The Impact of Technology in the Productivity of Corporate Banking: An Assessment of Emerging Markets

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DECLARATION

I, Nkosiyapha Moyo, declare that this research article is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at Johannesburg, South Africa on the 31st day of March 2022

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ABSTRACT

This paper assesses the role of technology within the banking environment and seeks to find a correlation between increase in technological investment and the financial performance of banking institutions. This is achieved through a comparative analysis of six banks in two emerging markets to prove that an increase in technological output results in improved productivity and ultimately, financial performance for banks within emerging markets. The paper illustrates how technological advancements in the twenty first century have been contributed significantly to the financial performances of major banks in South Africa and Kenya, to an extent that technology is a quintessential contributor to the increasing success of financial institutions and that even through the advent of the Covid pandemic, the role of technology has increased significantly, to the extent that the relationship and impact between banking and technology is immeasurable.

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1. INTRODUCTION

The following is a comparative analysis that examines the relationship between technology and banking, with a specific focus on emerging markets. This study analyses the impact that technology has had on Corporate Banking over the last decade in emerging markets. The paper seeks to assess whether an increase in technological output (systems, processes, and enhancements) for banks has resulted in increased productivity and financial benefits.

By assessing this relationship, the study seeks to unpack and understand the impact that technology will have on the banking sector in a post-Covid 19 workforce, which has been dominated by numerous factors that the study will unpack. The study will utilize existing literature on the topics of banking and technology as well as in-depth analyses on the impact that technology has played on financial institutions.

Problem Statement

The aim of the study is to understand three main concerns (1) whether or not technology has a direct effect on the performances of banking institutions, (2) to test whether technology is the most important contributor to a banking institution's success and (3) to understand the impact that Covid-19 has had on the role of technology in banking – has Covid precipitated the need for banks to invest further in technology? Has Covid proved unanimously that banks would struggle to function without technology?

The above are the main problems that the study seeks to address through data collection and assessment.

Hypothesis

By performing this task, the study seeks to explain the relationship between these two forces through unpacking the correlation between technology and banking in markets with similar socio-economic contexts, with the aim of carefully examining the hypothesis that '*Technological advancements lead to increased productivity in the banking sector within emerging markets. Furthermore, the study will illustrate that Covid-19 has increased the role of technology in banking through advanced system capabilities, automation, and the unanimous realization globally, due to the stringent lockdown laws, that remote working was not only a possibility but a reality that would shape the future of working.*

Based on the data analysed and the literature reviewed, the study finds that there is indeed a positive relationship between banking and technology, meaning that technological enhancements have resulted in increased productivity for financial institutions, technological enhancements have also resulted in greater efficiency outputs such as automation, the introduction of robotic processes, increases in turnaround time regarding the provision of services and customer satisfaction. All these factors, as the study will examine, combine to drive long-term benefits for banks such as cuts costs and increases in revenue.

Upon elaborating further on the impact of technology, the study begins by articulating the importance of banks within a financial system, that is, the role that banks have in an economy and their importance to the well-being and stability of an economy. Thereafter, the study provides a vivid illustration of the link between technology and banking, while then proceeding to provide context on recent developments (mainly the Covid pandemic) which have precipitated the role of technology in society, and banking in particular.

Once this section of the study has been elaborated on, the study reviews the literature around the key concepts that are being analysed. These concepts are: the relationship between banking and technology (in general), the role that technology has played in emerging markets, and the concept of New Ways of Working, which, as the study will indicate, has become increasingly significant since the Covid pandemic began.

It is crucial to understand the literature as it forms the foundation on which the study can expand upon. The literature has been limited in terms of outlining the impact of Covid on the banking sector and whether or not this sector is well equipped technologically to adapt to the changes that have been brought by the pandemic. By exploring this, the study will contribute towards literature that assesses the impact of the pandemic in the workplace, with a particular emphasis on financial institutions.

Once the literature has been reviewed, the study then proceeds to perform a comparative analysis on the impact that banking has had on financial institutions across emerging markets, namely; South Africa and Kenya from the period 2010 to 2020, which is the most recent ten-year period before the pandemic began. The comparative analysis will provide the platform for the study to critically assess the relationship between these factors and how they co-exist in a market.

This platform will then lead to the concluding section of the study which will provide recommendations for the future banking workforce based on the findings of the study, this section will be focused on outlining the most effective ways that financial institutions can implement technology in the future workforce.

1.1 The Role of Financial Institutions in the Economy

Banks are key to understanding economies of both developing and developed economies (Fulford 2015). The financial sector drives economic growth through effectively allocating resources to productive units (Kamau 2011) with banking increasingly proving to be a crucial component of a functioning society in any economic system and can be classified as the cornerstone of the modern economy (Qasaymeh 2011), this is proven by the fact that a bank's failure can unsettle the stability of the entire financial system (Heckemeyer & Mooij 2017), as was the case with the global financial crisis in 2008.

The financial crisis began when the banking system in the United States of America experienced stress which then spread to international markets, ultimately leading to shortages in liquidity, funding and credit and saw the depreciation of economies globally (Aiyar 2012). This crisis is one indication of the impact that banks have on the global market, thus their stability is linked and intertwined with economic stability.

Banks further provide services to clients, through granting loans to clients (Gertler & Kiyotaki 2015). Banks have also been noted as key to enhancing the transmission of internal shocks through their activities which results in more integrated business cycles (Goldberg 2009). The study will seek to illustrate that through this responsibility of providing services to clients, banks require forces like technology to help boost their service provision.

From the above, we can deduce that the banking industry is important for facilitating economic activity and maintaining financial stability within the market and is also a vital contributor to the demand and supply within a monetary system. With money being a crucial component of society, financial institutions are thus important stakeholders in the continuous flow of money, which is important for sustaining livelihoods. It is for this reason that is important to understand the productivity of banks.

1.2 The Link between Banking and Technology

The advent and progress of technology, on the other hand, has digitized numerous aspects of modern life, including the structure of the economy and the increased in popularity of online banking capabilities like instant and digital payments (Panetta 2018). Further to this, Information Technology (IT) has been shown to positively influence productivity patterns in numerous countries and industries (Syverson 2011).

Innovations like Automated Teller machines (ATMs), internet banking and electronic payments has led to increased growth for banks (Almanidis 2013), thus providing a platform for technology and financial institutions to connect and coexist through systems and tools. This connection and coexistence between these two forces is one that is becoming increasingly undeniable.

From this, it is evident that to effectively perform the provision of their services in an increasingly globalized world, banks rely on processes and systems that are aligned to the needs of the clients that they serve. Key to this, is the increasing advent of technology and the manner in which technology has helped fast-track and increase output in systems and processes.

A key element in this study is the significance of emerging markets in an economy. As the world continues along the path of globalization, there has been continued and steady growth in terms of global wealth, which is creating a new entrepreneurial class of clients, particularly in emerging markets (Marques et.al 2017). This new class requires banks to diversify their range of products and services to cater for clients (Marques et.al 2017)

As a result, the study will build on from the importance of these two components and assess them in order to examine the relationship that technology has in facilitating and ensuring that banks provide services and continue contributing to the financial stability of economies globally.

1.3 The Impact of Covid-19

Much like all facets of society, financial institutions have felt the impact of the Covid-19 pandemic globally, in particular the manner in which financial services are provided in a world where there was limited physical contact and activity among people, which resulted in the precipitation of remote working and concepts such as New Ways of Working - NWoW (World Economic Forum 2018).

Due to the pandemic, businesses globally were disrupted and forced to implement NWoW in the form of hybrid remote work (Mckinsey Global Institute 2021). Due to its impact on the economy and people's livelihoods, the pandemic has further brought the concept of digital transformation into sharp focus (Savic 2020) and the need for increased technology in the workplace.

Although there is extensive literature focusing on the important and leading roles that technology and banking have had previously, there is a gap in analysing these concepts in a post-Covid society that will be driven by the new workforce distribution of remote working and NWoW.

It is the task of this paper to assess the impact that technology has had in driving corporate banking productivity in emerging markets. Having illustrated the importance of banks in the society and how banking has been closely intertwined with technology, this study will examine the relationship between these factors, with the aim of determining whether the banking sector is sufficiently equipped (technologically) to seamlessly implement the concept of NWoW in emerging markets.

NWoW is important to implement in emerging markets because it has been noted as a means to provide more efficient and cost-effective work processes (Demerouti et.al 2014) particularly in an era of the Fourth Industrial Revolution which is transforming industrial production through Networks, Cyber-Physical Systems and the Internet of Things (IoT), thus enabling organizations to understand their environment and operations better (Kadir 2020). As such, we can closely link the concept of NWoW to technology and because technology is so crucial to banking, NWoW is also linked to banking, more so post the pandemic where remote working has become the norm.

This need for technology in emerging markets is crucial for all sectors of the economy and more so for financial services, especially if technology has a positive result on the productivity of financial institutions. Therefore, with an increased reliance on technology, the future workplace will most likely require businesses to be equipped accordingly and sufficiently with these enhancements.

However, emerging markets face numerous issues and challenges with regards to development and infrastructure, which provide difficulties for businesses that rely heavily on technological systems for effective service provision, such as banks. Therefore, it becomes pertinent to assess the readiness of environments and the impact that banking and technology will have in a post-Covid society.

The study concludes with a recommendation for future study to assess the impact of technology on other sectors beyond banking, while also recommending that the impact of technology on banking be assessed in advanced markets and less advanced markets.

Studies on these factors would expand the discussion further and enable a wider assessment of the role of technology in society and assist in taking lessons

2. Literature Review

To unpack and analyse the relationship between Information Technology (IT) and banking, it is crucial to first assess the literature that has been conducted on this field, with the aim of identifying and determining any gaps in the literature that this study can expand further on. The study will first analyse the literature on the relationship between technology and banking, before proceeding to briefly assess literature on the banking and technology in emerging markets.

With the increasing advent of globalization in the 21st century, technology has become a pivotal aspect of this globalized world, increasingly so within the banking sector, as the introduction of this paper has briefly stated. As the literature below will illustrate, scholars have undertaken research on the impact of technology on banking, with a focus on a number of criteria that explain this relationship. Furthermore, the review below will illustrate that there are competing narratives on the correlation between these two factors.

In addition to the studies conducted and narratives that have been built, there are key considerations that the literature has identified, as well as gaps which the proposed study can exploit and assess. These gaps are primarily relating to assessing the impact that technology has had or will have on banking in a post-Covid workforce, particularly in emerging markets and the measures and extent to which these markets can implement technology to work to their advantage.

2.1 Relationship between Banking and Technology

One of the more crucial perspectives on the relationship between banking and technology is provided by Ho & Mallick (2016) who argue that IT can improve a bank’s performance in two effects: firstly a cost effect (by reducing operational costs) and secondly a network effect (by facilitating transactions among customers in the same network). The authors’ methodology and assessment (including an assessment of 68 banks in the United States over a 20-year period) leads them to the conclusion that bank’ profits have declined over this 20-year period due to the adoption and diffusion of investment in Information Technology (Ho & Mallick 2016).

The literature above is supported by Shu & Strassmann (2005) who note that although IT investment has increased in the last two decades and provided business value, there has not been an indication that IT has contributed to increased labour productivity in the banking sector. Royster (2012), on the other hand, alludes that the significant role of IT in banking is one that has resulted in increased productivity within the commercial banking industry because these advances have enabled banks to provide new services without having to significantly increase staff.

Royster (2012) elaborates further on the advances by indicating that factors such as customers using online tools and the increased functionalities of ATMs have resulted in banks expanding their services into new areas, areas that can enhance the role banks play in the economic market. In essence, Royster concludes that online tools have increased banking productivity.

Clark (2015) assesses the banking sector and contributes to the literature by mentioning a ‘mobility revolution’ in banking, which, according to Clark, is shaping the banking world in positive ways that will show outcomes in innovation and also benefit consumers by lowering their transaction costs through the increased influence of services such as Bitcoin (Clark 2015). Another study assessing the link between banking and technology is from Atje et.al (2020) who mention two key reasons that motivate banks to adopt new technologies; (1) the need to improve performance and (2) a reaction to the emergence of Fintechs (Atje et.al 2020).

This recent study by Atje et.al (2020) is a fascinating analysis of the relationship between IT and banking as it makes mention of a new competitor (Fintechs) who have the financial and technological capabilities to not only challenge banks but to shape the future narrative in the industry. As such, this makes it crucial for banks to ensure that they adapt technologies that will keep them relevant in an industry that is increasingly led by technological enhancements.

Another perspective on the relationship between banking and IT is provided by Stella (2010) who notes that banking outputs such as loans have seen a significant increase as a result of changes in expenditure on Information Communication Technology (ICT). The effect of ICT on banking is further elaborated by Mocetti et.al (2016) who note that increased ICT reduces communication costs, thus streamlining the decision-making process for financial institutions.

Studies of Mocetti, Stella and Clark indicate a similar perspective on the relationship between banking and technology. The authors show a similarity which indicates that technology lowers costs for financial institutions and increases innovation, ultimately illustrating a positive outcome for banks as a result of increased technology.

Meanwhile, DeYoung (2009) notes that new technologies have revolutionized the manner in which banks provide services. Contributing further to the literature, DeYoung (much like Atje et.al (2020)) also mentions that increased competition has led to pressure on banks operating more efficiently through different strategies.

Pellegrina et.al (2017) also support the notion of a positive relationship between banking and technology through assessing the financial benefits of technology for banks by stating that the increased use of ICT systems enables banks to save on transaction costs. Saving on costs helps increase profits, thus it is noted that this study provides a perspective that there is indeed a positive relationship between these factors.

Leao and Leao (2006) contribute to the literature by analysing the correlation between technological improvements and interest rates, their study indicates that technological innovations can generate both positive and negative pressure on interest rates, depending on the level of innovation that is undertaken. Interest rates are a key component for banks because interest charges are one of the initiatives that banks use to increase revenue.

Berger (2003) notes that technological progress has had a positive impact on banking, in particular, it has led to productivity increases with regards to improved quality and a variety of banking services. With these studies, it becomes evident that a crucial component for banks surviving is the efficient provision of services, which is attained better through technological improvements.

Casolaro and Gobbi (2009) analyse the relationship between IT and the financial sector in one of the European countries over an 11-year period and assert that banks which adopt capital-intensive IT techniques have proven to be more efficient. However, the scholars further note that pessimistic perspectives on the relationship between banking and IT conclude that banking is led by cyclical factors rather than an increase in IT investments from banks.

From this literature, it is evident that we cannot ascertain if there is unanimous or universal agreement among scholars and researchers on whether or not there is a positive correlation between IT and banking, nor is there a commonly accepted or used method that can determine how to measure the correlation between these factors.

Although majority of scholars indicate that the relationship between the forces is positive, the perspective from Casolaro and Gobbi around the cyclical factors is one that would need careful consideration and assessment as it could also be a factor in the productivity (or lack of) for banks. Ultimately, despite the various outcomes on the literature, the Covid pandemic has certainly provided a new dimension that also ought to be taken into consideration when assessing the relationship between these two forces.

2.2 Literature on Banking Productivity and Technology in Emerging Markets

Scholarly work that has focused on sub-Saharan Africa investigates the factors that provide efficiencies in banking on the continent. Scholars such as Kamau (2011) focus on Kenya and correlate banking productivity with efficiency, while noting that firms with necessary resources to adopt new technologies are likely to have increased efficiency in production.

Kamau further assesses the challenges in the Kenyan market and notes that one of the most challenging aspects of the market is the under development of capital, thus heavily reliant on the banking sector to act as an intermediary between investors and savers, while further becoming the cornerstone of economic growth trajectory. The author's assessment of the Kenyan market further illustrates the extreme importance of banking for administering economic stability and growth.

Cole et.al (2011) look at the factors that drive demand for financial services in emerging markets (India and Indonesia) and note that in emerging economies, the promotion of innovative solutions like mobile banking can result in the expansion and productivity of financial services. This study further supports the narrative that technological innovation has positive effects on banking, particularly in emerging markets.

Further scholarly research (on banking in South Africa) provides the perspective that there is a correlation between the cost efficiency of banks and the effective deployment of technology (Ncube 2009), essentially asserting that when technology is implemented correctly, it can result in cost efficiencies for banks, such as the effective use of resources, controlling costs and providing services more efficiently. With all these cost efficiencies that technology may provide, it is crucial that the implementation of the technology is accepted by consumers (Brown et.al 2004).

According to Koenaite et.al (2019), the penetration of technology products in the South African market (such as mobile banking) has been low, indicating that there is room for growth in this field which banks can explore. The importance of technology in banking products in emerging markets is especially illustrated by Malaquias & Hwang (2016) who note that banking technology has the potential to enhance the customer's experience.

Picoto & Pinto (2020) note that advances in telecommunications and information technologies have had an enormous and positive impact on the banking sector, particularly as electronic channels like mobile banking have been popular in countries such as Kenya due to a substantial increase in technological use (Picoto & Pinto 2020)

With the Covid-19 pandemic having illustrated the importance of technology in this modern and globalized society, it is crucial for firms to increase their technological innovation and banks ought to be at the forefront of this initiative while simultaneously enhancing the client's experience.

The literature above on technology within the banking sector in emerging markets (particularly in South Africa Kenya) indicates that technology has the ability and potential to provide improvements for banks, which in turn has a positive impact on the overall customer experience, thus supporting the narrative of the notion that there is a positive correlation between technological enhancements and banking productivity.

2.3 Conclusion of Literature Review

The literature explored provides two narratives: one narrative of scholarly research which notes that there is definitely a positive relationship between IT and banking productivity. The second narrative has the opposition perspective which notes that there isn't comprehensive or conclusive evidence to assert that increased IT capabilities have an effect on banking productivity.

With these two narratives it becomes evident that a relationship between banking and technology exists. The literature further indicates that technology is increasingly playing a pivotal role in banking – banks are seeking to increase their efficiency through technological advancements, despite uncertainty and differing perspectives around the impact of technology in banking.

These narratives of the literature are important to note and understand because they provide an illustration of the commonality and differences that prior research has identified on this topic. As such, the proposed study will enhance the literature by assessing the relationship between technology and banking in the leading emerging markets, with the aim of providing insight into the factors that contribute to the relationship between technology and financial services.

The research will build on from the extensive literature on this relationship and focus on banking and IT in emerging market in order to ascertain the extent in which the growth of IT capabilities and infrastructure can have on banks in these markets, especially in a society that has seen an unprecedented and unexpected need for technological capabilities in future work.

The study will work from this literature and test the impact that technology has had on the banks in a number of markets, to determine whether technology has positively or negatively impacted the productivity of banks (particularly the ability of banks to provide efficient services to clients) based on the level and amount of technology that the banks have implemented.

3. Methodology

The methodological approach to the study is a comparative analysis, assessing the relationship between Information Technology and banking in the largest banks with emerging markets (namely South Africa and Kenya). The study assesses four financial institutions in South Africa and two financial institutions in Kenya by briefly providing an overview of their structure and services they provide, before then proceeding to analyse the business strategies and performance, with the aim to determine the role that technology has played in the financial performances of these institutions over a select number of years.

3.1 Information Collation

The information collated for this study is solely through publicly-available sources on literature websites or is information that has been retrieved from the various company websites such as financial statements and investor documents. There is no confidential or restricted information that has been sourced during the performance of the research.

The comparative methodology begins by assessing the market information received from the Central Banks in both countries. The information that will be assessed will begin initially a t a country level before delving deeper into each of the financial institutions. The market information contains key statistics about the banking environment, the role of the banking institutions to the economies and also articulating the dominant institutions (in terms of market share) in both countries.

This information will compare the Central Banks' various regulation and management of each market, while also providing an indication of the business climate in these markets, and a narrative from the regulator's perspective of the banking environment, while also identifying the financial roles of banks in the markets, outlining the year-on-year trends and statistics of banks and clarifying what the key themes and trends have been for banks within their operating environments.

The regulator's perspective will also assist the study to provide a clear comparison and contrast of the variances and similarities that are present in these countries and whether there is a trend in terms of the focus that banks have in terms of the mechanisms they utilize to improve the customer experience. Additionally, understanding what leads to productivity will determine the effect to which technology can or cannot improve productivity and ultimately efficiency.

Understanding these aspects and the overall environment will enable the study to contextualize the climate in which banks operate and provide a background to the key performance indicators of the institutions reviewed.

3.2 Comparing the Banking Institutions

Following information from the Central Banks, the study proceeds to individually assess the performances of the six banks that have been utilized for this study. The assessment of the banks focuses on a review of the financial performance over a given period, understanding the key factors that contributed to the performance, while understanding and unpacking the level of technological investment that each institution has made and the subsequent financial impact of this investment.

The study assesses data based on available literature relating to banking and information on the banks such as the company profiles, digitization strategies, financial performances over the last few years and market capitalization in the markets in which they operate. Further to this, country profiles were reviewed to provide brief insights into the economic sectors in these markets and the prevalent economic activities that are dominant.

The study assesses six banks in total, providing a brief overview of each institution, the services that they provide and their technology implementation strategies. The assessment of these institutions builds on from the extensive assessment performed in the literature review which has indicated the work that leading scholars in the fields of banking technology have deduced. As such, these institutions have been utilized to further support what the literature has indicated.

As the study has assessed the concepts of New Ways of Working and the future workforce through unpacking the literature on these terms and how they are shaping the narrative around the Corporate Banking sector, with the aim of study linking these concepts in the methodology, particularly their impact and relationship to technology in banking within emerging markets.

3.3 Comparative Analysis as Appropriate Research Paradigm

The approach of the study is to perform a comparative analysis of two factors (technology and banking) in different locations (South Africa and Kenya) with the aim of understanding whether or not a difference in location affects the relationship between these factors. Thus the comparative study becomes the most effective approach to undertake in seeking to understand the it is crucial to understand the importance of comparative studies and the contribution that they make in examining topics that are dominating the narrative. As such, this study makes use of this study methodology to examine the effect of two factors (technology and banking) within emerging markets.

Comparative studies are crucial as they enhance our understanding of our societies through juxtaposing our systems and routines with those of other people's systems (Esser & Vliegenthart 2017). With this, we can then understand the conditions that are required for certain services (like banking) to function effectively with the impact of factors such as technology. Furthermore, by performing a comparative study of different countries in emerging markets, the study will test the hypothesis through data-proven conclusions from multiple geographies with similar social and economic conditions.

The comparative study assessed the similarities and differences of technological enhancements in banking within the five emerging markets to describe the context within the banking sector in these markets. The study also describes the factors that outline banking productivity and juxtaposing this with technological enhancements.

The comparison of the emerging markets assisted the study with illustrating how banking and technology co-exist in different climates and economies that have a variety of challenges and impediments. This comparison of different markets was crucial in assisting the research towards providing recommendations on the strategies that could be taken for successful implementation of technology in a post-Covid banking industry.

Upon assessing the data, the study deduced a hypothesis which articulates that there is indeed a relationship between banking and technology in emerging markets. This positive relationship is driven by the technological enhancements that have been introduced. As such, the approach of the study has been to assess the banking institutions performances over a 10-year period and seek to understand the role that technology has played in the financial results.

The methodology utilized in the study is direct and succinct, based on official company data that is publicly available.

4. Comparative Analysis

The study analyses the major banks in each of the emerging markets that have been compared. This section dissects the financial institutions individually to understand the business strategies that have been implemented regarding technology. In this section off the paper, the financial institutions are assessed with regards to financial performance, technological enhancements, and business strategies, with a particular assessment of the period between 2010 and 2020.

The section begins with a brief overview of the banking sector in the emerging markets (South Africa and Kenya), with the major source of this overview being received from the various Central Banks in these markets. The section then proceeds to assess the major banks that have the greater market share in each market and how these institutions have initiated or enhanced their systems and the effects thereof, before then articulating the key trends and themes identified in these markets.

The findings of the study have been outlined and articulated in this section.

4.1 South Africa

According to the South African Reserve Bank's Prudential Authority, by the end of 2019, South Africa's banking sector had a total number of 36 entities, from which 19 were registered banks while 17 were local branches of foreign banks (South African Reserve Bank Prudential Authority 2019). Meanwhile, the statistics for 2010 indicate that South Africa had 17 registered banks and 13 branches of foreign banks (Prudential Authority 2010).

From the numbers provided in 2010, it was noted that four banks in the country (First National Bank, ABSA, Standard Bank and Nedbank) dominated the market share with a combined contribution of 84.6% to the total balance-sheet size of the banking sector (Prudential Authority 2010). Meanwhile, by 2020, the banks (along with a new competitor in Capitec bank) the banks had a total of 89.4% of assets (Prudential Authority 2020).

The stats above are key points to note as they provide an indication of the deep level of influence that these four banks have in the banking sector in this particular country, thus a key enabler of the stability of the sector. The dominance of these banks further demonstrate the need for the study to assess these institutions because their relationship with technology will provide an overall illustration of the impact of technology in South Africa.

4.1.1 ABSA

ABSA has a Corporate and Investment Banking (CIB) division which primarily caters for corporate clients (ABSA Annual Integrated Report 2022). Assessing the CIB division with regards to technology, the bank has products and services that have a digital focus and these are: Online Banking Channels, Integrated Banking Channels, Mobile Banking solutions, and a product offering named ABSA Access (ABSA Annual Integrated Report 2022).

ABSA has determined a number of elements that are priorities or items that matter, and technological change is one of the key metrics in this regard, as indicated by the Integrated Report of 2020 and the Group Chairman's message wherein he noted that the firm continues to invest in modern technology platforms that will respond to the ongoing rapid digital transformation (ABSA Integrated Report 2020). In this report, the firm notes that interconnectivity, digital transformation and innovative products are a pertinent factor to consider with regards to customer needs and trends (ABSA Integrated Report 2020) thus providing an illustration that the bank acknowledges importance of technology in driving customer satisfaction and proving to be a key force in banking.

With regards to the implementation of technology over the past few years, ABSA has undertaken a technology strategy that it driven by the adoption of an engineering approach with the aim of ensuring innovation, speed and agility for provision of customer services (ABSA Integrated Report 2020).

One of the key aspects of this strategy occurred in 2015 with the introduction of the 2015 Hackathon wherein the firm introduced some technology solutions to their product offerings, namely: introducing a virtual credit card, a credit card stop button that is compatible for smartphones, and an app for children which enables parents to provide their children a list of items and chores to perform, with the aim of teaching children good principles from young ages. (ABSA Integrated Report 2020).

ABSA's technological strategy has involved the implementation of automation, which essentially seeks to create self-built environments that increase automation and minimizes human error (ABSA Integrated Report 2020). The investment in technology at ABSA was driven by a R12.1 billion contribution received from Barclays bank which has seen the CIB division reach earnings of 3 billion Rands as at 2020, (ABSA Integrated Report 2020), which is significantly higher to the firm's earnings as at 2010 when the earnings were at 1,3 billion Rands (ABSA Integrated Report 2010).

This increase in technology services has seen the Corporate and Investment Bank (CIB) business receive accolades such as the Best Trade Finance Services and Best Online Portal in Africa in 2020 for its ability to service digital customers, getting clients to use digital offering, growing the digital customer base, and significant benefits of digital initiatives (Business Live 2020).

4.1.2 First National Bank

First National Bank (FNB) is a division of FirstRand Bank Limited (which is the largest listed financial services group in Africa) and much like ABSA, has a strong Corporate and Investment Banking division that is operating in 12 countries throughout the African continent (FNB CIB Annual Report 2022). However, for the purposes of this paper, the focus will primarily be on the CIB division in South Africa.

FNB's Corporate Banking department is primarily separated into four divisions: Investment Banking, Corporate Banking, Markets and Sector Coverage and these divisions work in unison to provide "state-of-the-art, seamless, integrated platform-based banking solutions" that are aimed at simplifying a client's banking experience (FNB CIB Annual Report 2022).

FirstRand, much like ABSA, acknowledges the importance of technology in the current working environment, as illustrated by the firm's acknowledgement that information technology is crucial to the firm's performance, sustainability and strategy, leading to the statement that technology, communication, commerce and financial transactions are advancing at an increased pace and thus the investment in information technology ought to grow (FNB Annual Integrated Report 2020).

FNB's strong technological strategy is witnessed through its financial reports of 2020 where it was mentioned that 91% of the firm's total transactions are digital, which has been a significant contributor to the revenue earned by the FirstRand Group – FNB contributed R12,3 billion out of FirstRand's R18,8 billion earnings in 2020 (FirstRand Annual Integrated Report 2020)

FNB's technology strategy is firmly driven by the firm's banking App, which is the key focus of the company's strategy and acts as an all-in-one-tool for clients to receive the complete banking experience which includes a virtual card, a tutorial feature app (launched in 2019) which provides entrepreneurial electronic learnings, videos and tools that are useful for business success and have resulted in FNB being voted the most valuable brand in South Africa in 2021 (Business Live 2022).

4.1.3 Standard Bank South Africa

The third large institution to be assessed for South Africa is Standard Bank Group. Standard Bank is the largest banking group in Africa in terms of assets (Standard Bank 2022). The firm's Corporate and Investment Banking (CIB) division comprises of Global Markets and Investment Banking divisions which are central to the products and services that the firm provides.

The products in the CIB division at Standard Bank are primarily focused on transactional offerings that are conducted on technological and online platforms, these offerings are Securitisation, Webtrader and Stockbroking, to name a few (Standard Bank Annual Integrated Results 2022). Furthermore, at the end of 2020, the firm's revenue growth within the CIB division had resulted in double-digit revenue growth that was driven by the expansion of the firm's digital functionality that was embraced by clients (Standard Bank Annual Results Summary 2021)

By the beginning of 2010, the bank sought to exploit business opportunities in the technology space, they did this by signing a strategic agreement with the United Nations Environment Programme's Africa Carbon Asset Development facility which ensured that the bank played a crucial role in developing carbon markets in Africa continent (Standard Bank Annual Integrated Results 2010).

To strengthen its technology offering, the firm had embarked on a mission of migrating its South Africa clients into a technology/online platform known as Business Online Platform (BOL) however and identified it as an impairment to its assets, while the firm disposed of a short-term, as at 2020, the firm has discontinued the use of this platform insurance technology start-up in 2019 (Standard Bank Annual integrated Results 2021). These particular illustrations are an example that not all technology features are bound to be successful and that implementation of technology tools does not always render success at first attempt.

Adding further to the challenges faced on technology, the firm's operating expenses from a technology perspective have been steadily increasing, with costs in 2010 amounting to R3,4 million (Standard Bank 2010) while by the end of 2020 the costs were at R9,4 million (Standard Bank 2020). The technology operating expenses have almost tripled within a ten year period, while experiencing challenges with various technological experiments.

In contrast to the FNB and ABSA cases, Standard Bank's experiences from a technology perspective indicate that the implementation in banking is not always smooth and is bound to experience some challenges that are likely to have negative implications on the expenses.

4.1.4 Nedbank

The last of the four financial institutions to be assessed for South Africa is Nedbank. The firm's CIB division offers a variety of products and services for business clients such as electronic banking, mobile banking, procurement cards, service relating to account verification and host-to-host solutions (Nedbank Business Banking 2022), with the aim of providing a holistic approach to business banking.

Furthermore, Nedbank has acknowledged that financial institutions (especially in investment banking) which utilise technology effectively have an enhanced opportunity of improving their service offering to clients and the manner in which their business operates (Nedbank Annual Integrated Results 2021).

In their assessment of how technology affects investment banking, the firm notes that the banking sector has seen the rise of Fintechs along with Financial Technology start-ups which have provided a disruption to the common or traditional means of banking that had existed to meet client needs (Nedbank Annual Integrated Results 2021).

With regards to technology implementation or investment, by 2010, Nedbank had identified that there was an increasing trend regarding significant increase in bandwidth, electronic, internet, mobile and new technologies and thus committed to leveraging off these technology trends to become a leader in implementing services such as mobile banking (Nedbank Annual Report 2010). This commitment culminated in the creation of the M-PESA cellphone banking solution - through a partnership with mobile telecommunications providers MTN and Vodacom (Nedbank Group Overview 2022).

Although the M=PESA offering is less directed at the Corporate and Investment Banking division, it is an illustration of the commitment to implement a digital strategy. Upon assessing the financial performance of the firm, it is noted that by 2020, the corporate banking division at Nedbank delivered an annual turnover above R750 million, largely driven by a digitally enabled and integrated model that ensured that client service was at the highest level and client coverage was improved (Nedbank Group Annual Results 2020).

4.1.5 Conclusion on the South African Banks

The four South African banks have all illustrated an awareness of the increasing importance of technology in the Corporate and Investment banking sector. For three out of the four banks, the assessment has identified a positive relationship between technology and banking while one institution has evidently struggled with technological investments (as seen with the discontinuation of certain technology initiatives), thus the relationship has seen some negative outputs. All four institutions have indicated an increase in revenue from 2010 until 2020, with increase in digital services playing pivotal roles for all the institutions.

Upon reviewing these institutions, some light has been shed on the management approach to the effects of technology. One other theme identified that is prevalent within South African banks on technology is that there has been a concerted effort to adapting to the evolving dynamics that technology has introduced.

Another aspect to note on the initiatives of these institutions that the study has noted is that there’s been an overall acceleration in terms of the digital solutions and products that banks were offering to clients, thus posing an interesting question as to whether or not the Covid pandemic has had as significant of an impact effect on the implementation of technology products because banks had already begun understanding the need for technology, thus would have continued on this accelerated path with or without the pandemic.

The next phase of the study is to assess banks in other markets with similar market conditions to understand whether or not there is a consistent trend regarding the impact that technology has on investment banking in emerging markets. This assessment builds on in a similar vein to the assessment on South African banks to determine the key trends and themes that prevail within the banking environment.

4.2 Kenya

The banking sector in Kenya, much like South Africa, has a rich variety of financial institutions that operate within the market. As at the end of 2020, there were 42 banking institutions, 9 representative offices of foreign banks, 4 Microfinance Banks, 3 Credit Bureaus, 17 Money Remittance Providers, 8 non-operating bank holding companies, a mortgage refinance company and 66 foreign exchange bureaus (Central Bank of Kenya Annual Report 2020).

The outline above from the Kenyan Central Bank provides a clear indication that the country has a vast and rich array of banking activities. Furthermore, the Central Bank governor noted, in the 2020 Annual Report address, that during the Covid pandemic, financial institutions in Kenya increased their online platforms to ensure that banking services were provided without disruption (Central Bank of Kenya Annual Report 2020). This statement is an indication that the banking sector is cognisant of the role that technology has played during the pandemic.

As at 2020, the Kenyan banking sector has a total of 1502 branches, which are noted as a crucial delivery channel that is used to provide for transactions that have high value and to provide advisory services to corporate clients (Kenya Central Bank 2020). Regarding market share, the Central bank notes that in 2020, there were 9 large banks that shared a combined market share of 74.55 percent while 9 medium banks had a total of 17.21 percent share (Central Bank of Kenya 2020).

When comparing the 2020 stats above to 2010, it is noted that the banking sector in 2010 comprised of 44 banking institutions which comprised of: 43 were commercial banks, 2 representative offices of foreign banks, 5 microfinance institutions that take deposits, and 126 forex bureaus (Central Bank of Kenya 2010). This assessment provides an indication that the number of active institutions in the banking sector has remained relatively stable over the 10 year assessment.

The market share in Kenya, when compared to South Africa, is an indication that there is a wider variety and spread of banks that have a share in banking the economy, whereas South Africa’s sector is dominated by the big 4 and Capitec, with an 89 percent market share.

4.2.1 National Bank of Kenya

One of the largest banks in Kenya is the National bank of Kenya (NBK) which was incorporated in 1968 and provides competitive financial solutions to corporate entities (National Bank 2021). As at 2019, the firm is majority-owned and overseen by KCB Group, which is the largest financial solutions provider in East Africa (KCB Group Integrated Report 2020).

One of the key initiatives that the bank has embarked on from a technology perspective has been the goal to maximize efficiency and productivity through the investment in cutting edge technology that seeks to automate many of the bank's functions and processes (KCB Group Integrated Report 2020).

The key initiatives of the automation process that the bank has embarked are on as follows: (1) a document handling process where documents are stored and moved digitally between branches, leading to improvements in turnaround times and a minimization of the loss of documents; (2) Implementation of Robotic Process Automation (RPA) which has resulted in the implementation of robots to assist with high volume, rule-based and labour intensive tasks at the bank, ultimately culminating in improved turnaround times, loss of revenue reversals and reduced the reliance on manpower (KCB Group Integrated Report 2020).

These measures from the NBK illustrate an accelerated implementation of technology products when compared to the end of 2010 and beginning of 2011 when the bank's offering of electronic banking services was limited to; Internet Banking, Simple Banking, Money Gram, and M-PESA (NBK Annual Report 2011 - https://www.nationalbank.co.ke/images/investorrelations/2011-Annual-Reports-and-Financial-Statement.pdf)

The vast improvement of technology services at NBK has resulted in the bank receiving accolades such as recognition by the Kenya Bankers Association for delivering exceptional digital experience to customers (KCB Group Integrated Report 2020) and indicated that technology has had a positive impact overall on the efficiency of the bank in providing services to clients.

4.2.2 Equity Bank

Equity Bank, under Equity Group Holdings, is a financial services provider in East and Central with a dominant presence in Kenya, Uganda, Tanzania, Rwanda and South Sudan, with a market capitalization of 136.8 billion Shillings in Kenya (Equity Group Holdings Integrated Report 2020). In 2020, the firm iterated eight key strategic focus areas and two of those areas are 'Business Transformation – Innovation and Digitization' and Efficiency and 'Cost

Optimization' (Equity Group Holdings Integrated Report 2020). To this effect, the bank has enhanced the execution of digital banking through their various digital platforms (Equity Group Holdings Integrated Report 2020).

With the business transformation strategy aimed at innovation and digitization, the bank has increased the use of digital channels and note that this has resulted in increased transaction volumes and values across the bank's cost channels (Equity Group Holdings Integrated Report 2020). With regards to efficiency and cost optimization, the bank has focused on its delivery channels, with the intention to automate and digitize operations and processes, to ultimately reduce costs (Equity Group Holdings Integrated Report 2020).

The element of reducing costs is significant with regards to technological enhancements as it provides the narrative that systems increase efficiency, reduce errors and thus save firms money. The cost-save element is significant because it has implications on profits (to increase profit, a firm should either increase revenue or reduce cost), therefore indicating that technological enhancements are key for companies on a variety of levels (revenue growth, increased efficiency, to name a few).

4.2.2 Conclusion on Kenya

The assessment on two of the key firms in the Kenyan banking sector has indicated that the market is diverse in terms of the activities within the banking sector. Banking activity in the country is vast, with a diversified number of participants both locally and internationally. In essence, Kenya experiences a wider number of participants that have a share in the market in the banking sector when compared to South Africa.

The banks in Kenya provide an indication that they are seeking to accelerate the implementation of technology within the market, as illustrated by initiatives such as Robotic Process Automation. Furthermore, there is an indication that the Central Bank, as the regulatory authority, provides a healthy and well-regulated atmosphere for banks to function in a competitive but fair manner.

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5. Study Outcomes and Assessment of the Future Workforce

The data analysed in the markets has indicated that financial institutions are prioritizing the implementation of technology within the environments that they are operating in. Over the past decade, it has been shown, through the literature and assessments of financial institutions, that the momentum within the modern workforce is centred on creating efficiency. It is further evident that the key source to creating efficiency is the implementation of technology.

Furthermore, an assessment of the financial institutions over a decade indicates that technology in the banking sector was receiving significant attention and implementation momentum. Therefore, when the pandemic occurred, the implementation of technology within this workforce was well in progress, the pandemic merely precipitated further the need for technological enhancements.

Despite all the positives around the relationship between banking and technology, there are some challenges too that are experienced with implementing technology. One such disadvantage is the costs that are incurred with technological enhancements, as illustrated by some of the financial institutions that operational expenses often tend to increase, the more that technology is implemented. However, such costs would be expected to be offset by the increased efficiency which results and quicker output and more productivity.

One other possible negative that may result in technological implementation is the systematic and structural challenges that emerging markets are faced with. South Africa’s power cuts have made headlines over the past decade, and they continue to be a challenge, more so for a technological environment that needs strong and functional systems (such as strong electricity grids) to work effectively.

As such, it becomes evident that organizations may face challenges that are beyond their control, thus there is also a need for greater collaboration from key stakeholders within the private and public sectors in markets. This collaboration would require these stakeholders to find common ground and understanding around the importance of technology within the economy and each stakeholder ought to take the necessary steps required to ensure that the possible challenges and hurdles to technology implementation are addressed accordingly.

Despite the challenges mentioned above for financial institutions, the speed that technology is being introduced into banking, it is difficult to envisage a deceleration of this speed, but rather, that these enhancements will continue to flourish. As such, it becomes crucial for organizations, particularly those in the financial services to utilize this phase of implementation and maximize their productivity and gains.

Furthermore, technological enhancements will also require the workforce to up-skill and reskill themselves. As indicated in the assessment of one of the banks in Kenya, there has been the implementation of Robotics, which is effectively performing the task that people used to perform, but the performance, output and productivity is greater than the human. As such, it becomes crucial for the workforce to identify new and in-demand opportunities that will ensure that they maintain their relevance and importance in the workforce.

The point above reiterates the point regarding collaboration and its importance. The reason for this is that workers cannot single-handedly up-skill themselves, but require the assistance of organizations to equip them to learn new skills that are relevant for the sectors within which they're in. In this regard, governments too need to play a role in facilitating the training of their citizens, wither through the necessary academic criteria within the learning institutions or through the provision of skills programmes targeted and unskilled and semi-skilled staff.

If the past and present are anything to go by, then we can expect that the future of working will continue to have technology has the centre of it, with banking playing an equally important part in ensuring regulation of the monetary system. As such, these two concepts are more than likely to remain interlinked and intertwined in the future workforce.

It then becomes crucial for organizations to leap into this connection and utilize it to their benefit. For banks, their role in society is bound to gain greater significance and importance, coupled with a responsibility to carefully manage the monetary system. We are inclined to believe that banks understand this role and therefore the decisions that are made ought to be for the overall and general benefit of society.

Areas for Future Research

With the crucial role of technology in banking being highlighted, that the impact of technology on other sectors beyond banking be examined for further research. This paper has indicated the importance of technology within one sector, especially following the advent of the Covid pandemic. However, the increasing influence of technology is not limited to one sector, but rather, cuts across numerous sectors which need to be assessed too and any lessons learnt from the banking sector applied to other sectors to fully leverage off on the impact that technology has had.

Furthermore, it would be worthwhile to assess the impact of technology in advanced markets and less advanced markets. The purpose of this study would be to ascertain if the impact of technology is consistent across locations or if there are certain conditions that are required for technology to flourish and be more effective.

Studies on these factors would expand the discussion further and enable a wider assessment of the role of technology in society and help determine the impact of technology in the way that the future workplace will be defined and measured.

6. CONCLUSION

Lastly, this study has assessed banking and technology. In the assessment, the study has provided an illustration of the importance and significance of these two components in the workforce. The study has further proceeded to connect these two forces together to articulate the positive outcome that each factor has on the other.

Through an assessment of the literature, the study has been able to illustrate that technology in banking has been accelerating for a while and that financial institutions have long realized the need to implement technology to maximize output and increase efficiency as much as possible. With the advent of key variables such as automation and digitization, technology has dominated the workforce and with banking proving to be so critical for any monetary system, these two variables can be likened to two forces of nature combining to accelerate change within the workforce.

The study has further indicated that these two forces have been aided by the unfortunate occurrence of the Covid pandemic, which disrupted the normalcy of life as it had been known and forced the introduction of remote working, broadly known as New Ways of Working. The pandemic shed the spotlight on the need for technology within this era of the Fourth Industrial Revolution and arguably, the banking sector was one of the great beneficiaries of this outcome.

The study has provided an assessment of the strategies that financial institutions have undertaken regarding technology and the outcomes of this assessment has elaborated further the fact that technology has a positive outcome on banking, through the increase of productivity and efficiency.

Despite the overwhelming positives, the study has indicated that there are still some areas of improvement required and most crucial to this is that the current workforce needs to keep up to speed with the implementation of technology and ensure that the correct skills are identified and modified where required, in order to ensure that the dominance of technology does not result in the obsolescence and disappearance of human capital, because this remains the most crucial and required element within the workplace. Human capital is one that cannot be overshadowed by any other factor, primarily technology.

Therefore, the need for a co-existence of all the forces is extremely crucial and can never be taken for granted or removed.

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