review. *Telematics and Informatics*, 32(1):129–142. [<https://doi.org/10.1016/j.tele.2014.05.003>].
- Stats SA. 2019. Mid-year population estimates. [Internet: <https://www.statssa.gov.za/publications/P0302/P03022019.pdf>; date accessed: 8 June 2020].
- Vance, A., Elie-Dit-Cosaque, C. & Straub, D.W. 2008. Examining trust in information technology artefacts: the effects of system quality and culture. *Journal of Management Information Systems*, 24(4):73–100 [<https://doi.org/10.2753/MIS0742-1222240403>].
- Van Deventer, M., De Klerk, N. & Bevan-Dye, A. 2017. Influence of perceived integrity and perceived system quality on Generation y students' perceived trust in mobile banking in South Africa. *Banks and Bank Systems*, 12(1):128–134. [[https://doi.org/10.21511/bbs.12\(1-1\).2017.05](https://doi.org/10.21511/bbs.12(1-1).2017.05)].
- Wessels, L. & Drennan, J. 2010. An investigation of consumer acceptance of m-banking. *International Journal of Bank Marketing*, 28(7):547–568. [<https://doi.org/10.1108/02652321011085194>].
- Yu, C. 2012. Factors affecting individuals to adopt mobile banking: empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, 13(2):104–121.
- Zhou, T. 2012. Examining mobile banking user adoption from the perspectives of trust and flow experience. *Information Technology and Management*, 13(1):27–37. [<https://doi.org/10.1007/s10799-011-0111-8>].