# Commercial Segment Competitiveness in a Market Disrupted by Digital Banks in South Africa

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## Abstract

The South African banking market has been largely dominated by the big four traditional banks i.e. FNB, ABSA, Standard Bank and Nedbank, prior to the implementation of digital banks. The introduction of these new entrants has meant the domination is starting to cease as many of the consumer and small & medium enterprise companies that banked with traditional banks are migrating to these entrants. This is because of the affordable pricing options and contextual solutions they offer, which are enabled through the use industry 4.0 technologies. With this in mind, a qualitative study was conducted to unpack what the commercial segment of a particular bank, Bank A, can do to bridge the digital divide opened by digital banks. The study concluded that Bank A should accelerate the adoption of industry 4.0 technologies to drive operational efficiencies and cost reduction, optimize business processes, apply agile project delivery methodologies to market solutions quicker than their competitors. This could be achieved by implementing a hybrid core banking application to enable the bank to adopt a progressive modernization strategy by using the best of legacy core system coupled with the new core banking application and collaborating with fintech companies to drive contextual solution delivery.

## Keywords
Traditional Banking in South Africa, Digital Banks, Industry 4.0 in Banking, Competitive banking model.

## 1. Introduction
According to McKinsey (2017) Africa's banking market is currently $86 billion in revenue before risk costs. Traditional banks who adopt digitalization can expect to grow their revenue by approximately 8.5% per year until 2022 which will likely bring the continents revenue to $129 billion. Prior to the emergence of digital banks, banking in South Africa was largely dominated by the big four banks, i.e., FNB, ABSA, Nedbank, and Standard Bank. The dominance is slowly starting to cease now as a result of disruptions which are brought about by new digital banks such as Tyme Bank. The Citizen (2020) have reported that ABSA lost 200 000 entry level customers with one of the major factors being pricing.

Temelkov (2020) argues that traditional banking business models were not challenged for decades, however, the 2008 financial crisis has allowed for the birth of new entrants providing competition to incumbent traditional banks. Temelkov (2020), further argues the new entrants were born because of the changes in the regulations which eased the requirements to enter the financial services industry coupled with the rapid raise in technology. William (2018) contends that traditional banking is mostly associated with legacy operational systems, which are static to run particularly the core banking applications. This, as a result, makes traditional banks less responsive to change and seizing new market opportunities. According to FirstRand (2018), running legacy core banking applications and other I.T related systems on mainframe technology has resulted in approximately 11% of the operating costs

excluding staff members working on the technology in 2018. These costs are ultimately pushed to the customers in a form of service or monthly account fees. This is where digital banks such as Tyme Bank have seized on the opportunity to develop digital solutions like cloud enabled core banking applications to ensure that that overheads associated with technology are kept to less than a 1% of the operating costs. According to estimates by Business Tech (2019) it has been observed that Tyme Bank has gained approximately one million customers in less than eight months of operation. Most of these customers can be accounted for from the traditional banking's customer base in both the retail and commercial segment.

## 1.1 Objectives
This study sought to investigate how Bank A's Commercial division could bridge the digital gap to empower the bank to be more responsive to change so that it can seize new market opportunities with the aim of satisfying their customers and prevent revenue losses in the hands of new digital banks. A conceptual framework, to evaluate which Industry 4.0 technologies and strategies can be embraced in the Commercial banking segment of a traditional bank to be competitive, is subsequently developed.

## 2. Literature Review
### 2.1. Industry 4.0
The technological world is evolving at a rapid pace with the introduction of 5G networks, big data, computational capability, cloud storage, and new tools to automate repetitive tasks. According to Mehdiabadi et al (2020), modern technology has paved a way for a wide range of applications and has played an important role in bridging the communication gab across different industries in the world. Mehdiabadi et al. (2020) further maintain that the introduction of new applications has opened doors of innovation which has paved a way for revenue growth for different companies across different sectors.

Tink (2019) claims that the introduction of technology and the rapid raise of the digital services has changed customers expectation in every facet of their lives, particularly the banking sector. Business Tech (2019) conducted a study in 2019, which revealed that South Africa has 31 million internet users, and each user spends on average 8 hours and 25 minutes online each day on any device. Virtual Incentive (2020) further argues that based on the number of people who spend hours online, customers expect businesses to interact with them over the digital touchpoints, meaning they must be reachable anytime and from anywhere.

### 2.2. Evolution of Banking in South Africa
Mehdiabadi et al. (2020) describes the evolution of banking, wherein branch banking can be categorized as Banking 1.0, where in services were provided at certain times at the branch. Mehdiabadi et al. (2020), further argues that with the introduction of the internet in 1980's, this allowed the formation of Banking 2.0 where certain services that were offered at the branch like cash withdrawals and account balance checks were now available at ATM's, which allowed people to access these services outside the normal branch operating hours. The introduction of Smartphones coupled with the existing technological advancement of faster internet between the period of 2007 to 2015 allowed traditional banks to offer most of the services they currently offer at the branch on self-service platforms, like the Online banking and App based banking. This is categorized as Banking 3.0. Mehdiabadi et al. (2020), further contend that digital banks have adopted Banking 4.0 which is characterized by intelligent decision making and high-speed networking protocols, providing customers with the personalized and integrated customer experience. Figure 1 below depicts the evolution of banking in South Africa.
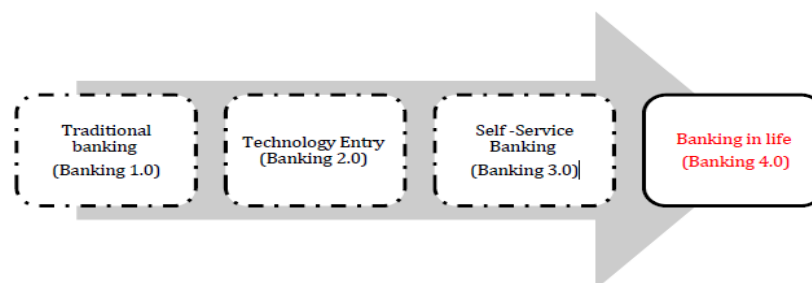


Figure 1 : Evolution of Banking (Mehdiabadi et al 2020)

## 2.3. Traditional Banking

Traditional banking is characterised by physical buildings. A traditional bank in South Africa has headquarters and to support the operation there are branches that are located across the country Orlando (2020) says branch banking was largely chosen for the convenience it provided in terms of giving face to face customer service. Orlando (2016) furtherstates that according to the Global Consumer Banking Survey (2016), approximately 60% of the 550 000 people that were surveyed across 32 different countries, preferred to go to a physical building to either complete a transaction or purchase one of the bank's product offerings. A reputable traditional bank may seem more trustworthy than banks that operate digitally without the convenience of the face-to-face interaction. However, they do not have the accessibility to customers particularly when the branches close operations at the end of business day. The operation of a traditional bank is characterized by legacy systems. and complex business processes.

Legacy systems are often complex systems that were built on old architecture, a small change on a legacy core banking system would normally require a great deal of impact assessment to ensure there is no downstream impact on other systems that integrate to the core system (Jones,2019). Jones (2019) further argues that legacy systems normally go through a plethora of changes and have catered for so many requirements over decades. This evolution normally presents banks with challenges in terms of integrating them to other modern systems. According to industry expects, Cloud and Software as a Service (SaaS) solutions are generally not compatible with older legacy systems. To incorporate the new solutions with legacy systems extensive customization of the code and a great deal of regression testing would be required to ensure that the integration is successful. This is a time-consuming exercise and has cost associated with it, which the customer will have to ultimately pay.

## 2.4. Digital Banking

Digital banks are characterised by offering their banking services online and through a mobile application platform. Digital banks have no need for branch facilities as their services are provided using automated processes, real time updates and offering customer support through in-app chats (Logan,2019). PwC (2018) argues that the South African banking market will soon be shaped by the digital entrants using technology and unprecedented levels of innovation. South Africa has seen a launch of three digital banks i.e., Bank Zero, Tyme Bank and Discovery Bank. PwC (2020) further states that these digital entrants have developed a business model based on monetising customer information through carefully built communities. MyBroadband (2020) argues that each of the digital bank offer a different value proposition to their customers. Discovery bank offers a personalised experience by integrating a bank account with medical aid, insurance, vitality money which allows customers to get personalised interest rates based on lifestyle behaviour and get the benefit of financial education through Discovery app. Discovery bank also offers their customers transactional accounts that require minimal monthly account fees (MyBroadband 2020).

Tyme Bank aims to offer easy accessibility to South Africa's unbanked and underbanked population which is approximately 11 million (Mambu 2019). The bank offers real time banking experiences that are unique, personalised and intuitive. Mambu (2019) argues that it has partnered with giant supermarkets i.e., Pick n Pay and Boxer to allow the bank to have access to more than 800 stores across the country and install real time biometric ATM's. This would allow customers to open Bank accounts with only their I.D numbers with no additional paperwork required. A customer then has access to an open and active bank account within five minutes (Mambu 2019).

### 2.4.1 Industry 4.0 technologies adopted by Digital Banks

This section examines the principles of Industry 4.0 that digital banks have mostly adopted to the core of their operating model.

*Cloud enabled Core Banking*

Gartner (2011) define a Core Banking Application as "a system that processes daily banking transitions and posts updates to accounts and other financial records". These systems typically include "deposits, loan, and credit processing capabilities with interface to general ledger systems and reporting tools" (n.p.) A Core banking application is the engine that integrates with other supporting systems to facilitate virtually every transition and reporting for the bank. Williams (2018) states that some digital banks have entrusted their core banking to cloud providers. This is done to leverage the computing, tooling, and processing power that cloud offers. Cloud generally claims to offer infinite storage, greater network capability, and data security, the security standards are amongst the highest available. Additionally, digital banks have used an Application Programming Interface (API) enabled cloud-

based core to use microservices to develop and integrate new applications and solutions. This allows them to be more responsive to change, allowing greater innovation and a greater reduction in costs which ultimately results in an improved customer experience. (Williams, 2018).

*Big Data Analytics*
Reynolds (2016), defines Big data analytics as a process with which industries collect and utilize information to enhance the customer experience, improve their products and services and improve the operational capability of their business. Reynolds (2016) further argues that incumbent traditional banks had large amounts of data that was sitting in reservoirs and are left untapped. This is where digital banks have taken advantage and used this evolving industry 4.0 concept as one of the primary means of conducting their business**.** Digital banks use different analytical models to suit a specific purpose in their business (Reynolds, 2016)**.** They make use of statistical models, forecasting techniques, predictive techniques, and information management to generate customer patterns which drive the future product offerings. This ensures the correct product is delivered or advertised to the correct customer timeously. Reynolds (2016) says predictive analytics is also a good tool for innovation and the ability to respond quickly to an ever-changing customer needs. The ability to market future product offerings digitally is advantageous particularly with 30% of the South African population owning a smart phone and connected to the web as stated by Statista (2020), and thus allowing access to information at any given time and place.

*Internet of thing (IoT) – Interconnectedness*
Boulmakoul (2019) states that the Internet of Things refers to the interconnection via the internet of computing devices that are embedded in every object which allows them to send and receive information without human intervention. Every object around a human being will be able to exchange information and communicate with one another (Boulmakoul, 2019). Digital banks are one of the economic actors which have taken advantage of connectivity of objects to satisfy the customers who expect a significant innovation from their banks by offering them appropriate products and services to enable a connected life (Boulmakoul, 2019). Boulmakoul (2019) further states there are technical advancements which IoT have brought into the financial service industry, that new digital banks have taken some advantage of in their operations. These include, Account Management of Things**,**a platform that most digital banks have developed to allow for easy, seamless, and instant access by consumers to all the banking services that they offer according to Boulmakoul (2019). Customers are now able to open transactional accounts from anywhere using the assistance of biometrics and facial recognition that automatically recognize individuals based on their physical and biological characteristics. Through the digital interface between a digital bank and Home Affairs, data is then verified in an instant, allowingfor a seamless bank account opening.

*Open Banking using Application Programme Interface (API's)*
Digital banks have seized the opportunities to use one of the emerging and fast developing areas in the financial services industry which is Open Banking (Mehdiabadi et al, 2020). Open banking uses the Application Programme Interface (API's) to collect banking data from different sources and institutions and puts it on a single platform (Mehdiabadi et al, 2020). Additionally, with the use of API's, customers have access to banking data real time, which enables them to make better decisions in terms of performing transactions, applying for credit and investing their money (Tech Funnel,2020). Customers can monitor and share their financial information with organisation within the financial services industry as well as, outside the industry to allow them to get better service, better investment opportunities and easy access to credit solutions (Tech Funnel,2020).Tech Funnel (2020) further argues that open banking can be used within the financial service industry to provide tailor-made solutions to individuals; it can also assist Small & Medium Sized Enterprises (SME's) to address their everyday challenges such as cashflow.

*Robotics Process Automation in Banking*
One of the major facets of Industry 4.0 is Robotics Process Automation (RPA). Robotics has revolutionized the banking industry. Dabke (2018) defines RPA as the eyes and the hands that use the capability of data collection, Artificial intelligence (to interpret the collated data to follow the behaviour) and Machine Learning to automate repeated and high-volume tasks such as processing credit card orders, capturing financial statements of customers applying for credit onto a financial spreading system and loan approval process. Dabke (2018), further argues that traditional banks who use robotics in some of their areas have reduced staff to free them to focus on innovative solutions, which has reduced operational costs. Implementation of robotics has also removed the risk of human error while ensuring compliance with the regulators and reducing the time of fixing human errors in banking.

Darke (2018), states that there are major banks in the United States of America (Bank of Tokyo, CitiBank and the Bank of America) who are making the most of the Robotic Technology. Citibank harnesses the power of robotics

technology by using machine learning to detect fraudulent charges based on spending history. Bank of America uses Artificial Intelligence technology "Erika" which is a chatbot that provides financial education and support through the use of predictive analytics to its customers. a (Dabke,2018) The Bank of Tokyo uses robots that can communicate in 19 different languages in its Branch facilities, these robots can respond to customer queries more accurately and quickly. This signifies that Banks do not need a human on the other side of the chatbot, thus they can benefit from the operational costs saving.

*Biometrics in Banking*

According to Agidi (2018), digital entrants are always looking at leveraging biometrics technology to enhance the solutions they offer and improve the security around those solutions. Agidi (2018), argues that more transactions are performed through an online mobile transaction. There are however customers who are still concerned about the security measure surrounding an online transaction. Banking transactions can be performed through a voice or speech recognition system where customers need to verify themselves using a microphone in their phones before they do any transaction (Agidi 2018). Entersekt (2019) argues that traditional banks have always wanted to increase simplicity without compromising on security This was done with the username and password login method. With customer having the flexibility to own multiple bank accounts with different banks, this means they must remember the username and password combination for every account owned and ultimately for every transaction that they need to perform. Entersekt (2019) further states that 37% of people who own 2 or more accounts, are likely to forget their passwords at least once a week , having to reset the password is a cumbersome process.

*Blockchain technology*

Kkozyra (2020) describes blockchain technology in the banking context as open, distributed mechanism that records transactions between two parties. BBC storyworks (2021) states that block chain allows two parties to share a ledger across a computer network without needing a third party, enablingefficient transactional capability. In a study conducted in 2019 by McKinsey & Company (2019), cross-border payments totalled around $600 billion annually with an expected increase of 3% a year which is driven by international trade. Processing cross boarder payments can take a few days to settle becausethey are limited by the way incumbent financial institutions were built, costs high fees with a result of causing customer frustration (McKinsey & Company, 2019). Blockchain technology can, thus, be used to facilitate faster payments and lower the fees of processing these transactions (Kkozyra, 2020). Blockchain technology also brings in improved security that prevents hackers from accessing bank and customer personal information (Fintech Weekly, 2021).

## 2.5. Competition

One of the substantial roles of competition in the banking industry is ensuring banks do not have monopoly power in the market, which results in customers being charged exorbitant prices (Posner ,2016). As a result of the high pricing model, customers will be demotivated to borrow from banks, havinga negative impact on the overall competitiveness of the country in which they opaerate (Posner,2016). Banks also play an important role in terms of setting up the monetary policy of the country, as such the availability of competition ensures collaboration between banks in implementing an effective monetary policy (Fungacova et al 2013). Haripersad R et al (2018), contend that commercial banks worldwide are struggling to maintain their competitiveness because of the introduction of digital entrants and fintech companies who have disrupted the traditional banking model. This, as a result, has negatively affected the traditional income streams of traditional banks. Competition in the banking sector is inevitable due to an increase in the number of banks in the South African banking market. According to ADV Ratings (2021) there are 67 banks operating in South Africa serving a market of approximately 27.4 million people aged 16 years and older, The Citizen (2020) reported that AABSA lost 200 000 retail customers in 2020, with Standard Bank citing a 1% drop in active customer in it's personal and business banking units.

## 3. Methods

A qualitative approach was chosen for this study because it gives an in-depth understanding of the phenomenon being explored where little information exits (Tiley 2017). With this approach participants can freely discuss their experiences and beliefs without any constraints (Tiley 2017). The adoption of Industry 4.0 technologies in the commercial segment of Bank A is still relatively low, which results in this study being exploratory.

Semi structured interviews were used to explore the subjective views, experiences, beliefs and motivations of Subject Matter Experts (SME's) employed by Bank A. These were chosen because they allow the collection of

open-ended data that gives in-depth understanding of the participants thoughts, feelings and beliefs regarding the phenomenon being explored (DeJonckheere et al. ,2019). The purpose of semi-structured interviews is to connect facts in a phenomenon that is explored with the subjective views and experiences of SME's that will be interviewed (Wengraf 2004).

Purposeful sampling was used to ensure that individuals selected to participate in this study were especially knowledgeable and experienced (Lawrence et al. 2013) about technological advancement brought about by industry 4.0 coupled with the understanding of the future strategy of Bank A's Commercial division in terms of ensuring that business banking remains competitive. The SME's included head of departments, business solutions head, product manager and systems owners who are knowledgeable and have vested interest in the technological advancements which are brought about by industry 4.0.). Eight interviews were conducted in Bank A's Commercial division. According to Namey (2017), conducting an interview-based study on a specific research question, generally little new information is generated after interviewing more than six people, as such this leads to data saturation as described by Faulkner et al. (2017).

Data was collected through the recording and transcription of the interviews. One interview, through virtual meetings on Microsoft teams, was conducted with each of the SME's lasting approximately an hour. To ensure an optimum use of the interview time, questions were sent to respondents prior the interview so that they could familiarize themselves with the questions and to ensure that the interview is focused on the desired outcomes (Pharm, 2014). To develop interview questions the study used Wengraf (2004)'s Pyramid Model of interview research. From the Critical Research Question that has been developed, interfacing with the use of facts that have been drawn from the literature, several theory questions were developed. Open ended interview questions were then developed from the theory questions.

Data was collected and presented in a word document corresponding with each question. The following six-step process that was used to develop themes:

- *Familiarization* - getting to know the data that was collected prior to the analysis being done. This was done through reading the interviews.
- *Coding* – Collected data was pre-coded by highlighting and underlining significant information that relates the objectives of the study Saldana (2016), the highlighted information was then grouped into categories. sentences and specific texts were identified and arranged in a systematic order to look for concepts and ideas and codes to describe the content will then be developed. Each code will describe an idea around the text.
- *Generating themes* – Codes created will be looked at to identify any patterns among them. For any recurring patterns, themes will be developed.
- *Reviewing themes* - Themes that are developed will then be compared to the actual data to see if anything is missed.
- *Defining and Naming Themes* – Finalizing the themes and formulating exactly what they mean and defining how the themes define the data that was collected.
- *Write up* – Analysis of the data will be written down. Where the introduction and the objectives of the research will be tied into the themes that were developed.

## 5. Results and Discussion

Data analysis enabled the development of themes and sub-themes aimed at addressing the objectives of the study. Themes and sub themes drawn are compared to the literature to draw discussion points, presented below. These ultimately lead to the development of a conceptual framework for the evaluation of which Industry 4.0 technologies and strategies could be embraced in the Commercial banking segment of a traditional bank to be competitive.

The findings from the empirical data indicate that digital banks are a threat and have significantly changed the perspective of banking in South Africa. Many customers are migrating to these digital banks because; they provide a competitive pricing model, enhanced customer experience and provide a contextual solution. This is evident in how Business Tech (2017) argued that Tyme bank has onboarded 18 000 business customers in less than two years of its operation. These customers cannot be attributed to the unbanked community only. There are business customers moving from traditional banks to these digital banks, particularly the Small and Medium Enterprise's customer base who are looking to transact without paying account and transactional account fees. The respondents in this research

agree that it is important to respond to this threat by implementing industry 4.0 technologies to maintain the competitive advantage by reducing operational costs and providing an enhanced customer experience.

## 5.1 Implementation of Industry 4.0 technologies required to be competitive against digital banks

The results indicate that automation plays an important role in achieving higher productivity, reliability, increased performance and reduced operational costs. The data reveals that RPA technology is still at its infancy at the bank in the commercial segment. It is, therefore, important that the bank aggressively accelerates the implementation of RPA technology by automating algorithms for repetitive tasks particularly from a credit application perspective. Customers are generally required to send their financial statements in support of credit application, automatically capturing these statements onto a system would enable quicker credit decision-making and free up employees from manually capturing the financial statements to focus on value adding projects. This is supported by Dabke (2018) who contends that RPA enables t the capability of data collection, artificial intelligence to interpret the collected data and automate repeated tasks and high-volume tasks such as processing credit card orders, as well as, reducing operational costs and releasing employees to focus on more innovative technologies.

The results also reveal that Bank A has no functionality that speaks to the implementation of blockchain technology because of the legacy architecture limitation. The data analysis show that it is important to implement blockchain technology to improve the current software infrastructure security and reduce the operational costs associated with facilitating cross boarder and cross currency payments. The bank currently facilitates the cross boarder and cross currency payments through a 3rd party bank at high costs, adding to the operational costs of the bank which are ultimately pushed to the customer in a form of account management fees. Kkozyra (2020) indicates that blockchain technology has affected the payments system, settlement system, it has changed the clearance and payment system and reduced operational costs and it has brought real-time clearance of finance between financial institutions. Fintech Weekly (2021) points out that blockchain technology brings in improved security that prevents hackers from accessing bank and customer personal information.

The adoption of blockchain technology would improve the experience of commercial customers who pay cross boarder suppliers and those that deal with currency payments, as this technology would allow the beneficiaries to receive payments within hours instead of waiting for days like they do currently. Banks are required by the regulators to have an enhanced security that will enable the protection of customer information, as such the implementation of this technology would help the segment to store information across a network of computers, which means compromising data becomes much more difficult for hackers to access. The high level of security afforded by blockchain technology makes it particularly appealing to customer as they know that their personal information is safe with the bank. This enables customer trust, which is an important facet of ensuring customer loyalty in your existing customer base.

One of the respondents pointed out that the bank uses a physical data center as a storage house. This has limitations from a cost perspective because the physical data center providers charge for the storage size that is created for the bank, whereas cloud providers charge per storage utilization. The results highlight the importance of migrating from a physical data center to cloud storage providers. The bank, however, needs to be aware of the regulatory limitation preventing banks from storing data outside South Africa (S.A.) and look for cloud providers within the South African boarders. The results further reveal the importance of engaging with the regulators for a more dynamic regulatory strategy to lessen the regulation around data storage, allowing the banks to store data with cloud providers outside S.A. Mister (2019) highlights the importance of cloud storage as it gives users the ability to share and access files without needing access to a physical data storage, reduces the costs associated with operating on a physical data center. Cloud storage provides an additional layer of security to their service.

The respondents agree that biometric technology plays an important role in terms of improving customer experience. The bank has an existing biometric technology that allows commercial customers to easily log on to the banking app using their fingerprint stamp or face recognition without the need to remember the username and password combination, which is often frustrating for customers particularly if they forget either one of the two. The respondents also indicated the importance of continuing to enhance the current capability and leveraging the capability of the technology in some of the business processes to improve turnaround times. When customers sign suretyship on behalf of other legal entities in support of a credit application, it is often a lengthy process because the bank would courier the documents to the customer to sign and return before a loan payment can be made. As such,

having customers approving suretyship though a biometric stamp would save significant time and allow quicker loan payments to be made.

The bank still uses business functions to integrate to other internal and external systems. These business functions do not provide a great deal of flexibility, in that a small change can often require a great deal of impact assessment. The respondents revealed that it is important to move to the API solution to effectively share data and easily integrate with other systems. Mehdiabadi et al. (2020) indicates that API's provide a better way to share information, integrate with other systems, and provide personalized services, making financial services quick and efficient. API's can enable the bank to grant third party companies secured access to their banking platform to integrate and build solutions.

Figure 2 shows the statistical results of industry 4.0 technologies that should be prioritized for implementation in the commercial segment of Bank A to be competitive against the new digital banks.
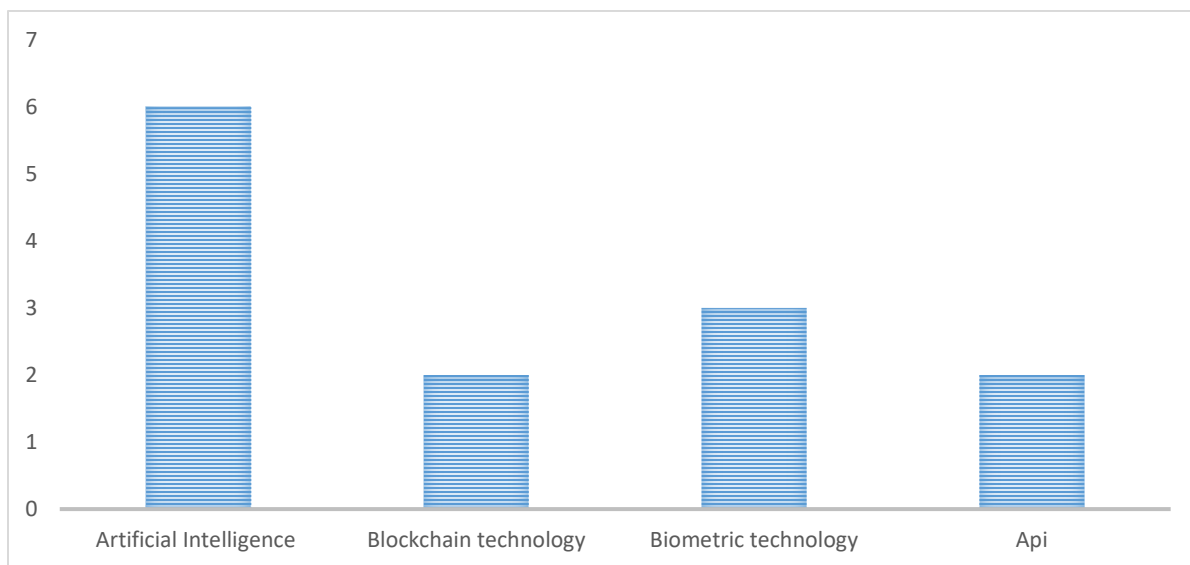


Figure 2 . Industry 4.0 technologies to be prioritized for implementation (Developed by Author based on Interview Results)

## 5.2 Implementation of a hybrid core banking application

62% of the respondents believe the bank should use a hybrid core banking application. This model looks at a progressive modernization strategy to allow a new core banking application to perform certain functions of the legacy core, until it can fully replace the legacy core banking application. The hybrid model will combine the processing capability of providing complex lending and transactional products that is already built on the legacy core application and the ability to provide simple, cheap products on the new core banking application. This model will also break the limitation of interfacing the digital platforms to the core banking application that often leads to technical debt which is recovered through monthly account and service fees. 25% of the respondents believe the bank should implement a new core banking application which will enable the bank to start on a new architecture and 13% of the respondents believe the bank should continue using the legacy core banking application, as many of the complex and transactional products are catered for, which gives the bank an advantage for the bank as these digital banks have not catered for such products in the offering. A hybrid core banking application theme was then developed based on the results of the respondents, below is a statistical breakdown on which core banking application approach the bank should adopt (Figure 3 and figure 4).
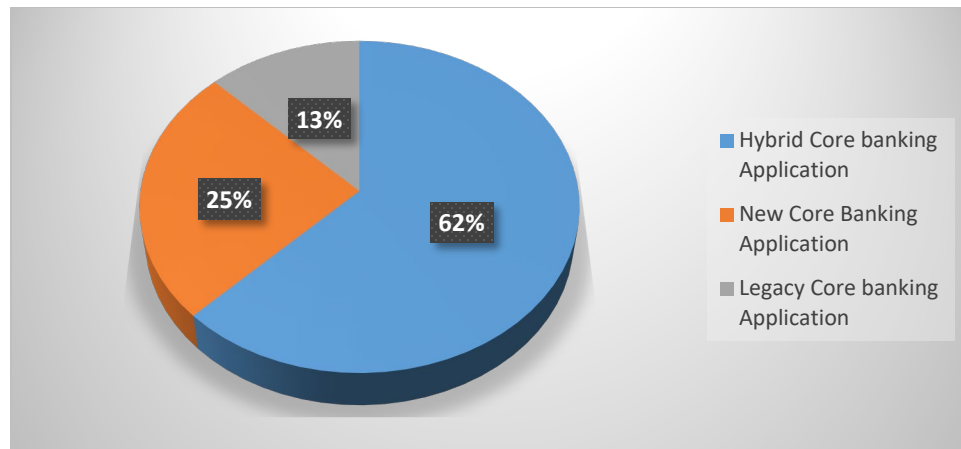
Figure 3. Analysis into which Core Banking Platform should be used (Developed by Author)

### 5.3 Collaborating with third party organization

Respondents indicated the need to collaborate with fintech companies to drive solutions delivery for specific business problems. As technological usage rapidly evolves in the banking industry, it has become important to find the right skills to develop solutions to business problems. It has, however, not been the case as banks struggle to find the talent in-house, hence there is a need to collaborate with fintech companies to provide technical solutions to specific business problems. The results reveal that the bank must establish relationships with fintech's as a partner or a vendor instead of acquiring a stake in the company to incorporate already developed solutions and the workforce. The disadvantage as indicated by one of the respondents is that fintech companies do not know the existing architecture and the problems associated with it, hence acquiring a fintech without consideration of the current state is the same as buying technology and hoping it solves a specific problem. The partner and vendor model would be driven by the business units within the commercial segment. With this model a problem is identified right up front, and the relevant solution and technology would then be identified to solve for the problem that has been identified.

### 5.4 Optimization

Optimization helps the bank to boost operational performance and set clear standards. The respondents indicate the importance of enhancing the data architecture to provide the key capability of collecting meaningful data by setting up standards for all the data systems across the bank. The results indicate that the legacy architecture contains multiple databases that do not interface with each other. This barrier has put a restriction on the segment in terms of harnessing the power of using data, which is a key in understanding customer, business, and operational needs. It is, therefore, important for the bank to develop a single database warehouse across the bank that will force all the source systems to comply with the data standards. The single data warehouse will enable the bank to collect meaningful information that can be used to enable customer proposition.

Solution delivery method is an important component in the bank that enables the bank to deliver the right solutions for quicker marketing, ensuring successful transition to a new business or technical state to realizes the benefits of the organization. Choosing the right method allows the bank to realize these benefits. The results reveal that the bank still uses a waterfall method to deliver its solutions, which is a limitation as it only allows the project teams to follow sequential steps that have to be followed one after the other until the previous phase has been completed. Any changes to the customer need will not be catered for and will have to wait for the next iteration of changes. The respondents indicate that the bank should move from the waterfall method into an agile methodology which allows quicker solution delivery ensuring the bank takes the product into the market quicker than its competitors. Additionally, value and customer needs will be met earlier which ensures an enhanced customer experience.

Bases on the literature and the empirical study results, a conceptual framework was developed which provides guidance as to which industry 4.0 technologies and strategies should be implemented at the commercial segment of a traditional Bank to remain competitive:
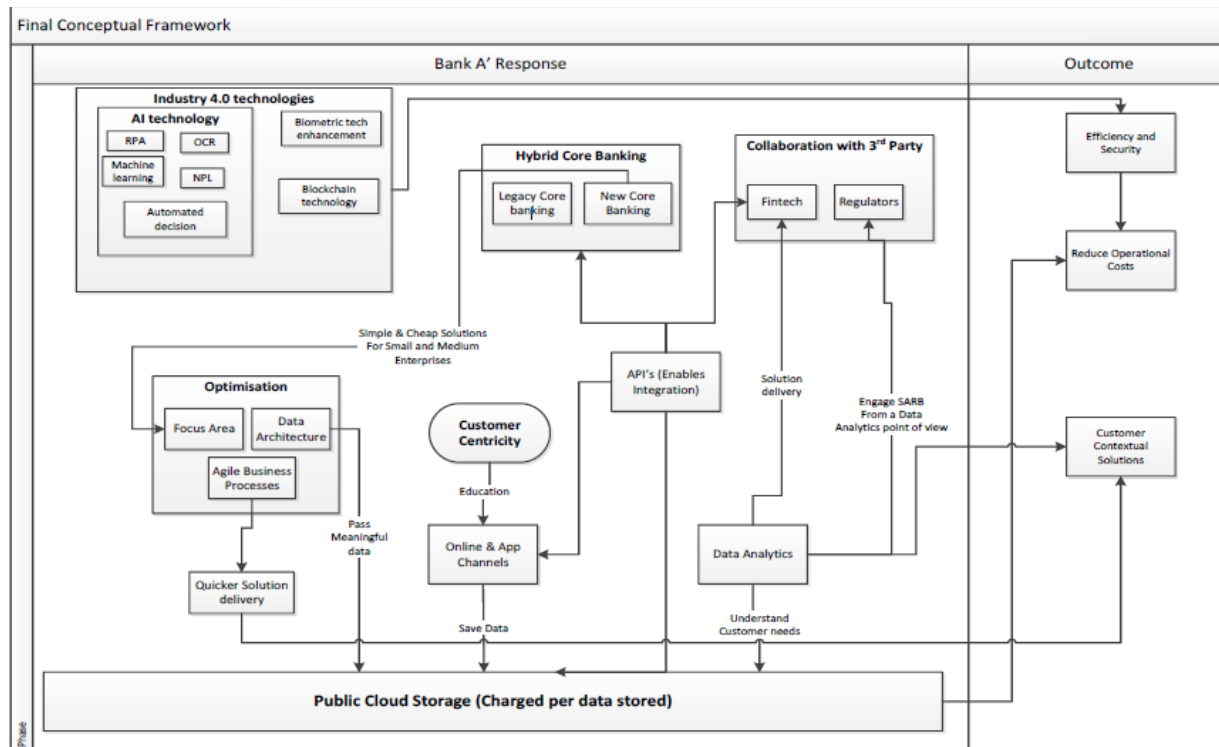
Figure 4. Conceptual Framework (Developed by Author 2021)

## 6. Conclusion

From the study results, it may be concluded that that monthly account and transactional account fees have become important elements that drive the commercial banking segment competition. This is because of the launch of three digital banks i.e., Bank Zero, Tyme Bank and Discovery Bank in South Africa who have introduced commercial customers to the flexibility of having transactional accounts that do not require them to pay monthly fees. It is seen from the results that the commercial segment has large operational costs associated with operating and maintaining mainframe technology, having manual processes, operating branch and call center facilities, waterfall project delivery methodologies. These costs must be recovered through the customers transactional account and any other products they offer. In response the commercial segment must cut the operational costs by implementing the right industry 4.0 technologies as indicated by the results, enabling the core banking application that will benefit customers and optimizing the business processes. These implementations will enable the segment to shave off the monthly account fees and still provide the same value proposition that customers have. As such, the success of the commercial segment competing with digital banks will therefore be measured by the number of customers retained and new customers attracted because of the reduced monthly fees and the value they value proposition they have.

Another important element that drives segment competition is the ability to enhance the customer experience by providing contextual solutions to meet and exceed customer needs, enabling easy to use digital channels, providing educational programmes to build customer trust and loyalty. Enhancing customer experience will also contribute to commercial segment competing with digital banks.

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