Towards Sustainable Development with the Development of a System for Paying Instant Money Transfer "e-Withdrawals" Directly into Bank Accounts

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Abstract: The rapid growth of technology is changing how businesses operates and how services are being provided to customers. In the financial sector, mobile banking is one of the most promising technologies that has emerged in the recent years and could prove to have considerable value to both banks and customers. Services that are being provided by banks including instant money transfer services to improve customer satisfaction, customer retention, efficiency and convenience. Instant money transfer is a mobile money service that allows for a person-to-person service where people get to send or receive small sums of money to mobile phone users across the globe and have had a tremendous positive impact on people's lives and have contributed to increased financial inclusion and economic growth. The several number of banking services that are being provided by banks including instant money transfer services have come to reality in some sort of progression. First, it became possible to transfer money either through internet banking or mobile app to someone who has a bank account. The money goes straight into the bank account. Then it became a problem that revealing one's banking account details to people could lead to fraud being perpetrated on one's account. There then came the progression of using email address or mobile phone number as point of transferring money. The bank customer can send the money using their bank channel to a receiver, and the receiver receives a notification in a form of an email or a short message service (SMS) entailing the amount and the personal Identification number (PIN) to access the money at the bank. This service differs from bank to bank as some banks attach the transaction to the recipient's cell phone number and other banks use codes. The receiver could use an Automated Teller Machine (ATM) of the sender's financial service provider or the partnered merchant to withdraw the money using either their cell phone number or code as well as the PIN to complete the transaction. However, ATMs tend to be out of service and customers having to wait in long queues are among the most commonly experienced problems. Also, money transfer services also pose risks to recipients who receive the money in a form of mobile money transfer as they are required to perform traditional money withdrawal using ATMS, and this method exposes customers to ATM and/or street cash robberies. One should be able to change mind and redirect such money to bank accounts whenever one wishes to or when one fears such ATM and/or street cash robberies. This research focuses on mobile banking to help influence the drive towards the growth of cashless transactions. Thus, this research study addresses the question of how do someone receive instant money via email address or cell phone (avoiding releasing banking details) and still get the money into any of client's bank accounts (avoiding having to go and use ATM machines) thereby helping to influence the drive towards the growth of cashless transactions which could enhance sustainable development by avoiding unnecessary trips to the ATMs while also giving freedom of choice on how to receive the money. This in addition builds and enhance trust in the banking system enhancing future and sustainable use of the banking systems in the society.

Keywords: Electronic banking, mobile banking, online banking, instant money transfer, Sustainable Development.

Introduction

Development in the banking industry has had positive impact on many societies in a progression that has now come the level where one can do banking transactions instantly across the world from mobile devices like internet-enabled phones and laptops. Considering the statement by Brown (2017) which explains that sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs", then developments in the banking industry has been meeting the needs of the present without compromising the needs of future generations but rather progressively making it easier for future generation to maintain and improve upon. This is made possible with one of the possible tools at our disposal today involving using Information Technology and Information Systems to enhance development. Mansell and Wehn (1998, p.11) explain that the former United Nations Secretary General Kofi Annan emphasises the enormous potential of information and communication technologies (ICTs) for development in his remarks to the first meeting of the United Nations Working Group on Informatics. Subsequently, Malapela, Mabunda and Dehinbo (2022) observes that Information Systems development as the engine of information and communication technologies (ICTs) has been known to be capable of leading to development which can be in simple terms be understood to refer to a state of improvement.

The rapid growth of technology in Information Systems development for services is changing how businesses operates and how services are being provided to customers. In the financial sector, research reveals that mobile banking is one of the most promising technologies that has emerged in the recent years and could prove to have considerable value to both banks and customers. Through mobile banking or mobile money services, there are a several number of services that are being provided by banks including instant money transfer services to improve customer satisfaction, customer retention, efficiency and convenience. Instant money transfer is a mobile money service that allows for a person-to-person service where people get to send or receive small sums of money to mobile phone users across the globe. According to Cull, Ehrbeck & Holle (2014), mobile money services have had a tremendous positive impact on people's lives and have contributed to increased financial inclusion and economic growth.

The several number of banking services that are being provided by banks including instant money transfer services that have come to reality in some sort of progression. First, it became possible to transfer money either through internet banking or mobile app to someone who has a bank account. The money goes straight into the bank account.

First National Bank (FNB) launched the eWallet service in 2009 in South Africa. eWallet has seen an exchange of over R21 billion that had been sent via this platform (www.iol.co.za) which has emerged as the largest mobile money solution in South Africa. Later in the years, other banks such as Standard bank and ABSA also came through with the instant money transfer service. Standard bank launched the instant money voucher service in 2010 (www.moneyweb.co.za) to stay in the competition, while ABSA launched the Cashsend service in 2008 (businesstech.co.za), but FNB eWallet has become the most popular instant money transfer service in South Africa.

The dependency of mobile transactions has increased over the years because financial transactions are being performed electronically to recipients. Mobile transaction is a service provided by banks or other financial institutions that allows its customers to conduct financial transactions remotely using a mobile device (Mhlongo, Mtsweni & Modiba, 2017). Consumers now have a variety of options that they can use to make financial transactions. It is now easy and convenient for consumers to transfer funds from one account to another, from one bank to another and from one country to another without presenting themselves at the banking hall counters (Jan and Abdullah, 2014). All these services and products have been driven by technologies, competition and customer satisfaction (Amin, 2016).

Omondi and Muturi (2013) stated that mobile transfers could represent a more secure method of transferring funds than informal remittance channels, avoiding the need to carry cash during long and expensive trips with the risk of the cash being lost or stolen. According to Subia and Martinez (2014) mobile money transfer systems show that mobile money services take advantage of their ubiquitous, real-time mobile communications networks and bring financial services into rural villages and everyday retail stores, thus alleviating the lack of banking infrastructure and filling a huge niche in developing countries.

Then it became a problem that revealing one's banking account details to people could lead to fraud being perpetrated on one's account. There then came the progression of using email address or mobile phone number as point of transferring money.

The bank customer can send the money using their bank channel to a receiver, and the receiver receives a notification in a form of an email or a short message service (SMS) entailing the amount and the personal Identification number

(PIN). This service differs from bank to bank as some banks attach the transaction to the recipient's cell phone number and other banks use codes. The receiver will use an Automated teller machine (ATM) of the sender's financial service provider or the partnered merchant to withdraw the money using either their cell phone number or code as well as the PIN to complete the transaction.

According to Elias and Estember (2018), ATMs tend to be out of service and customers sometimes having to wait in long queues. Moreover, there are often scammers, fraudsters and robbers around ATMs. These are the most commonly experienced problems. As a result, money transfer services also pose risks to recipients who receive the money in a form of mobile money transfer as they are required to perform traditional withdrawal method, and this method exposes customers to scammers, fraudsters and street cash robberies. It has been recognized that money plays a critical role in fuelling street crimes because of its liquidity and transactional anonymity (Wright et al, 2017). This research focuses on mobile banking to help influence the drive towards the growth of cashless transactions.

Progressions of improvements in Banks' money transfer services

As indicated earlier, in the progression of improvement in banking services, there came a progression from simply transferring money instantly using bank accounts into using email address or mobile phone number as point of transferring money. The next section looks at this progression in more detail.

Banks offering account payment using cell phone number

As explained in Dehinbo (2023), payments without using bank account details enables addressing security considerations by avoiding possible situations such as hacking into specific bank accounts. Also avoids money laundering in which fraudsters can knowingly deposit illicit money into someone's account and then blackmail or threaten the person to forward the payment to them. Using cell phone number instead of the account number ensures the privacy of the account details. Capitec bank in South Africa offers account payment using cell phone number only so that you don't need to use the recipient's bank account number. Figure 1 below gives the steps of how to pay people using cell phone number on the Capitec app platform.

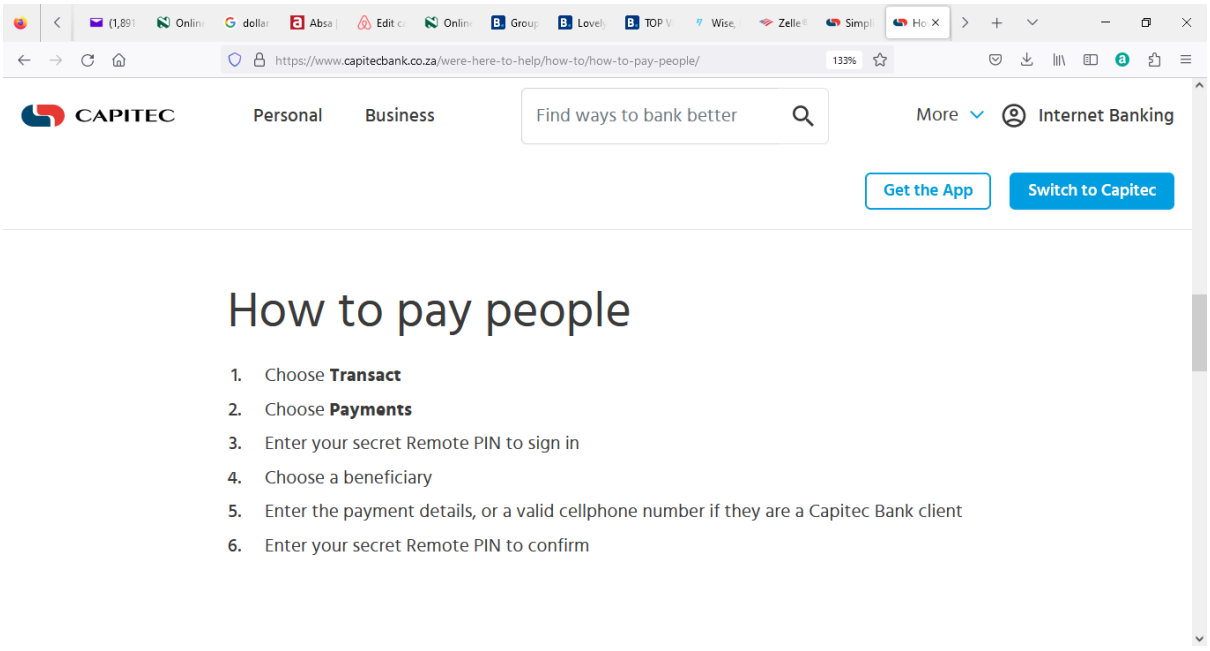


Fig. 1. Steps of how to pay people using cell phone number on the Capitec app platform.

However, please note that this service is only limited to accounts in Capitec bank only. So, one cannot use it to pay clients at other banks. Also, this service is available on the Mobile app only and not yet available on the Internet banking platform.

This service is different from the service where you receive codes via cell phone number or email address and then go to collect the money at the banks' Automated Teller Machines (ATM). What if you find endless queues at the ATMs? Will one be willing to spend time and fuel to go to the ATM and then spend hours to receive the money? What if one is mugged or robbed after receiving such money at the ATM? That is why the Zelle service enables receiving directly into bank accounts using email addresses or phone numbers in USA. This is explained in the next section. However, the Zelle system is an inter-bank system and links one email address to a specific bank account and one cannot use the email address at another bank.

International Banks offering account payment using Zelle via cell phone number or email address

As in the case of using cell phone number instead of the account number to ensure the privacy of the account details, some International Banks in USA offer account payment using Zelle via cell phone number or email address. For example, the Bank of America (2023) in figure 2 below enables sending and receiving money using Zelle via cell phone number or email address within minutes into other bank accounts irrespective of where they bank.

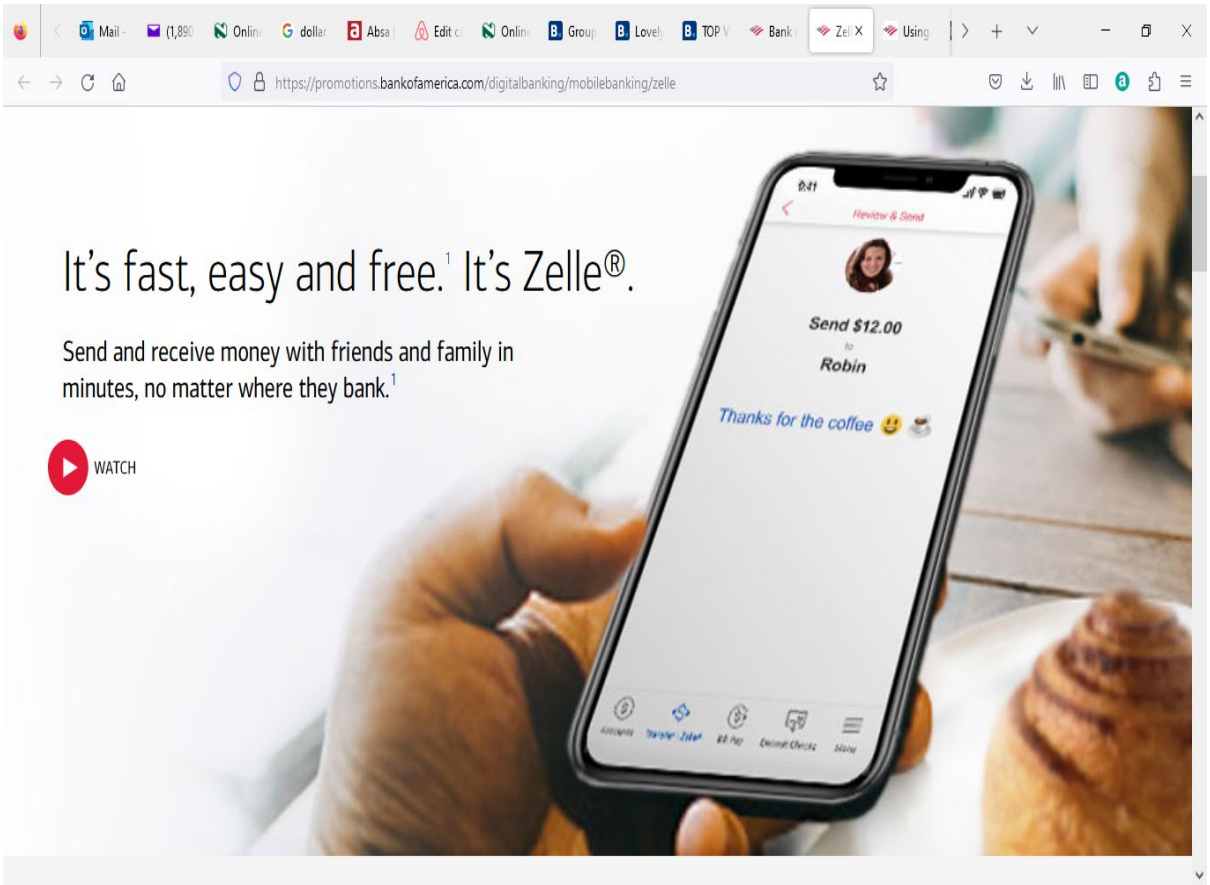


Fig. 2. Sending and receiving money using Zelle via cell phone number or email address.

To use this service, one has to first enrol cell phone number or email as indicated in figure 3 and 4 below on the ZellePay (2023) program available in some banks. If the recipient is also enrolled, the money is deposited in the bank account within minutes irrespective of where they bank. If the recipient is not also enrolled, steps will be given on how to enrol and get the transferred money.

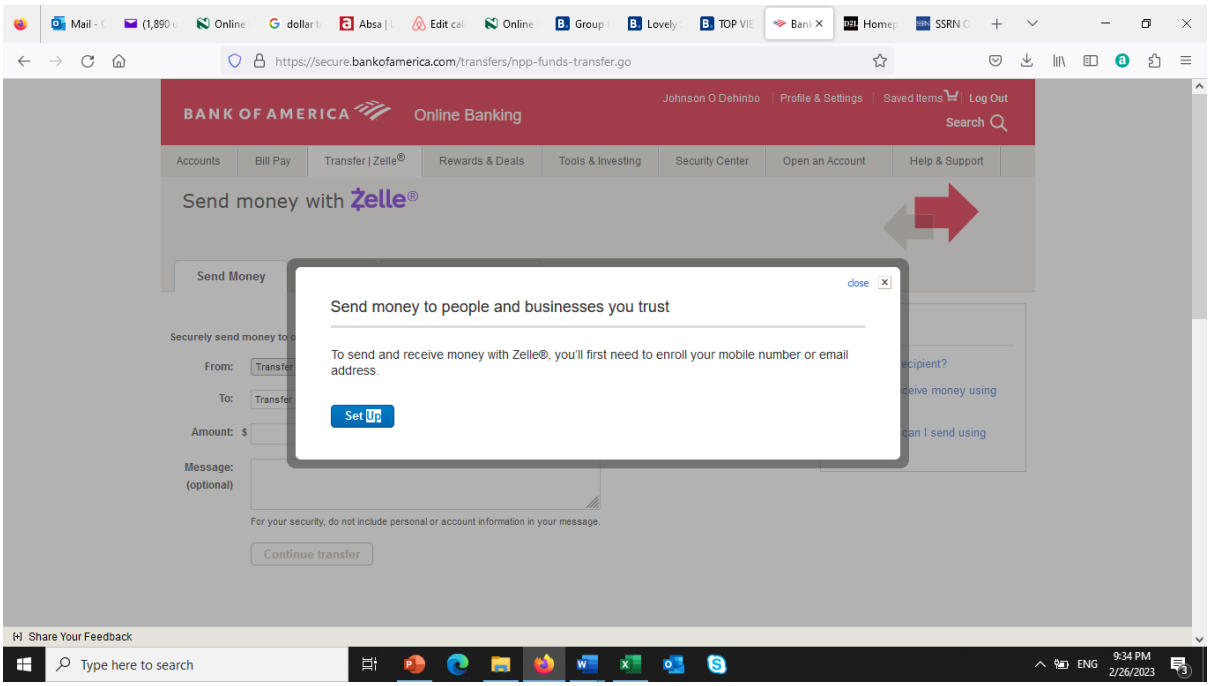


Fig. 3. Sending and receiving money using Zelle first need enrolling cell phone number or email address.

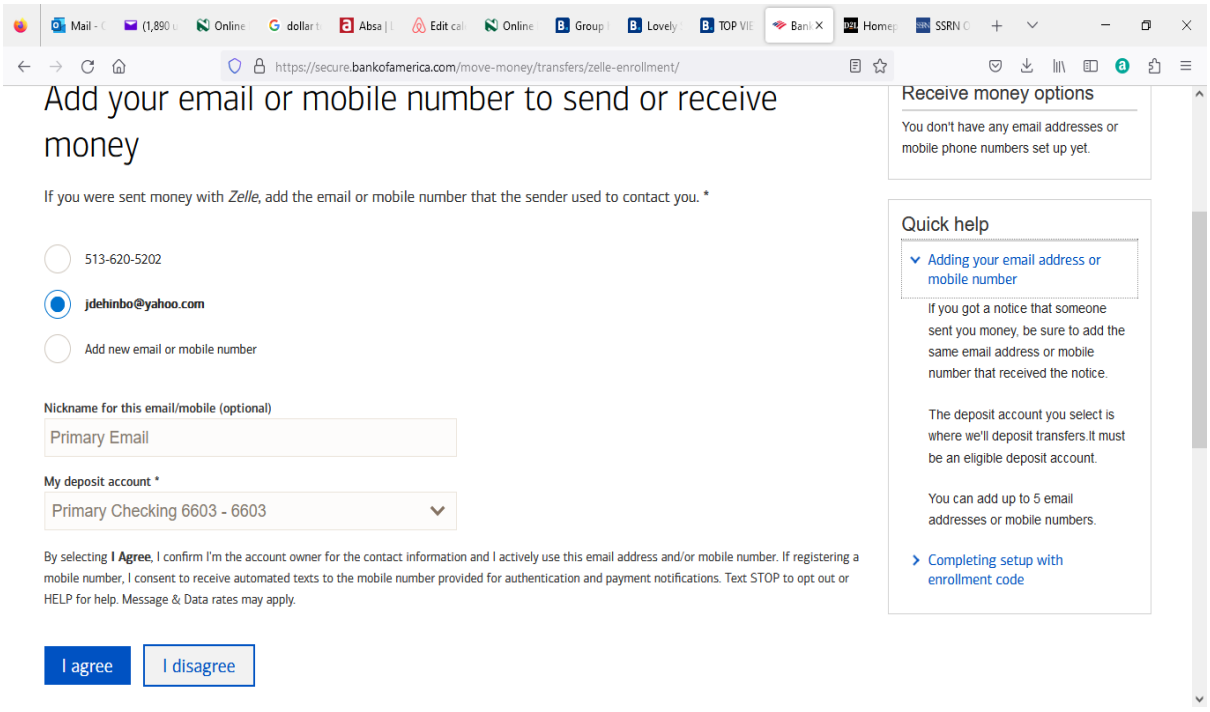


Fig. 4. Example enrolling cell phone number or email address.

Again, this Zelle service is different from the service where you receive codes via cell phone number or email address and then go to collect the money at the banks' Automated Teller Machines (ATM). As indicated earlier, one may find endless queues at the ATMs. One? Will one be willing to spend time and fuel to go to the ATM and then spend hours

to receive the money? What if one is mugged or robbed after receiving such money at the ATM? That is why the Zelle service enables receiving directly into bank accounts.

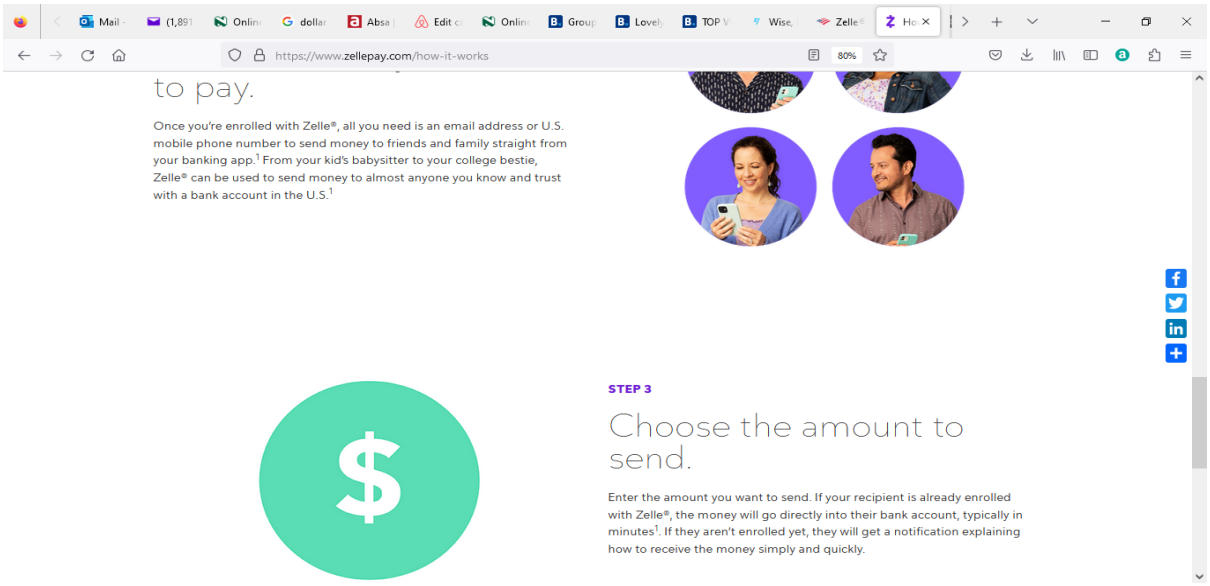


Figure 5. Indication that Zelle service is only available to bank accounts in the United States of America

However, figure 5 above explains that this service is only available to bank accounts in the United States of America. Also as explained in Dehinbo (2023), another limitation of the Zelle service however is that the enrolled email address or phone number in the Zelle system is linked to one bank account only. Therefore, if one has for example, 5 or more bank accounts at different participating banks, do the person now have to also create 5 or more email addresses and phone numbers? This limitation is currently being addressed in a new banking system called "Payshap" recently launched on participating South African banking platforms (Payshap, 2023) in March 2023. The is presented in the next section.

Recent related "Payshap" system in the mobile and online banking systems in South Africa

Again, Dehinbo (2023) explains that while the article is being writing up on 16 March 2023, an email is received on a recent related developments in the mobile and online banking systems in South Africa. This is known as Payshap (2023) illustrated in figures 6 below.

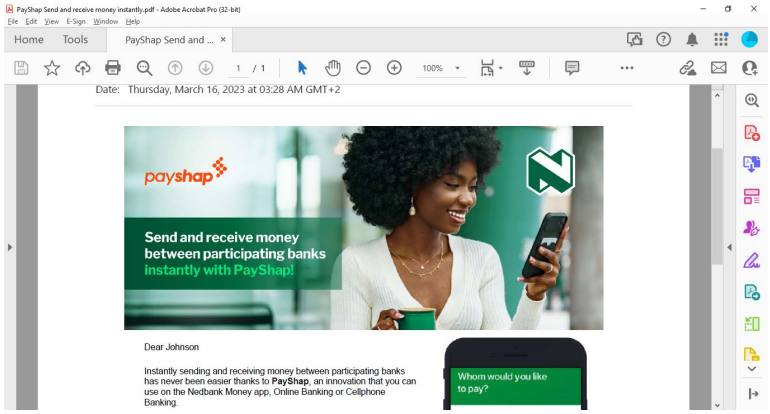


Fig. 6. Nedbank email introducing the new banking system called "Payshap" in South Africa.

Subsequent search show that the "Payshap" system was launched in South Africa on 13 March 2023 as given in figure 7 below. The system was commissioned by the South African Reserve Bank (SARB) equivalent of Central banks in other countries, BankServe Africa and four other prominent banks namely First National Bank (FNB), Nedbank, Absa Bank and Standard Bank.

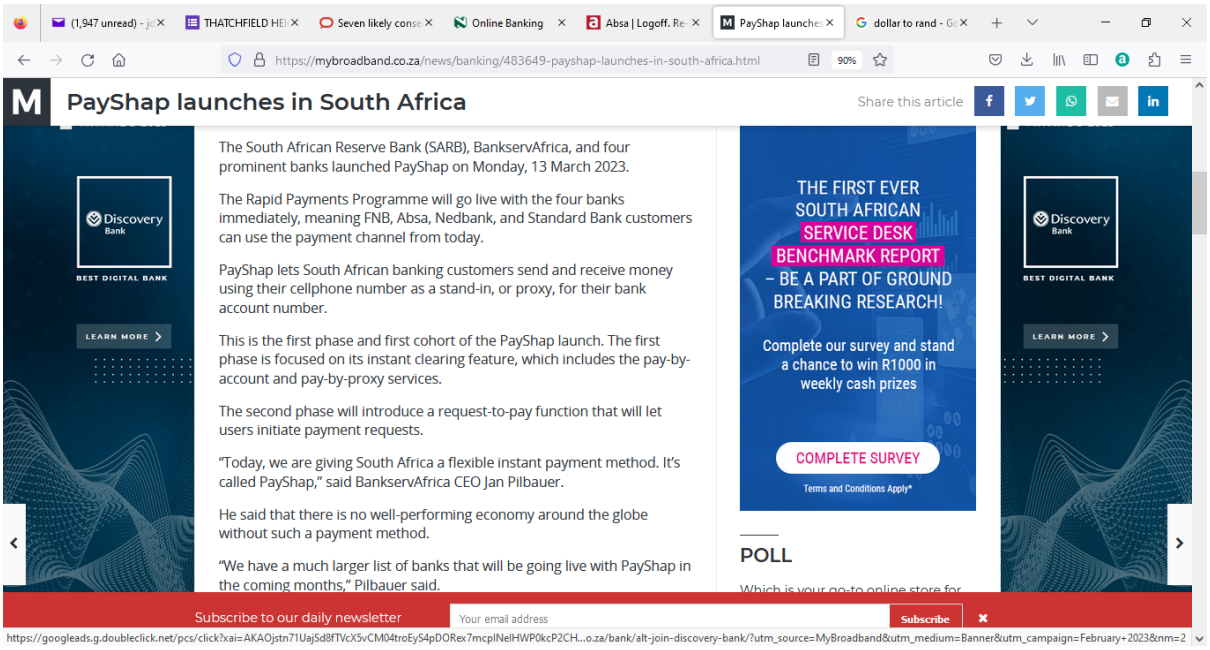


Fig. 7. The launched of the Payshap" system in South Africa on 13 March 2023.

According to the Payshap document in figure 7 above, in this first phase of the payshap system, only the four prominent banks namely First National Bank (FNB), Nedbank, Absa Bank and Standard Bank are participating. Furthermore, a larger list of banks including Capitec will be going live with the payshap system in coming months.

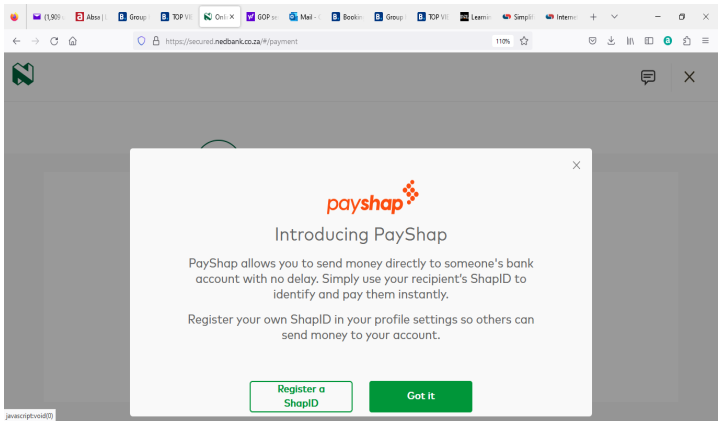


Fig. 8. Nedbank website for registering "SharpID" on the "Payshap" system in South Africa.

The payshap (2023) system allows sending and receiving money into someone's bank account instantly using the recipients' ShapID instead of their bank account number. The ShapID can be set to be a phone number of any alphanumeric name. Users register their ShapID in their profile at participating banks such as for Nedbank in figure 8 above. The ShapID offers the advantage of possibly being set to be easy to remember than the account number while

also offering the security advantage of not giving out user's bank account number, thereby avoiding possible compromise of such account details. In figure 26 below, a phone number is registered as the ShapID. This is similar to the Zelle system explained above.

Interestingly however, Dehinbo (2023) explains that to address the limitation of the Zelle program in which the enrolled email address or phone number in the Zelle system is linked to one bank account only, such that someone having say for example, 5 or more bank accounts at different participating banks do not have to also create 5 or more email addresses and phone numbers, one can use the the "payshap" system. This is because the Zelle system allows registering any text identification instead of just using email and phone numbers only. Thus, if one wants to reflect one's email address or phone number (that recipients can easily associate with the payer) one can append the email address or phone number to each of the name of the bank where the account is held. For example, we can thus have "sharpids" like 0822594883@nedbank, 0822594883@absa, 0822594883@fnb, 0822594883@standardbank, 0822594883@capitecbank etc. But instead of creating different shapids, why don't one just use the payment code to receive money sent on a system and then direct the money to any of the recipient's bank accounts ?

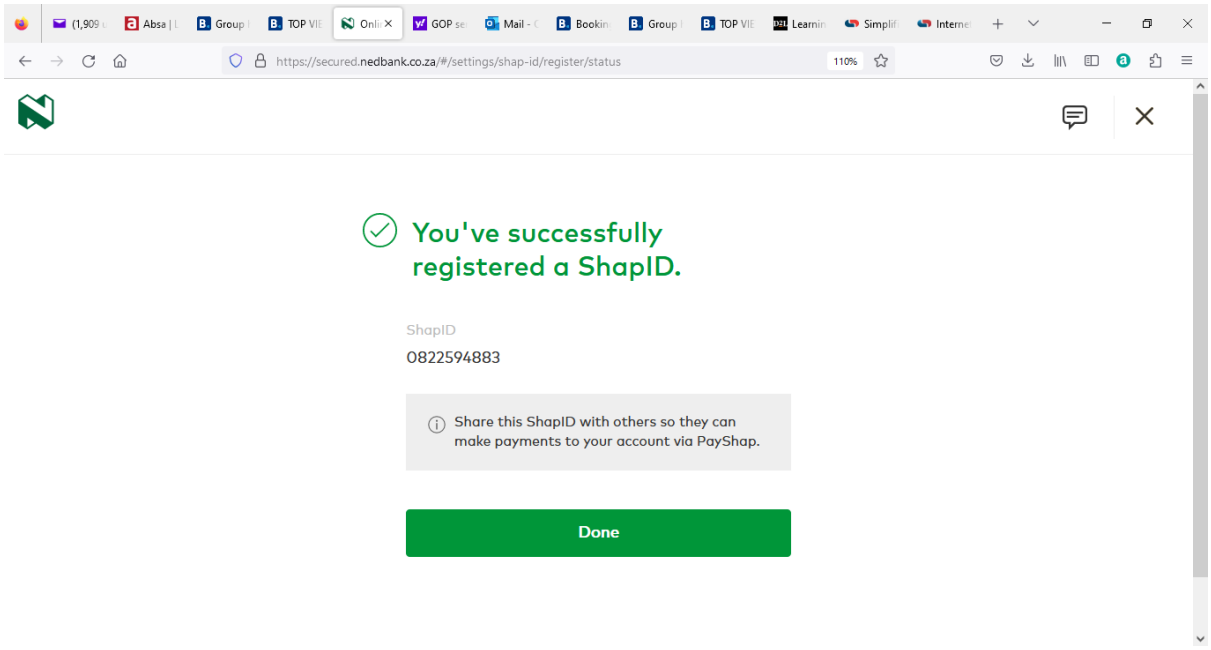


Fig. 9. Illustrating a phone number 0822594883 as registered as a ShapID.

Another limitation of the payshap system is that not all banks are currently participating in the system. This is unlike the Nigerian Interbank system that automatically covers all banks in the country. And also, after a sharpid has been registered, it doesn't do a real-time check of verifying the sharpid against name of the recipient. So, aside from using easy to remember names, it becomes similar to simply storing recipient's details on the banking system. What if few weeks after, a recipient closes his or her account while you still think you have the person's banking details or sharpid due to recent usage? So, it is still important to rather simply send the money to the phone number or email address and let the receiver decide whether to withdraw it at the ATM or to direct it to a bank account. Furthermore, the receiver should be able to decide up to the withdrawal time direct which of his or her bank account to direct the money to.

Also, Dehinbo (2023) observes that on a recent radio program on FM702 (2023) financial program by Bruce Whitfield by 6pm on 22 March 2023, it was discussed that some banks recycle account numbers after an account has been closed. Standard bank was for example was said to be recycling account number after 3 years of closure. Therefore, what if one thinks one has a person's banking details or sharpid due to finding it stored on banking recipients' profile while the account owner has changed? Therefore again, it is still important to rather simply send the money to the phone number or email address and let the receiver decide up to the withdrawal time whether to withdraw it at the

ATM or to direct it to a bank account should be able to decide which of his or her bank account to be used to receive the money.

So, the goal for this study here is that recipients should have the option of using either the beneficiary's account number or preferably cell phone number or email address or an identifying text using alphanumeric characters such as appending phone number to the bank name as done by the "payshap" system, instead of just using the account number only. But most importantly, the recipients should be able to just use the payment code received for instant money transfer to have the money received directly on a system and then direct the money to any of the recipient's bank accounts rather than receiving such money at the ATM (as has already been addressed by most banks especially to cater for those without bank accounts). Most importantly, in keeping with the one of the goals of sustainable development that people should have some degree of freedom on matters that concern them, then the receiver should be able to make their decision up to the withdrawal time.

In summary therefore in line with the problem identified and the various attempts towards understanding and reasoning into possible solutions based on experiences in other countries, the following is the concise statement of the desired solution.

This research addresses the question of how do someone receive instant money via email address or cell phone (avoiding releasing my banking details) and still get the money into any of my bank accounts (avoiding having to go and use ATM machines) thereby helping to influence the drive towards the growth of cashless transactions which could enhance sustainable development by avoiding unnecessary trips to the ATMs while also giving freedom of choice on how to receive the money?

Further Literature Review of related studies

The banking industry worldwide have come to rely heavily on Automated Teller Machine (ATM) to assist in service to customers. ATM is an electronic banking outlet that allows bank customers to complete one or more banking transactions without the aid of any bank official or teller. It is a self-service technology in financial service delivery usually adopted by financial institutions to reach their customers outside the banking hall. They give vending-machine convenience to customers to the effect and withdrawals of cash-transactions that have historically played a key role in the banking branching decisions (Odusina, 2014). Elias and Estember (2018) conducted a study on the impact of information quality and ergonomics on service quality in the use of ATMs, and they found that majority of ATM user were young people who are mostly educated and have higher economic status. In the study, they identified common problems relating to ATM. The most common problems that were identified was that customers tend to wait in long queues, ATMs running out of money and the geographical separation from ATMs. According to Klapper and Singer (2017), recipients who carry cash often have to travel considerable distance to receive their payments but are also vulnerable to street crime once they carry cash due to its anonymity. Omari and Zachary (2013) identified that ATM system accessibility is not friendly to people who are living with disability. So, such customers may prefer directing mobile banking into their accounts than receiving cash payments from the ATMs.

Mobile banking on customer satisfaction

A possible reason for widespread use of mobile banking and internet banking could relate to consumer satisfaction on the use of mobile banking. Kapoor (2015) has identified factors that contribute to the consumer satisfaction with internet banking. With banking sector being one of the first sectors to make global presence, the change in technologies adopted by banks, strategies used by the banks are also changing. Dimension of service quality like tangibility, reliability, responsiveness, assurance and empathy have shown more or less a great impact on customer satisfaction with internet banking services. According to Islam, Islam and Saifuddin (2018), the usage of e-devices in the banking sector has a positive impact on improving service quality and client commitment that eventually strengthens the relationship between clients and banks. In the study Islam et al. (2018), results revealed that modern people prefer to use information technology facilities to get banking services quickly by not having to physically visit banks to save time and cost. When payments are received into accounts, they can also be held more securely than manual cash payments (Klapper and Singer, 2017). This could make customers to be more satisfied with mobile banking than receiving cash payments. Results reveal that service quality dimensions, perceived price and fairness and service convenience dimensions have positive impact on customer satisfaction and customer loyalty (Kaura et al., 2015). And Agolla, Makara and Monametsi (2018) provided evidence that customers are attracted to their banks due to these innovative banking approaches in their research. Nawaz, Motiwalla and Deokar (2018) mentioned that research on mobile usage shows that applications with personalization increases customer satisfaction, loyalty, continued usage and provide a higher return on investment for the banks.

Benefits of mobile and internet banking

Mobile banking (MB) services offered today by a majority of financial institutions are moving from being a strategic advantage to survival strategy in a highly competitive environment (Nawaz, Motiwalla and Deokar, 2018). Mhlongo, Mtsweni and Modiba, (2017) have identified various benefits of mobile banking including ubiquity, accessibility, localisation, instant connectivity, Personalisation and time sensitivity.

- Ubiquity – the user is able to transact from any area where there is network coverage.
- Accessibility – the user can be contacted regardless of time and location
- provided that the location is covered by the mobile network operation.
- Convenience – mobile devices can be carried around with ease, they are able to store data and retrieve information.
- Localisation – the emergence of Global Positioning System (GPS) and related technologies has enabled the development of applications that are location-aware. These applications are able to deliver services, which are relevant to the location of the user provided that the area is covered by the mobile network operations.
- Instant connectivity - the introduction of General Packet Radio Service (GPRS), Enhanced Data Rates for Global System for Mobile Evolution (EDGE) and other technologies such as two and half Generation (2.5G) which was later followed by third Generation (3G) and fourth Generation (4G) has enabled mobile devices to connect to the Internet in a simpler and faster way.
- Personalisation - the services that are offered can be customised in such a way that they suit the preferences of the user.
- Time sensitivity – refers to services, which are time critical; in the trading environment such as in the buying and selling of financial instruments; the stock price has to be updated in real time, any slight delay can mean a difference between a profit and loss.

Mobile banking is a product that offers customers of banks access to services as they go. Customers can make their transactions anywhere with services such as account balance, transaction enquiries, stop cheques, do account verification, bill payments, electronic fund transfer, updates, history, and other customer services are all deliverables via mobile phones (Muhibudeen and Haladu, 2018). Innovative banking services come in many ways such as Mobile banking, internet banking, E-Wallet, and are regarded as service innovation, enabling a multi-channel banking strategy by providing new methods for customer engagement (Mbama and Ezepue, 2018). According to Agolla et al. (2018), innovation reduces transaction time, and enhances convenience to customers, through elimination of queues and provision of quick money transfers.

Research Design and Methodology

Research Strategy and Approach

Quantitative research approach in the form of prototyping is used because a prototype is developed to investigate receiving instant money via email address or cell phone (avoiding releasing my banking details) and still get the money into any of one's bank accounts (avoiding having to go and use ATM machines) thereby helping to influence the drive towards the sustainable growth of cashless transactions. The development of the prototype system is detailed below in this section.

Prototyping: Functional Requirements

Prototyping is a software development methodology aimed at developing a small working model of a system that can be presented to the user for evaluations, giving the user an overview of the final deliverable. There are several variants of software prototypes; however, all of them are based on two main types of prototyping, namely: throwaway prototype and evolutionary prototype. Throwaway prototype is based on the principle called "do-it-twice" since the first model is only used to gather all the preliminary requirements required to accomplish the final system. After the developers get feedback from the users and the new requirements have been clearly stated, the developers devise a new system (Chaudhary, 2018).

Evolutionary prototyping is based on the development of a robust prototype in a structured manner that keeps on evolving up until all the software specifications are met. This type of a prototype is used as the heart of a new system and all the improvements and additional requirements are going to be built as the additional objects or components

(Chaudhary, 2018). The prototype methodology can be used to develop a system which seeks to gather more information or requirements from the users (Sommerville, 2010). The selected prototyping method adopted in this study is throwaway prototype since we are currently seeking a demonstration tool as a proof of concept. In future studies where we would seek to use the prototype to study behaviours based on the system such as sustainable development enhanced by the use of the system, then we would be adapting the method as evolutionary prototyping.

System Design and Development

Instant money transfer service E-drawal system is a banking service that will allow instant money transfer receivers to transfer / deposit instant e-money directly into their bank account using their mobile phones or any device that has internet access. This system alleviates the need to visit the nearest ATM to withdraw money. Instant money transfer service E-drawal system will work as a middleman between banks in South Africa that provide instant money transfer services such E-Wallet, Cashsend, etc. The system provides convenience as it can be accessible at any location and at any time. The system will run an android mobile phone and web.

System Use-case diagram

Use-cases are scenario-based techniques that seek to describe all the possible actors and interactions in the system (Sommerville, 2004). Figure 10 depicts the use-case diagram illustrating the user of the system and their interactions with the system.

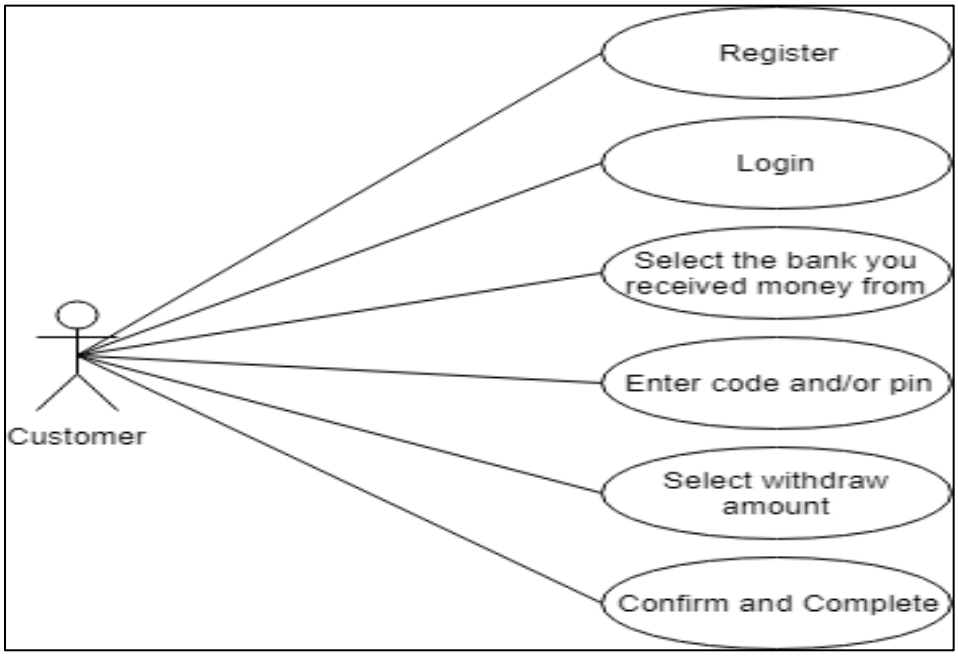


Fig. 10: Instant Money Transfer Service E-drawal System Use Case

System Requirement Specifications

Functional requirements define what the system does, and non-functional requirements define how it should be done. In this case, the non-functional requirements define how the system should perform a particular task.

Functional Requirement

1. Registration – Allow the user to register their personal and banking details
2. Login – Allow the user to login using their username and password
3. Select bank – Requires the user to select the bank they receive money from
4. Enter the code and/or One Time Pin (OTP) – Requires the user to enter the money code if the bank uses codes, and/or OTP

Select Amount to deposit/Withdraw – Select the amount they want to transfer into their account up to maximum

1. Select whether to deposit into bank account or to withdraw via ATM
2. If to deposit into bank account, – Select the amount they want to transfer into their account up to maximum
3. Confirm and Complete – Allows the user to confirm and complete the transaction

Non-Functional Requirements

1. Reliability – The system provides consistent and accurate performance based on its intended functionality. Should there be any failure, appropriate error messages to flag.
2. Availability – The system will be available at any time and place where there is network connection
3. Authentication – Users will be authenticated to access the application
4. Flexibility – The system will be in a manner that will be easy to enhance and change as the requirement change and/ or increase
5. Usability – The system is developed in such a way that the interfaces are easy to use.
6. Efficiency – The efficiency depends on the response time and network coverage by the mobile network operator.
7. Security – The system is safe and secure.

Frameworks, tools and technologies

Instant money transfer service e-drawal system is developed using IntelliJ IDEA 2019.1.3, Java, Spring boot, Twilio API, Angular, Android, and MySQL database.

1. IntelliJ IDEA 2019.1.3 is Integrated development environment (IDE) where the code is written and manually tested for errors
2. Java spring boot is the controller which uses Maven to fetch JAR files, and will communicate with Angular, Twilio API and MySQL database which stores the users account information
3. Angular is used to design the user interface
4. Android is the operating system used for mobile application
5. Twilio API is used to send One-Time PIN SMS to the user
6. For security, the system uses spring security to validate and ensure that the user's information is secure.

System architectural design

The system architectural design of instant money transfer service e-Drawal system is structured into three servers as seen on Figure 11 below. The client server represents the graphical user interfaces that is used to display information; The application server is where most of the communication between the client server and data server occur. The application server controls the communication channel between the client server and the database server; The data server displays the database which stores information. How the different servers communicate with each other is displayed in figure below.

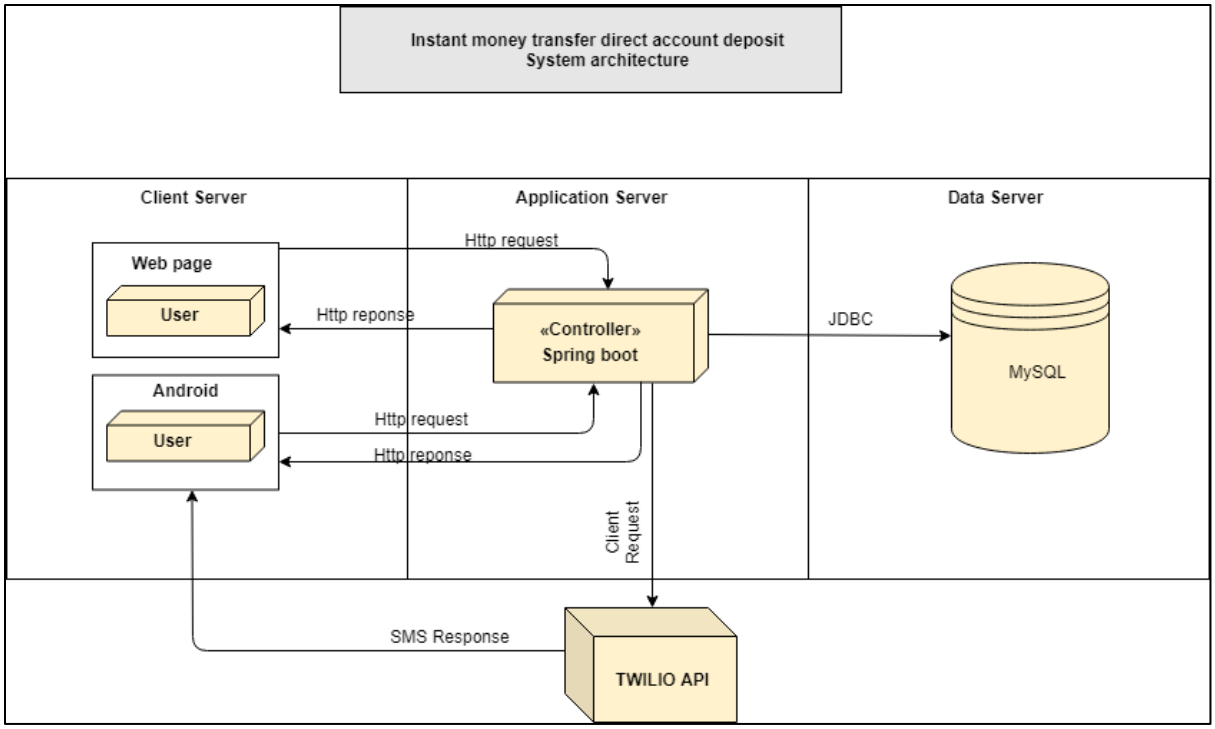


Fig. 11: Instant Money Transfer Service E-drawal System architectural design

Database design

The database design is the organization of data according to a database model. Figure 12 depicts the database design for the system.

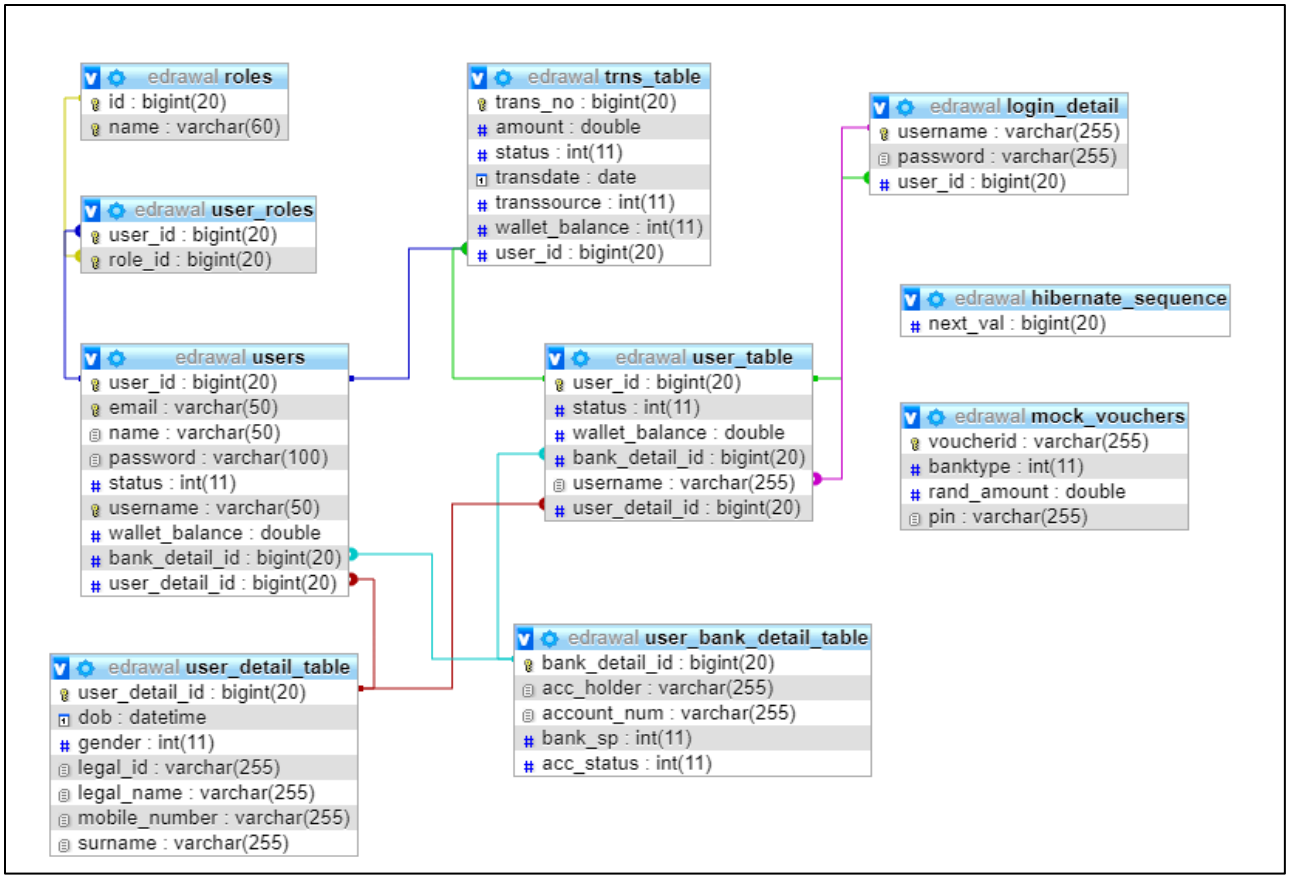


Fig. 12: Database Entity Relationship Diagram for the Instant Money Transfer Service E-drawal System

System Results

The system output results begin with the system user interface which is the visual part of application or system through which a user interacts with the system. It is started with the registration visuals in figure 13. Thereafter, it allows the user to login once the registration is complete using their username and password.

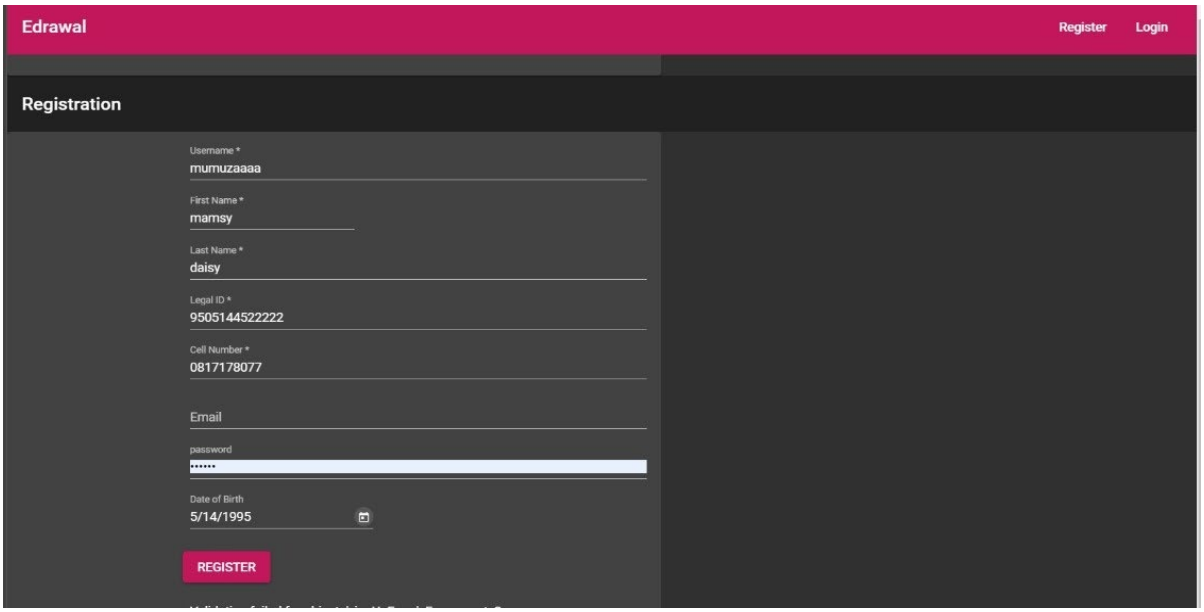


Fig. 13: Registration page

Figure 14 allows the user to select the bank the instant money transfer was sent from.

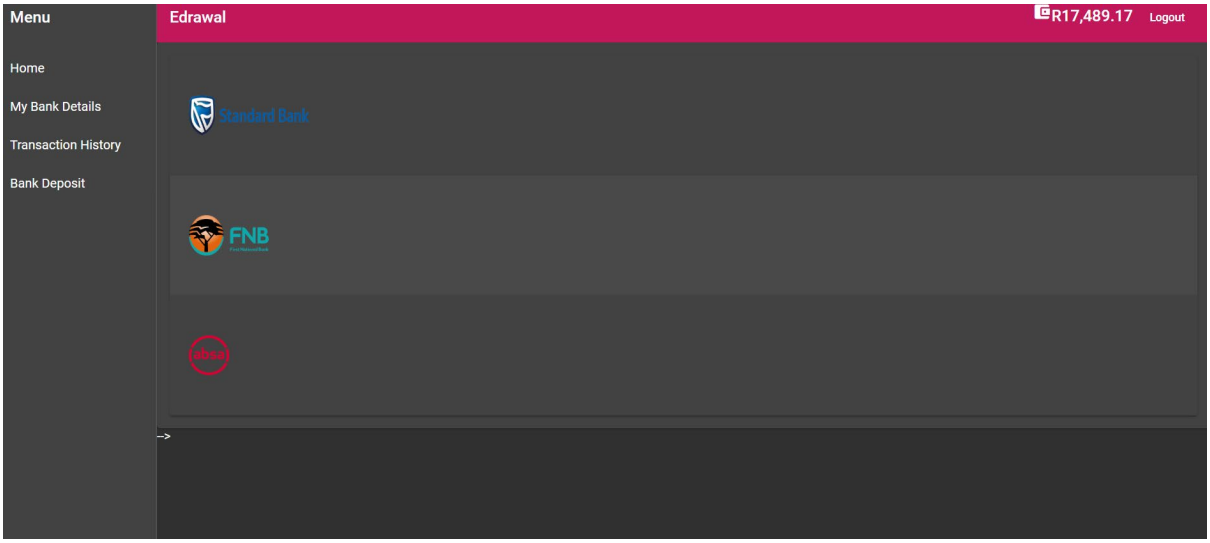


Fig. 14. Selecting banks

Figure 15 allows the user the user to enter the voucher code and the OTP.

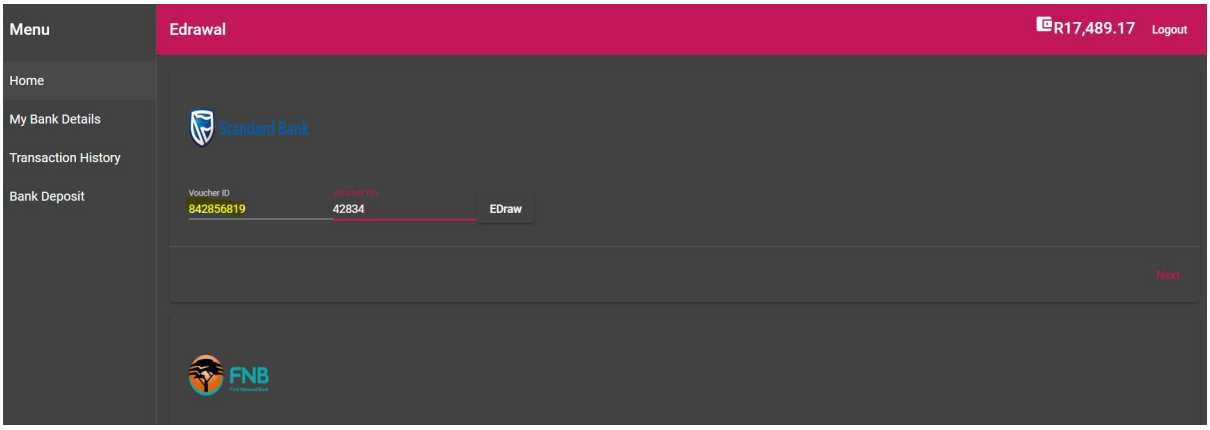


Fig. 15. Entering the voucher pin and OTP

The user will receive an SMS containing an OTP to continue with the transaction. Figure 16 requests the user to enter the OTP attached to the SMS.

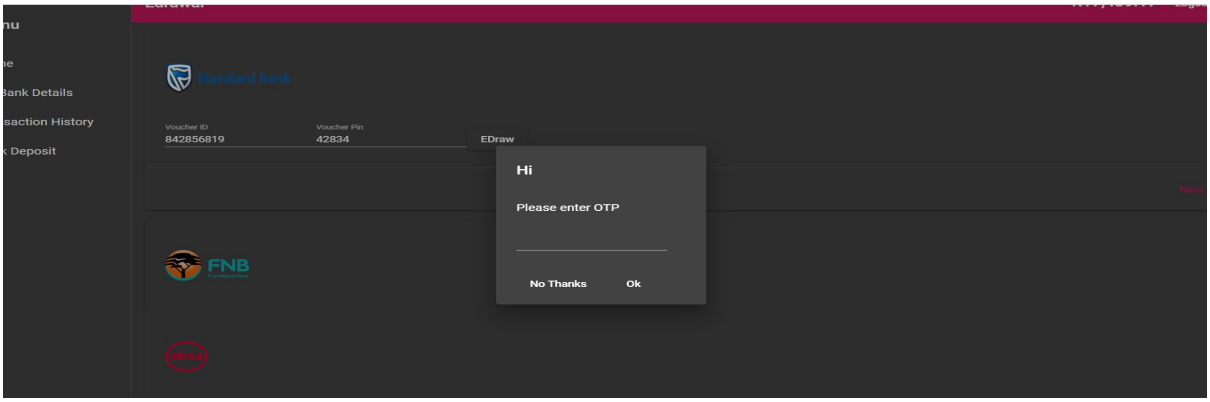


Figure 1. One-time pin prompter

Figure 17 allows the user to enter the amount they desire to withdraw and transfer into their bank account up to the maximum amount that was sent.

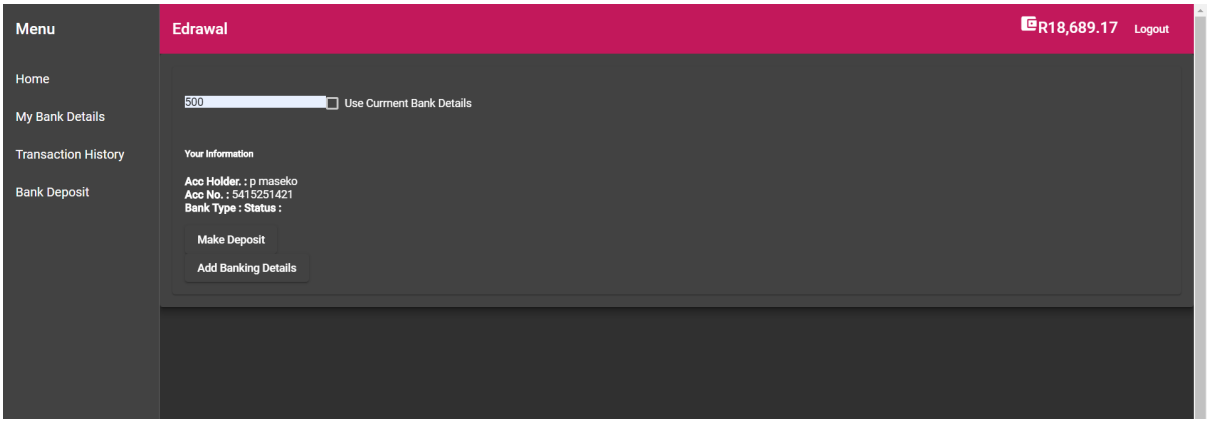
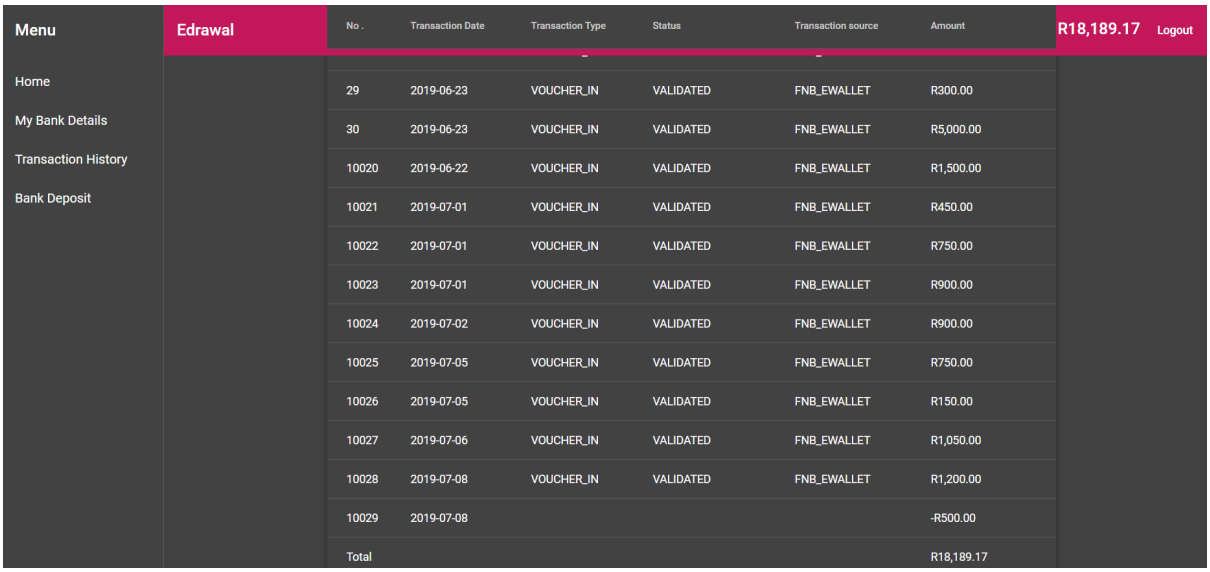


Figure 2. Entering withdrawal amount

Figure 18 displays the transaction history. This gives detailed list of transactions that took place including the dates and the total amount of all the transactions.



No .	Transaction Date	Transaction Type	Status	Transaction source	Amount
29	2019-06-23	VOUCHER_IN	VALIDATED	FNB_EWALLET	R300.00
30	2019-06-23	VOUCHER_IN	VALIDATED	FNB_EWALLET	R5,000.00
10020	2019-06-22	VOUCHER_IN	VALIDATED	FNB_EWALLET	R1,500.00
10021	2019-07-01	VOUCHER_IN	VALIDATED	FNB_EWALLET	R450.00
10022	2019-07-01	VOUCHER_IN	VALIDATED	FNB_EWALLET	R750.00
10023	2019-07-01	VOUCHER_IN	VALIDATED	FNB_EWALLET	R900.00
10024	2019-07-02	VOUCHER_IN	VALIDATED	FNB_EWALLET	R900.00
10025	2019-07-05	VOUCHER_IN	VALIDATED	FNB_EWALLET	R750.00
10026	2019-07-05	VOUCHER_IN	VALIDATED	FNB_EWALLET	R150.00
10027	2019-07-06	VOUCHER_IN	VALIDATED	FNB_EWALLET	R1,050.00
10028	2019-07-08	VOUCHER_IN	VALIDATED	FNB_EWALLET	R1,200.00
10029	2019-07-08				-R500.00
Total					R18,189.17

Figure 3. Displaying transaction history

Conclusions

This research study addresses the question of how can people get to receive instant money via email address or cell phone (avoiding releasing my banking details) and still get the money into any of their bank accounts (avoiding having to go and use ATM machines)? This is necessary because ATMs commonly being out of service and customers having to wait in long queues are among the most commonly experienced problems while using ATMs. Also, money transfer services also pose risks to recipients who receive the money in a form of mobile money transfer as they perform traditional money withdrawal using ATMS, as this method exposes customers to ATM and/or street cash robberies. One should be able to change mind and redirect such money to bank accounts whenever one wishes to or when one fears such ATM and/or street cash robberies. This research focuses on mobile banking to help influence the drive towards the growth of cashless transactions. Thus, this research study addresses the question of how do someone receive instant money via email address or cell phone (avoiding releasing banking details) and still get the money into any of client's bank accounts (avoiding having to go and use ATM machines) thereby helping to influence the drive towards the growth of cashless transactions? Answer to this could enhance environmental and financial sustainable development by avoiding unnecessary trips to the ATMs while also giving freedom of choice on how to receive the money. This in addition builds and enhance trust in the banking system enhancing future and sustainable use of mobile-based banking systems in the society.

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