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EXPLORING KEY ELEMENTS
FOR E-TRANSFORMATION IN COMMERCIAL BANKS IN KENYA

JULIET WANGUI MAINA

A research report submitted to the Faculty of Humanities,
University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Arts (in the field of ICT Policy and Regulation)

9th August 2016

ABSTRACT

Digital transformation on a national level is a framework that has been applied to a number of different contexts. Studies in both developed and developing countries have exhibited digital transformation in a manner that reflects its applicability across contexts and scenarios. However, this research explored what happens when the same is applied to organizational contexts in a developing country. The research did not divert too far from the national application of a digital transformation framework, but merely sought to incorporate the organizational perspective, and the different considerations that arise in commercial banks in Kenya; an area which was previously under-explored. A conceptual framework was developed to study only particular elements of digital transformation from qualitative analysis and different sources of data. The findings of this study illustrated that there is a huge uptake of technologies in these commercial banks, but also notes a significant number of limitations that currently exist. The report concludes with proposals as to how these limitations can be addressed through various recommendations, and also considers other avenues for improvement, and future research that can later be applied other contexts.

DEDICATION

To my loving family, friends and esteemed colleagues, thank you for your support, your encouragement and most of all your understanding and patience on this journey. This achievement is ours.

ACKNOWLEDGMENTS

I am deeply grateful to my supervisor Lucienne Abrahams for her support and unwavering commitment to the course and to her students. Thank you going the extra mile to ensure this report was completed.

DECLARATION

I hereby declare the following;

I declare that this report is my own, unaided work. It is submitted in partial fulfilment of the requirements of the degree of Master of Arts (in the field of ICT Policy and regulation) in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

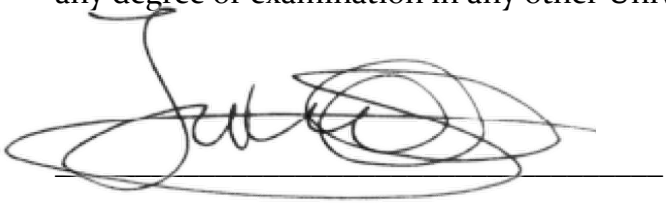

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TABLE OF ACRONYMS

ACRONYM	
AFRALTI	African Advanced Level Telecommunications Institute
CA	Communications Authority of Kenya
CAK	Competition Authority of Kenya
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CRB	Credit Reference Bureau
CTP	Cheque Truncation Project
DLP	Digital Learning Programme
ERC	Energy Regulatory Commission
GDP	Gross Domestic Product
ICTA	Information Communications and Technology Authority of Kenya
IoT	Internet of Things
IMF	International Monetary Fund
KBA	Kenya Banker's Association
KEBS	Kenya Bureau of Standards
KE-CIRT	Kenya Cyber Incidents Reporting Team
KICA	Kenya Information and Communications Act
KIRDI	Kenya Industrial Research and Development Institute
KLR	Kenya Law Reform
KNBS	Kenya National Bureau of Statistics
MFI	Micro Finance Institution
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
NPSA	National Payment Systems Act
NPSR	National Payment Systems Regulations
OECD	Organization for Economic Cooperation and Development
ODPP	Office of the Department for Public Prosecutors
OTT	Over The Top services
REA	Rural Electrification Agency
SACCO	Savings and Credit Co-operative
ULF	Unified Licensing Framework
WEF	World Economic Forum

Chapter 1: Setting the scene for digital transformation in commercial banks in Kenya

Around the world, the banking industry is one that has been heavily impacted by the ICT revolution (Al-Qeisi & Hegazy, 2014). The Kenyan banking sector is a prime example of this revolution in motion as it has experienced a huge metamorphosis in the recent years, as a result of technology. The entry of mobile financial services into the Kenyan market in 2007 drastically changed the entire financial landscape of Kenya, and the revolution is far from over. Through technology, Kenya has been able to leapfrog developmental stages and address severe developmental gaps in the sector. While previously financial inclusion was targeted at the higher income earners, the situation now is entirely different as we see technology catering for the needs of all who seek financial services. ICT in banking has completely transformed the way in which banks deliver their services, and now mobile banking, Internet banking and e-services have become a main delivery channel as they serve to significantly reduce operating services of banking institutions as well as increasing efficiency in their operations (Hanna, 2011).

Ways to optimally leverage technologies, are constantly being sought after, and particularly for a developing country like Kenya, there is a great deal of potential for growth. This is what prompts this particular research. The purpose of this chapter is therefore to contextualize the issues as pertains to the Kenyan commercial banks, and serve as a primer to the research report as a whole. It seeks to introduce the role of commercial banks in socio-economic development, and align the same to the process of digital transformation as we seek to ascertain the extent to which this has been achieved in Kenya as well as how it can be made more effective.

1.1 Background to Kenya's commercial banks

Kenya is one of five countries in the East African region and became a democratic state in 1963. The country is extremely diverse and has a strong Islamic presence and as a result of this, the legal framework is comprised of four different systems which are; English common law, Islamic law, customary law and the law of judicial review.

Kenya's population was estimated at 46.4 million people in 2014 (KNBS, 2015) and the country's economy is largely comprised of agriculture, manufacturing and wholesale and retail trade. As per the data from 2014 (KNBS, 2014), the agricultural sector contributed the largest percentage to the country's GDP at 27.3% and the second largest sector is the manufacturing sector with 10% in 2014, followed closely by wholesale and retail trade at 8.2% in the same year (KNBS, 2015). The financial and insurance activities sector stood at 6.7% contribution to GDP in 2014 which is a significant amount, and it is also noteworthy that is has marked an increase from the 6.6% contribution in 2013. Additionally, it is important to note that the economy of Kenya is steady and displays year on year increase. The economy of Kenya is estimated to have grown by 5.3 per cent in 2014, compared to a growth of 5.7 per cent in 2013 (KNBS, 2015). Recently, it has also been reported that the economy has grown 4.7% in the first quarter of 2015, as compared to a 4.3% marked growth change in the same period of 2014 (KNBS, 2015).

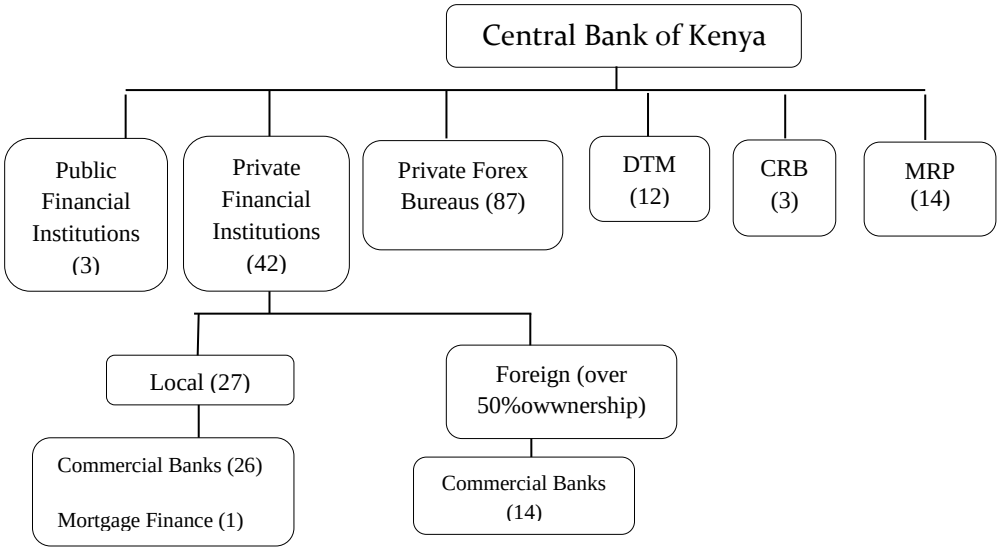
1.1.1 Kenyan banking sector

The banking sector in Kenya is regulated by the Central Bank of Kenya (CBK) whose vision statement is "to be a world class modern central bank". The vision goes on to state that, "The bank will pursue its mandate in support of economic growth, guided by law, national development agenda and international best practices" (CBK, 2015). Figure 1 below summarizes the banking sector of Kenya which is comprised of six key sectors namely; public financial institutions, private financial institutions, deposit-taking microfinance banks (DTMs), money remittance providers (MRPs), foreign exchange bureaus and credit reference bureaus (CRBs). For the purposes of this study, the researcher focused on the private financial institutions in Kenya, and specifically the commercial banks.

There is in place an industry association known as the Kenya Bankers Association (KBA) whose function is to promote industry development and economic growth by engaging the government and the sector regulator (KBA, 2016). It seeks to establish a professional and reputable sector, and ensure that the end consumer is secure. This enables the sector to

have a sole representative and it is of great benefit to the growth of the sector. This became evident as the research progressed, and is presented at a later phase.

Figure 1: Kenyan banking sector illustrated



Source: Central Bank of Kenya, 2015

1.1.2 Kenya's financial landscape

The surge in mobile subscriptions in Africa, coupled with the lack of access to formal financial institutions is what led to the rapid growth of mobile financial services in Kenya (Villasenor et al., 2015). M-Pesa is a money-transfer system that is operated by Safaricom, a licensed telecommunications services provider, and allows users to transfer money all around Kenya (Safaricom, 2015). It led to a complete overhaul of the Kenyan financial landscape, and is today one of the most successful stories of mobile banking in the world (Villasenor et al., 2015). In a paper written for the International Monetary Fund (IMF) by Andrianaivo and Kpodar (2001), it was found that the uptake of mobile financial services in Kenya, Zambia and South Africa have demonstrated the manner in which these services can be used to significantly reduce the financial infrastructure gap, as well as the lack of access to financial services in Africa. The 2015 Brookings Financial inclusion report also found that globally, only 2% have a mobile money account, while the percentage in Africa is up to 12% (Villasenor et al., 2015). It is expected that as mobile financial services grow,

and the environment becomes more enabling, that there will soon be a range of other services offered through mobile. Examples of this already exist in Kenya with M-Shwari which is a paperless banking service offered through M-Pesa that enables users to open an M-Shwari bank account through a mobile device, and without needing to visit the bank, or fill out bank account opening forms (Safaricom, 2016). Additionally, the account holders incur no charges when moving money around. M-shwari is a partnership between a non-financial services provider (Safaricom) and a commercial bank, the Commercial bank of Africa, and has led to an increase in the banked population in Kenya, as will be seen below. This is also driven by the growth of use of smartphones in Africa, which allows more services to be accessed beyond M-Pesa (Villasenor et al., 2015).

World Bank (2014) data found Kenya to have the second highest rate of financial inclusion in Sub-Saharan Africa at 75%, and second to South Africa. As of August 2015, Kenya has been found to have the highest financial inclusion rate in Sub-Saharan- Africa followed by South Africa (Villasenor et al., 2015). This can largely be attributed to the mobile financial services that are now widely used in Kenya. In the same report, Kenya was ranked second highest for mobile capacity, which looks at indicators such as mobile infrastructure and adoption, as well as those indicators that are specific to mobile money. Kenya also came in second for regulatory environment and first in terms of adoption ranking. All these factors combined have resulted in a digital ecosystem within the financial services industry that has led Kenya to attain the top financial inclusion ranking in the region (Villasenor et al., 2015).

Considering the private commercial banks context, it is found that in 2013, there were about six commercial bank branches per 100,000 adults (International Monetary Fund, 2013). It was also found that about 21% of Kenyans had a bank account in 2013, and that this number had risen to 55% by 2014 (Villasenor et al., 2015). Additionally, it was found that approximately 30% of Kenyan adults saved at a financial institution. The IMF Financial Access Survey (2013) indicated that 29% of the banked population used banks, while 9% used Savings and Credit Cooperatives (SACCO) and 3.5% relied on Micro-Finance

Institutions (MFI). Kimenyi and Ndungu (2009) were of the opinion that the increase in formal banking was as a result of commercial banks realizing the need to lower their barriers to entry, as well as lowering the costs of transacting across other bank accounts. The inevitable result of this was that more customers were willing to open accounts. Equity, a private bank, has even sought to compete on this same platform and is now offering mobile money transfer services directly through a bank. This involves new thin-sim technology which provides direct competition to the mobile financial services (Equitel, 2016).

Within the sector, the CBK registered improved growth in assets in the year to March 2015 driven by growth in deposits, injection of capital and retention of profits (CBK, Annual Supervision Reports, 2015). The sector registered better performance in earnings and capital and also witnessed a decrease in the level of non-performing loans. The CBK also reported that the banks' lending rates in 2014 remained relatively high but reached a maximum of 15.99% as compared to 16.99% in 2013. As at September 2015, the banking sector in Kenya was recording improvements in the size of total assets, gross loans, and it was expected that this would remain stable and maintain an upward growth in the remainder of the year (CBK, 2015).

Overall the state of the banking sector in Kenya is relatively stable and the overall financial landscape reflects signs of growth. Below, the researcher looked at the current state of ICT developments in banks as a basis for further contextualizing the research at hand.

1.2 ICT in the commercial banks in Kenya

Increased use of ICT as a catalyst of banking business comes with irrefutable benefits to the banking sector (CBK, 2015). Although costly, banks recognize the value addition that will come from efficiency and product enhancement, and they are therefore making huge investments in technology. One such example was the Cheque Truncation Project (CTP) in 2013 which effectively converts physical cheques to electronic form and allows for images to be transmitted electronically to the clearing house for clearing and eventual payment (CBK, 2016) and enabled the banks to clear cheques much faster. This has proven to be of

great benefit to bank customers as it enhances the flow of funds in the economy. The impact of technology in the sector has also been witnessed through the introduction of the chip and pin technology for payment cards, which is in line with global trends (KBA, 2016). ICT in banking exists in several different aspects, as it extends from internal systems and processes, to modes of service delivery to the end consumer. The researcher opted to look at the latter which considered mobile banking, agency banking and Internet banking.

1.2.1 Mobile banking

As mentioned earlier, the current state of financial inclusion in the country is largely attributed to the mobile telephony uptake. Additionally, the move by banks towards integrating mobile payment platforms into their service delivery models has also positively impacted on financial inclusion as mobile banking services represent a low-cost approach that uses modern technology to expand the financial services frontier (Kimenyi & Ndungu, 2009). Porteous (2006) highlighted that there are different models of mobile banking. In one respect, mobile banking acts as an added channel for service delivery as used by banks, whereas the other approach looks at the delivery of financial services through non-financial service providers (Porteous, 2006).

Mobile phone operators have managed to establish themselves as non-bank transfer operators as they address the gap in financial inclusion. Table 2 below depicts the current state of mobile money transfer services in Kenya as recorded by the CA over one quarter in 2015. As is evident from the data, the total number of subscriptions to mobile money transfer services is increasing steadily. Suffice to say, mobile money in Kenya is quite well established, although the research still seeks to further ascertain the extent to which this can be improved upon, if at all. Although the focus of this study is on the commercial banks in Kenya, the convergence between these institutions and the non-financial services providers is profound, and it is therefore virtually impossible to contemplate the commercial banking context without taking mobile financial services providers into consideration. Mobile financial services providers have caused somewhat of a disruption in the traditional service delivery in the banking sector. This has forced the traditional banks

to alter their modes of service delivery in the banking sector and has led, particularly in Kenya, to increased mobile banking applications that reach a wider market. Increasingly banks are also partnering with Mobile Network Operators (MNO) in various ways to increase their reach and serve their consumers better. There will be more on this later.

Table 2: Mobile Money Transfer Service

Service Provider	*Sept-15*		*June-15*		*Quarterly Variation (%)*
	Agents	*Subscriptions*	Agents	*Subscriptions*	*Subscriptions*
Safaricom	91,246	22,127,622	87,119	21,338,328	3.7
Airtel	9,986	3,114,956	9,857	3,119,812	-0.2
Orange	16,734	191,300	15,984	192,531	-0.6
Finserve	-	1,085,869	-	873,643	24.3
Mobikash	16,162	1,754,117	14,801	1,714,170	2.3
*Tangaza**	1,596	503,556	1,596	503,556	0.0
Total	135,724	28,777,420	129,357	27,742,040	**3.0**

Source: CA (2015) Operators Returns * Provisional data

1.2.2 Agency banking

The agency banking model which was introduced in 2010 has also gained significant traction, as it enabled Kenyans to access banking services in close proximity to their homes or businesses. The legislative reforms instituted between 2010 and 2013 allowed both commercial banks and microfinance banks to contract approved third party retail channels to offer specified services on their behalf. The Banking Act now also allows for subcontracting of agents and the use of agent network managers (aggregators). The Banking Industry Development and Social Investment Report published in 2013 by the KBA found that at March 2014, 14 banks had adopted the agency banking model with the number of active agents standing at 24,645 (KBA, 2013). A more recent report by the CBK stated that as at 30th September 2015, 17 commercial banks had contracted 39,871 agents and had led to the facilitation of over 193.4 million cumulative transactions (CBK, 2015). Also noted

was the fact that the value of banking transactions undertaken through agents is on the increase. This shows marked improvement from the 2014 statistics, and suggests a larger scope for financial inclusion in the country as a whole (CBK, 2015).

1.2.3 Internet banking

Internet banking refers to the use of the Internet as a delivery channel for banking services (Ndung'u et al, 2012). Some of the benefits of Internet banking include low costs, improved customer service, wider coverage, and revenue growth, just to name a few (Bradley & Stewart, 2002). Quite a number of commercial banks in Kenya have adopted Internet banking as a mode of service delivery, however currently the uptake is nowhere near as high as that of mobile banking. Internet banking in Kenya is still in a blossoming phase, despite the relatively high levels of Internet penetration (Ndung'u et al, 2012). According to Gikandi and Bloor (2010), privacy and security were among the issues that were preventing the maturity of Internet banking in Kenya. This study therefore sought to establish the other key reasons that may exist for this low adoption rate, and ultimately propose recommendations as to how they can be mitigated.

Having considered the key areas that pertain to this particular study, we will now look at the process of digital transformation and the various elements that are required to achieve said digital transformation.

1.3 Elements of digital transformation/e-transformation

The process of digital transformation is not confined to one aspect such as technology, but seeks to incorporate several other factors that will serve to promote effective ICT adoption and diffusion in a transformational manner (Hanna, 2011). It adopts a holistic approach and even goes as far as requiring assimilation with the national strategies of a country in order to achieve its full potential. Where digital transformation is achieved, four key characteristics are evident which are, information society, knowledge economy, ICT enabled development and e-development (Hanna, 2010). Contextually, this means is that the process of e-transformation leads to changes in the economy and the society as a whole, brought about by ICT development (Hanna, 2010). This leads to a shift towards a

knowledge economy as opposed to an agricultural economy or an industrial economy (Houghton & Sheehan, 2009).

A simplified framework has been developed that would lead to the actualization of the above characteristics. This framework focuses on five key aspects of e-transformation, and is designed to be appropriately adaptable to any context. These are: e-government, e-business and e-society, ICT industry, policy and institutional frameworks, human resource development and ICT infrastructure. To succeed, the digital transformation process must incorporate and act on these key factors simultaneously, as well as develop strategies for each of these components (Hanna, 2016). Hanna found that the problem was that ICT was viewed more as an industry rather than as a cross-sector enabler and transformer (Hanna, 2010), but it is our aim to approach it in an integrative manner so as to see ICT achieve its full potential. For this particular study, the researcher focused on three core components of e-transformation which will be human resource development, ICT infrastructure, and policy and institutional framework, and which will be applied to the commercial banks in Kenya.

1.4 Why three and not five components

It is important to note that the researcher, in selecting three out of five elements for study, does not seek to undermine the importance of the other two. The researcher opted to focus on these three components because of their importance to the process of digital transformation, in what she felt was a less obvious way, particularly to consumers. To the end-consumer on their digital device, it is conceivable that they may not have considered the link between, say, policy and legislation, and their ability to gain access to telecommunication services. The same applies to information infrastructure and human resources which, although very relevant, may be easily overlooked, as some may perceive it as an issue that is removed from them as end consumers. This emphasizes the issue that Hanna (2010) has previously had with the adoption of technology which is at times viewed an industry issue, rather than an enabler in other sectors. Arguably, and in the view of the researcher, ICT industry and e-government/e-society/e-business are easily linked to the process of digital transformation and as such she opted to look at the other three instead.

Below, the researcher explores these three key elements as they pertain to the current Kenyan commercial banks context. Chapter 2 then provides a more theoretical approach to the framework which includes all the essential elements as a basis for the study.

1.4.1 Policy and institutional framework

An enabling policy and institutional framework that is shaped by a shared vision, long term strategy and institutional leadership is important in achieving digital transformation, and ultimately a digital economy (Hanna, 2010). It lies at the heart of this kind of revolution as it strategizes the entire transformation process. A well-established environment will enable stakeholders' engagement to forge a sustainable national e-development strategy that can see the actualization of the potential to be found in digital transformation, both socially and economically. For this particular study, we explored the two key regulatory bodies tasked with regulating ICT services and financial services respectively.

The ICT sector in Kenya is regulated by the Communications Authority of Kenya (CA) whose mission statement is to "facilitate the transformation of lives through progressive regulation of the Information and Communication Technology (ICT) Sector" (CA, 2015). The regulator is therefore directly responsible for the efficient and successful diffusion of ICT in the country and should consequently play a direct role in applying resources to achieving the full potential of cross-sectoral and transformative role of ICT (Hanna, 2011). As stated earlier, the banking sector in Kenya is regulated by the Central Bank of Kenya (CBK). It is necessary to consider the roles played by both regulatory bodies in achieving digital transformation in the commercial banks. Currently, there is a light-touch regulatory approach to addressing this jurisdictional overlap, which was strongly witnessed in the regulation of M-Pesa, the mobile money service that was introduced by Safaricom in 2007. The two regulatory bodies are currently in the process of signing a Memorandum of Understanding which is designed to lead to a more collaborative approach towards regulating the sectors, and adequate addressing of the overlaps (CA, 2015). Already, laws and regulations such as the National Payments Systems Act (NPSA) of 2011, and its subsidiary legislation, the National Payments Systems Regulations (NPSR), 2014 have been

formulated in a bid to better regulate the technological advancements in the sector. Through such a collaboration, it should become easier to draft policies and establish institutions that will adequately boost ICT developments in the country.

1.4.2 Human resource development

Hanna (2010) states that the process of e-transformation is hinged on development of ICT skills that will help people adapt to the new technologies and enable them to develop appropriate and efficient management of information systems and infrastructure. However, by 2016 this has evolved to include elements such as change management skills as well as techno-entrepreneurship skills which focusses on transformational and user skills (Hanna, 2016). Kenya is currently ranked at 101 in the human capital index (Schwab, 2015). The index serves as a tool for capturing the intricacies of education and to establish to what extent countries are leveraging their human capital to establish better workforces, and manage competitive economies (Schwab, 2015). In the sub-Saharan region, Kenya is one of the top 10 countries that are able to leverage their human capital (Schwab, 2015).

Honing in on ICT skills development in Kenya, we find that ICT research in undertaken by the Kenya Industrial Research and Development Institute (KIRDI) which has an entire division dedicated to ICT research. Additionally, in terms of training, the Africa Advanced Level Telecommunications Institute (AFRALTI) is an intergovernmental institute whose mission statement is to "provide quality training, consultancy and advisory services to the ICT sector in Africa" (AFRALTI, 2015). The institute is responsible for building ICT capacity in Africa, which is important for maximizing ICT potential in the quest for an information society.

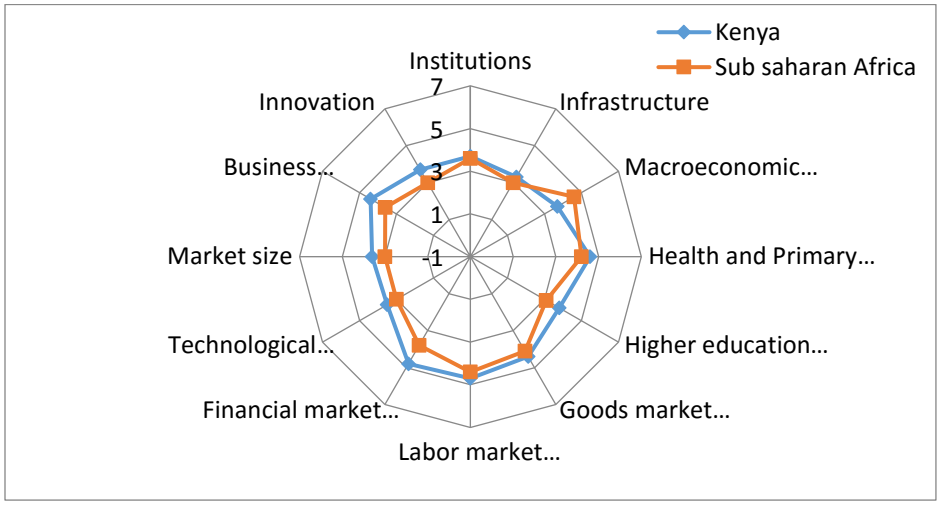
Furthermore, a Digital Literacy Programme (DLP) was introduced by the ICT Authority of Kenya (ICTA) in 2015 and is currently in its developmental stages. The aim of the DLP is to enhance learning in public primary schools through the use of digital technologies. The programme encompasses smart classrooms which are tech savvy and will see the schools embrace digital learning. It further identifies key pillars, including a content approach, power supply, skills development for teachers, and provision of platforms that will allow

students access to the content and see the actualization of this project. For each of these pillars, the relevant ministry/authority would be engaged to implement it. These will range from the Ministry of Education, Science and Technology (MoEST), which will seek to develop content and teachers' capacity, and go all the way to the Rural Electrification Authority (REA), which will be responsible for the power connection to schools. This element of the e-transformation process already seems to be adopting a synergistic approach in Kenya, which is strongly advocated for by Hanna (2010).

1.4.3 Information infrastructure

Ensuring that Kenya has a healthy ICT infrastructure is imperative in achieving digital transformation in the country as a whole, and particularly in the commercial banks in Kenya. A holistic look at the current state of Kenya's readiness for digital transformation is captured in figure 2. From the diagram, we can see that Kenya's performance is significantly better than that of the overall sub-Saharan region in most of the pillars. Although all the pillars are indeed relevant, the researcher here chose to focus on the pillars that directly impact the digital transformation process in the commercial banks in Kenya. These would be institutions, innovation, infrastructure, higher education and training, and financial market development. We see that in these key areas, Kenya appears to be performing above average and as such is in a good position to leverage the adoption of ICT in this context.

Figure 2: Kenya's performance on the twelve pillars of the global competitiveness report (2014-2015)



Source: (Schwab & Sala-i-Martin, 2015

In addition to the above, closer examination of the ICT sector has revealed marked growth with increased subscriptions and penetration levels for both mobile and Internet. Table 2 highlights the growth rate from as recent as December 2013 to September 2015. There has been significant increase in subscriptions and penetration in both mobile and Internet subscriptions, which provides a suitable platform for the process of digital transformation in the commercial banks to take place. With such high levels of penetration, it shows that the country's infrastructure is currently well placed to enable people to access available services through ICT infrastructure (Duan et al. 2009: 1840).

Table 2: Mobile and Internet Subscriptions and Penetration

Year	Mobile		Internet	
	Subscriptions (mil)	Penetration %	Subscriptions (mil)	Penetration %
Dec '13	31.3	76.9	21.3	52.3
March '14	31.8	78.2	21.7	53.3
June '14	32.2	79.2	22.3	54.8
Sept '14	32.8	80.5	23.2	57.1
Dec '14	33.6	82.6	26.1	64.1
Mar '15	34.8	85.5	29.2	71.7
June '15	36.1	83.9	29.6	69
Sept '15	37.8	88.1	3.9	74.2

Source: Adapted from CA (2015)

1.5 Research Problem statement

Based on the above, the research problem can be stated as the absence of data and analysis on a multi-faceted approach to the digitization in commercial banks in Kenya. Levine (1997) found that the financial systems of any country are largely shaped by non-financial developments which included but were not limited to changes in telecommunications thus making this study important. Although there have been several studies on e-transformation in various countries on a national level (Hanna & Knight, 2011;2012), there has not been an in-depth appreciation of the process and implementation of e-transformation in the banking sector in Kenya with particular focus on the identified key elements of e-transformation.

The research problem therefore is that, despite its transformative capabilities, the role played by ICT technology in the banking sector of Kenya has not been well researched from the e-transformation perspective, which adopts a multi-faceted approach to incorporation of ICT in the banking sector. Such an approach would require that investments in ICT are

accompanied by investments in other areas such as human resources, process innovations, institutional changes and policy reforms in order to fully realize the potential benefits. The significance of such a study would therefore be to explore key elements of digital transformation that will boost the ICT revolution in the sector, and boost the impact of these financial systems on the economy.

1.6 Research Purpose statement

The purpose of this study was therefore explore the ICT revolution in the case of Kenyan commercial banks from a multifaceted perspective. The study sought to establish the strengths and challenges of this process, and propose ways in which it can be made more efficient in this particular context. This was done through looking at three selected elements of the e-transformation framework, namely (1) policy and institutional framework, (2) human resource development and (3) ICT infrastructure. This multifaceted approach provided for a clear understanding of the commercial banks in Kenya and the environment within which they operate, with particular regard to the aforementioned components. A well-researched study on the process of e-transformation within the banking sector would provide a platform through which other sectors can similarly be studied and transformed.

1.7 Limitations of the research

Limitations of the research included the inability on the part of the researcher to interview all the institutions in the banking sector and gain deeper insight on the way it operates. However, by selecting a very small sample group, the researcher was able to delve deep into the issues of each institution. Additionally, despite the small number, the researcher has endeavored to select institutions that are likely to be representative of the Kenyan commercial banks sector in Kenya. Another limitation of the study was that the researcher, due to time and financial constraints, was unable to conduct a comparative analysis which would have enabled the study to compare the Kenyan case to a jurisdiction in which e-transformation in the banking sector has been successful. Lastly, the researcher did not intensely explore the technological aspect of this particular study, but largely the regulatory

aspects, among others. This is limiting, but it provides a sound platform for anyone wishing to explore the technological side vis-à-vis the policy and regulatory aspect of it. By chapter 6, the researcher was able to formulate other limitations of the research which acted as sound platforms for future research.

1.8 Chapter outline

Chapter one is comprised of Kenya's current economic position and the role of commercial banks, as well as a brief introduction to the concept of e-transformation. The chapter also highlights the research problem that is to be explored, as well as some of the limitations of the study.

Chapter two explores the current body of knowledge that surround the research problem at hand. It consists of definitions and various discussions that will assist the reader to understand the debates that surround the problem that the researcher sought to explore. This chapter also includes a conceptual framework which provides a snapshot of the complex factors that impact on this study while creating a correlation in a relevant manner.

Chapter three introduces the research questions that address the research problem at hand. It further provides an outline of the research methodology and methods that were adopted in a bid to address the research problem, as well as the sample group that the researcher studied, and the approach to data analysis that was adopted.

Chapter four constitutes a presentation of the insights that were elicited from the data collection that was conducted subject to the research proves outlined in chapter 3. This chapter seeks to highlight the key issues that arose from the data in preparation for analysis.

In chapter 5, the researcher provides an analysis of the results that were recorded in chapter four.

Chapter six is a conclusion of the overall study, and provides recommendations based on the results and analysis in the preceding chapters. It also makes suggestions for future

studies that would further contribute to this particular line of research and the body of knowledge.

1.9 Chapter summary

Digital transformation in commercial banks is taking place with or without the aforementioned framework and this is based on the fact that the banking sector is one that is heavily reliant on ICT technologies to improve service delivery and operate in a more efficient manner. The researcher in this chapter has sought to introduce the research and the context in which she seeks to study it. The researcher also briefly explains why the study has considered three out of five components that are key to the process of digital transformation and explore ways to make the process more efficient. The purpose of this study is essentially to look beyond the obvious facets of this transformation process, such as ICT deployment, and to consider what role these elements play particularly in the digital transformation in the commercial banks of Kenya and explore the ways in which they can be improved upon.

Chapter 2: Current literature on digital transformation in commercial banks in Kenya

Having contextualized the research and identified the problem statement for this research, the next step was to review the existing body of knowledge on the topic and the various debates that surround the recognized issues. This review explored relevant literature and identified the concerns raised in the implementation of ICT and particularly in the banking sector. It defined key concepts of digital transformation and sought to align these to the commercial banks. The successful examination of the existing body of knowledge assisted the researcher to formulate a theoretical and conceptual framework for addressing the current research problem.

2.1 The role of commercial banks in economic development

Commercial banks play a significant role in the economic development of a country (Raihanath & Pavithran, 2014). In discussing the Indian context, Raihanath and Pavithran (2014) noted that the financial services provided by commercial banks include savings, loans, insurance, credit and payments among others operate at the heart of a country's economy. Levine (1997) also found that financial systems allow for the mobilizing of savings and facilitate the exchange of goods and services. He highlighted five key functions of financial systems which are - facilitation of risk management; allocation of resources; monitoring of managers and control over corporate governance; savings mobilization and easing the exchange of goods and services (Levine, 1997).

The commercial banks therefore directly impact on the performance of other very important sectors in the economy (KBA, 2015) as they play a central role in extending financial services within the country to boost the economy. The banks' efficiency and ability to maintain lower lending rates not only increases the impact of their services, but also allows for financial inclusion. This study asserts that the digitization of the banking process will lead to better efficiency and this will inevitably impact on the service delivery and costs of services by the bank.

2.2 ICT in the banking sector

As stated earlier, the banking sector has been one of the leading adopters of ICT in enabling e-business and has recorded major productivity and service improvements as a result of this adoption (Akhisar et al., 2015; Al-Qeisi & Hegazy, 2015; Hanna, 2010). Jayamaha (2008) has even gone as far as stating that the financial services industry is now practically dependent on IT development. Banks are now able to use these new products to provide better services to their customers, to market their products better, and to increase awareness as well. Additionally, e-finance and mobile phone operator avenues have been perceived as a tool to include smaller enterprises from formal financial intermediation (Hanna, 2010). As a result of electronic financial services, financial systems can now be set up without an elaborate structure. With provider's processing costs considerably abridged, the customer also experiences reduced costs in accessing the available services (Akhisar et al., 2015; Hanna, 2003). This increases competition in the market and innovation of products and services which will boost the growth of the sector as a whole (Akhisar et al., 2015). ICT has also served to afford to previously under-developing markets the same advantage as larger players, so as to enable them to participate globally (Claessens, Glaessner and Kingbiel, 2001). As mentioned above, a large contributor to this is the mobile revolution and the mobile financial services that are now afforded to virtually every Kenyan. Banks are now forced to innovate in order to compete, and this inevitably leads to better services for the end consumer.

Based on the above, it is evident that the desired outcomes and expectation of ICT adoption and diffusion in these institutions include efficiency, lower interest rates, increased access to finance and e-business generation, among others. Hanna (1994) highlighted that ICT in the banking sector would also result in increased fee income, and improved portfolio management assessment.

In developing countries, there is less adoption of formal financial services and this is as a result of several factors which include high costs and lack of awareness, among others (Claessens, 2006). Consequently, from the customer perspective, ICT would be able to

improve the service delivery of these commercial banks, and therefore target a larger percentage of the 'unbanked' population (Ndungu & Kimenyi, 2009).

From the above, we see that ICT in the banking sector hosts a wealth of benefits for both organisations and consumers alike. Below, we will examine the existing literature on the process of digital transformation to better inform how these can be aligned to the commercial banks in Kenya to increase efficiency.

2.3 What is e-transformation/digital transformation?

As stated earlier, the problem in this research has been identified as the lack of an informed study on e-transformation in banking, and particularly, to what extent the same has been effected in commercial banks in Kenya. To do this, we will seek to first define e-transformation, and understand the various approaches that have been taken in understanding what it means.

To reiterate, successful e-transformation is recognizable by four key characteristics which are; information society, knowledge economy, ICT enabled development and e-development (Hanna, 2011). Key to note is that the process of e-transformation is not limited to the deployment and diffusion of ICT and requires a complete transformation in more than one sector. Trends analyst Altimeter has defined digital transformation as "the realignment of, or new investment in, technology and business models to more effectively engage digital customers at every touch point in the customer experience life cycle." (Solis, Li & Szymanski, 2014: 8) This definition presents the business perspective of the digital transformation and considers an overhaul of the business models of certain organizations. This is important for this study because commercial banks are private entities and therefore operate under specific business models. To expand on digital transformation as it relates to business, Berman (2012) states that the key activities to be looked at are the ability to re-shape customer value propositions as well as an approach that will transform the organizations' operations using new technologies for enhanced customer interaction.

Davidson et. al (2005), has described the process as a phenomenon that has seen the application of ICT to traditional business and communication processes in the hope of

improving efficiency and effectiveness. These new technologies serve to complement traditional services and enhance customer reach, a factor that is crucial in a long-standing industry such as banking.

What is consistent in these definitions is that digital transformation is more than just an introduction of a system into an organization. It is always transformative and multifaceted in its approach. Beyond implementing systems and digital operations, there are still several factors to be considered (Baker, 2014). The definitions also introduce us to various components that are essential in business contexts, and these will be explored later within the key components of digital transformation.

2.4 Challenges of digital transformation

Hanna (2010) has however noted that in as much as there has been wide adoption of ICT in this sector, that there still exist issues such as security, cybercrime, affordability and credit risk information. According to him, government actions will be central in the increase of access to finance with the use of ICT which further supports the framework of e-transformation (Hanna, 2010).

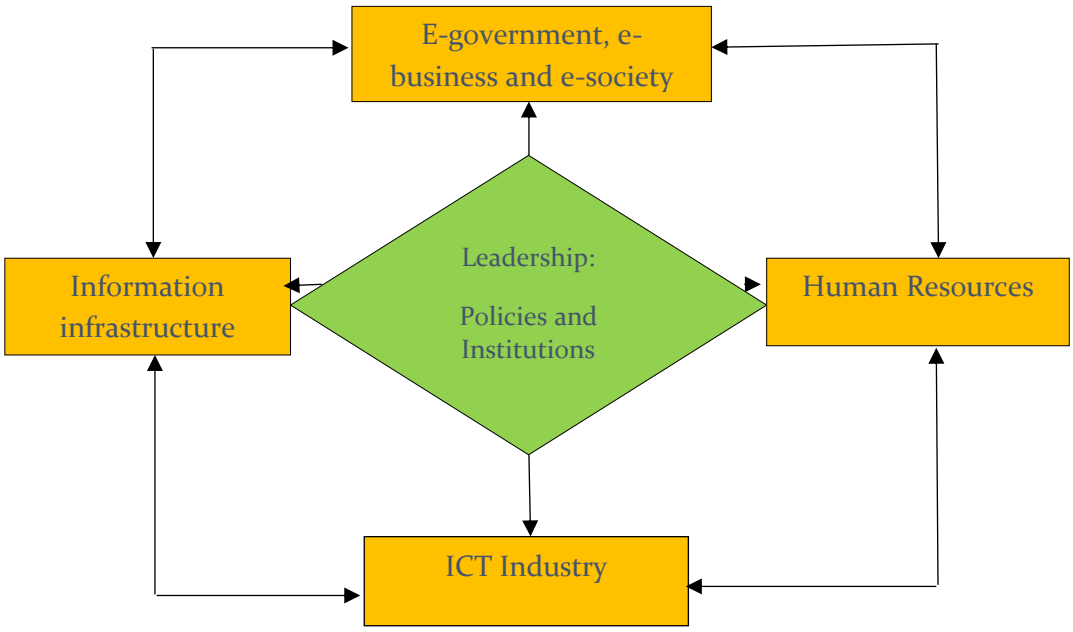
Hanna (2016) further highlights some of the challenges of mastering digital transformation and advances a number of questions which we believe will be crucial to this study, as he touches on policies and managerial processes, educational reforms, public policies and institutions as well as e-participation, just to name a few. Through this, he is able to provide stakeholders with a guide that will help them to identify gaps and weaknesses in the process. He calls for systematic thinking towards enabling of development through a functional ecosystem that will incorporate all the elements. Below we will explore this further as we consider each component in greater depth.

2.5 Approaching digital transformation

As stated earlier, digital transformation goes beyond the automation of systems and is a process that seeks to introduce real change within an organization in the way it operates and reaches its clients (Baker, 2014). Hanna (2003) asserts that the process of e-transformation is not a quick process and requires long adjustment periods before any real

impact on the economy can be felt. Additionally, he holds that there is no blue print for e-transformation and that the whole process requires a great deal of patience and adaptability. Recently, Hanna (2016) iterated that a holistic digital transformation strategy will require strategies for the different components of the framework, both vertical and horizontal. It is therefore imperative that the policy and regulatory frameworks that impact on the implementation of e-transformation are understood before any change can be introduced. He goes on to propose planning processes which he deems critical to the transformation process. On a national level, these are: a) diagnosis of a countrywide ecosystem b) identification of opportunities and threats present in the global environment and c) an in-depth review of the country's competitiveness or development strategy and role of information (Hanna, 2016). Fig 3 below highlights Hanna's framework for digital transformation (Hanna, 2010) which provides a simplified framework that provides a foundation upon which the concept of e-transformation can be understood and developed further in different contexts. Hanna (2016) has however emphasized the interdependency of each of these components in the quest for digital transformation.

Figure 3: Hanna's e-transformation framework



Source: Hanna, 2011

Having explored the impact of commercial banks on the economy, and considered the impact of ICT on these banking institutions, as well as the various approaches to digital transformation, the next step is to seek to align the process of digital transformation within the said banks and explore the literature surrounding the elements of digital transformation with particular focus on policy and institutional framework, human resource development, and ICT infrastructure.

2.5.1 Policy and institutional framework

As stated earlier, ICT has the capability to impact every sector in a transformative manner that will boost economic development (Ajakaiye & Wangwa, 2011). Policies and legislation therefore need to be geared towards economic development and particularly with an ICT focus. As stated by Hanna (2011), integration of e-transformation into broader strategies is key to providing the kind of institutional environment within which the e-transformation process can take place. The problems that arise in achieving an appropriate legal and regulatory framework include a scarcity of e-leaders, low awareness of the benefits of ICT, weak involvement of core ministries, ownership of ICT among most public administrators, and a lack of interdependence in the e-transformation across agencies and ministries (Hanna, 2009). According to Hanna (2011), all these factors lead to a lack of a synergistic approach which is vital in achieving e-transformation. To address these issues, there is a need for countries embarking on digital transformation to set up institutions that adequately design and implement the ICT sector policy (Vaughan, 2006; Hanna 2011).

In order for digital transformation to be effective, it needs to be engrained in the leadership that will boost the harnessing of ICTs in a manner that is beneficial to the country as a whole. In an ideal situation, the leadership would need to go as far as providing funding options for ICT powered projects, in a top-bottom approach to the ICT revolution (Kelly et al., 2010)

2.5.1.1 Jurisdictional overlap

In this particular context of commercial banks, a jurisdictional overlap is inevitable as ICT in the banking sector is fast evolving and is a scenario that witnesses the overlap of two, if

not more, regulatory bodies. These include and are not limited to the telecommunications regulatory body, and the banking regulator. The regulatory bodies need to be able to establish a collaborative and cooperative framework between themselves, and the relevant stakeholders that will enable the digital transformation to be a success. One cannot over emphasize the importance of the leadership in this process and Porteous (2009) was alive to this when he stated that the lack of clear leadership would act as a drawback to the process due to coordination failure.

In such instances, there exist several possible challenges which may arise from an attempted co-jurisdiction policy (Porteous, 2007). For example, cross-sector comparison can be made difficult due to the lack of an obvious overall comparative network (Hawkins and Prencipe, 2000) because the two sectors have very different mandates and different measurements of success.

2.5.2 Human capital

Human capital development is an irrefutable component of e-transformation. Hanna (2016) emphasizes that skilled human resources are at the core of the ICT revolution from both the user and the producer perspective. Based on this, human capital as a component of digital transformation can further be broken down into what the researcher considers to be sub-elements. These are, broadly, ICT skills, and increased awareness levels which are better explained below.

Africa as a region currently ranks the lowest in terms of human capital as far as ICT skills is concerned (Schwab, 2015). In the case of Botswana, shortage of ICT skills was found to be a great hindrance to the ability of organizations to leverage ICT and compete globally (Maitlamo, 2004). On a national level, the ability to cultivate and develop a ICT skills capacity cannot be over emphasized as this is the only way in which technologies that are developed, can have any impact on economic growth.

With regard to awareness, a study in Egypt by Maksoud and Youseff (2003) found that lack of awareness was a key barrier to ICT implementation while Rizk (2004) also found that in Egypt, that lack of awareness constituted a large barrier towards implementing ICTs in

small firms, and that the same would need to be addressed for better use of ICT. A lack of awareness inhibits the potential uptake of technologies which would be extremely beneficial. The focus of this research is on commercial entities, and we will therefore hone in on some of the issues that may arise in human resources development and awareness, and specifically on an organizational level.

2.5.2.1 Human Resources on an organizational level

Jimenez-Jimenez and Sanz Valle (2001) have applied the concept of human capital from a different perspective which considers the level of capacity within organizations. As stated earlier, capacity is required so that it is possible to adapt these technologies to our context, and better leverage them for socio-economic development. Jimenez-Jimenez and Sanz Valle (2001) have further highlighted the importance of innovation in developing competitive advantage, and points out that this is what enables organisations to be able to respond to economic challenges quickly, and to exploit new products, as well as market opportunities (Brown & Eisenhard, 1995; Miles & Snow, 1978).

In expanding on this point, Jimenez-Jimenez and Sanz Valle (2001) invite us to consider the role of knowledge management within organizations, and the extent to which it is beneficial to the development of human capacity development. To them, human resources are a key aspect of competitive advantage. Although this approach diverts from the original definition of human capacity and its role in the process of digital transformation, it is just as important to consider the human capacity from the supply outlook, and not only from the demand perspective. If the organizations are unable to, within themselves, harness the powers of new technologies, then it will be extremely difficult, if not impossible to roll out these same technologies in an effective and advantageous manner. From the perspective of knowledge management, the key is to create a culture through implied and tacit knowledge which serves to engrain it within the organization. This is just as important as ensuring that the end consumer is able to leverage these technologies. Their study was carried out to establish the links between knowledge management, human resource management and innovation within an organization (Jimenez-Jimenez & Sanz Valle, 2001).

Gupta and Singhal (1993) stated that "People, not products, are an innovative company's major assets". As stated earlier, banks tend to be the leading adopters of technology as their core functions largely depend on it. Therefore, within the environment of a banking institution, the capacity to innovate is extremely vital, and it resides in its employees' abilities to learn, as well as their motivation to share the knowledge within themselves.

Therefore, by introducing knowledge management, and seeking to integrate IT and business planning resources more effectively, the organizational human resources are better developed, and codified so as to better reach the end consumer in the same fashion (Jimenez-Jimenez & Sanz Valle, 2001).

From the demand perspective, it has been stated the enhancement of citizens' ICT capabilities is crucial in promoting sustainability of ICT programs and in bridging the digital divide (Benjamin, 2001). It is therefore essential that citizens are kept well-informed of the new technologies so that they may be able to leverage them for socio-economic benefits. From an organizational perspective, a well-structured human resource management strategy that touches on knowledge management and innovation is the definite way to achieve this.

2.5.3 ICT Infrastructure

Building dynamic and competitive infrastructure for the sector is key in ensuring that information and access takes place (Hanna, 2010). ICT infrastructure is important due to the key role it plays in enabling information access and sharing, and is depended upon by much of ICT systems and applications in any sector.

It was found that countries with poor ICT infrastructure reaped significantly low benefits from ICT (Hanna, 2010). This was supported by Akhisar et al. (2015) who state that the lack of adequate ICT infrastructure served to block the positive impacts such as cost effectiveness and profitability. Takieddine and Sun (2015) carried out a study that looked at Internet banking on a country level and which prompted proposals that revolved around financial sponsors on the part of banks and e-vendors, to improve infrastructure in their respective countries. Takieddine and Sun (2015) stated that this would address a number

of issues in the sector with regard to connectivity and access. In addition to this, it was proposed that the banks be prepared to offer security services for their customers in order to boost usage of Internet banking services. The study also considered the role of governments and policy makers in promoting ICT infrastructure projects in the country (Takieddine & Sun, 2015).

A study was carried out in the Kenyan context by Gikandi and Bloor (2010) which sought to rank the future challenges of e-banking according to their impact on e-banking adoption. In both 2005 and 2009, Internet security was ranked the highest as a challenge, and infrastructure was ranked 15 in 2005 and 11 in 2009. This suggests that as the years progressed, and with the increasing ICT diffusion and adoption, infrastructure presented itself as more of a hindrance to electronic banking in the country.

Also important in the exploration of ICT infrastructure is interoperability. Porteous and Wishart (2006) argue that lack of interoperability results in high costs pertaining to financial infrastructure deployment which may be avoided through the use of standards and protocols that enable systems to communicate. Interoperability is therefore important to enable ubiquity and vastly impact rates of financial inclusion in developing countries. Authors like Porteous (2006) and Dolan (2009) are huge advocates of interoperability as it holds a wealth of benefits such as increased efficiency, greater customer value through better functionality, and through the dynamic efficiency that interoperability gives to the sector.

2.5.4 ICT industry and innovation and e-business/society/government.

Here the researcher offers brief insight into the final two elements that exist in Hanna's framework. This is important because although it is not explored at length in this particular study, they still exist as core components to the process as a whole and as such cannot be excluded.

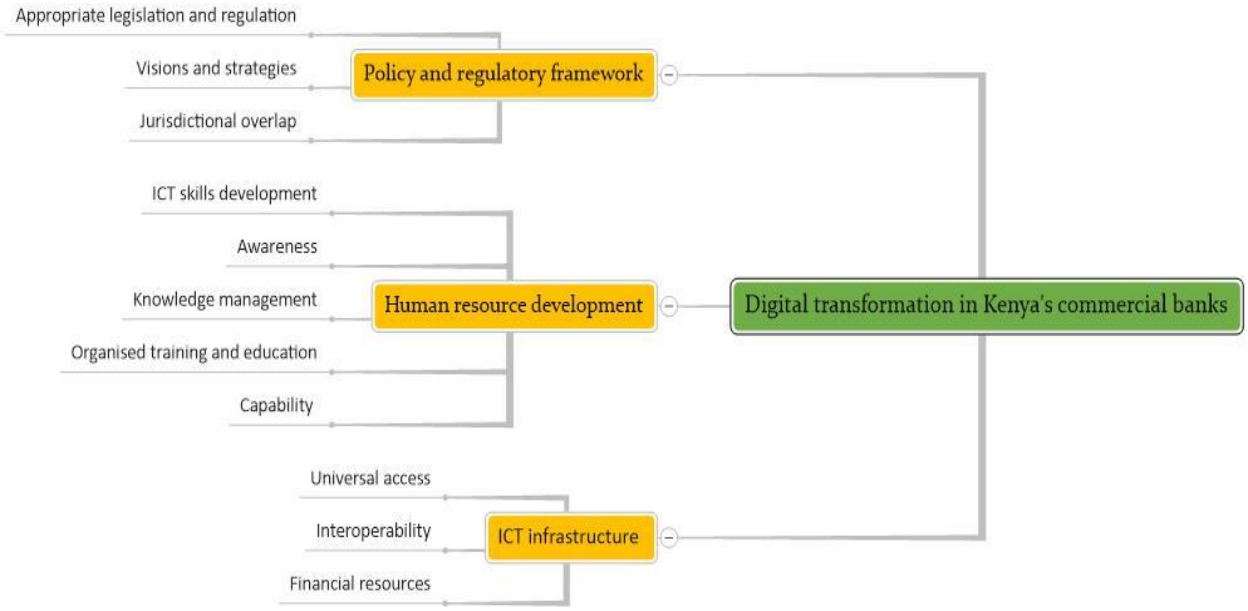
Hanna's framework includes a component of ICT industry and innovation which he holds core to the process of digital transformation (Hanna, 2010). It is important as it drives technological change as it cultivates a culture of ICT use and adoption which leads to

innovation and is specific to each context. This is vital in a country like Kenya, and particularly in a technology driven sector such as the banking sector. Also crucial is the element of pervasiveness of the technology in the day to day lives of the people in the particular context that is to be studied. This looks at the elements of e-business/society and e-government an indicates a need for ICTs to be incorporated in these areas, in order to achieve digital transformation on a larger scale, and in specific sectors (Hanna, 2016).

2.6 Theoretical and conceptual framework

For purposes of this study which focusses on the digital transformation in commercial banks, not all of the elements were considered. As stated and illuminated in chapter 1, the researcher opted to focus on three core areas which are – policy and legislation, human capital development and ICT Infrastructure. The researcher sought to apply the framework at an organizational level in this study, while also considering the impact of these elements from a broader perspective. The review of the existing literature around the core components revealed further sub-elements that can be explored with regard to this particular context. Based on this, the researcher was able to formulate a framework and populate it with the new sub-elements that would be vital for this particular study. The framework below is therefore an adaptation from the simplified e-transformation framework formulated by Hanna (2011) and focusses on the three selected core elements and their sub-elements.

Figure 4: E-transformation framework, applied to Kenya's commercial banks



2.7 Chapter summary

This chapter presented a literature review on the concepts of digital transformation, and particularly with respect to commercial banks. This study places heavy reliance on the e-transformation framework by Hanna (2010) and seeks to apply it to this particular context in a manner that will generate the most significant results. In adapting the framework for this particular study, emphasis was placed on specifically three core elements of the framework as the researcher sought to explore the extent to which the three contribute to, or hinder the process of digital transformation, and how the same can be improved upon.

Chapter 3: Methodological approach to understanding digital transformation in Kenya's commercial banks

The purpose of this chapter is to present a detailed account of the approach that was taken to address the aforementioned research problem. The chapter reiterates the research problem and purpose, and proceeds to identify key research questions that will need to be considered for this purpose. Following this, a map of the intended methodology will be introduced, as well as the rationale for choosing it. The design and structure of this methodology will be laid out, as well as the procedures for data collection and analysis.

3.1 Research problem statement

As stated above, the research problem is the absence of data and analysis on the process of e-transformation in commercial banks in Kenya. The researcher found that although there have been several studies on e-transformation in various countries (Hanna & Knight, 2011), there has not been an in-depth appreciation of the process and implementation of e-transformation in the banking sector in Kenya with particular focus on the identified elements of e-transformation. This is also unique to previous studies which have applied this e-transformation framework on a national level rather than on an organizational level which is what the researcher here hopes to do. The problem therefore is that, despite its transformative capabilities, the role played by ICT technology in the banking sector of Kenya has not been well researched from the e-transformation perspective, which adopts a multi-facetted approach to incorporation of ICT in the commercial banks in Kenya.

3.2 Research purpose statement

The purpose of this study is to explore the ICT revolution in the case of Kenyan commercial banks. The study sought to establish the strengths and challenges of this process, and in due course propose ways in which it can be made more efficient. This was done through looking at the selected core elements of e-transformation framework, namely (1) policy and institutional framework, (2) human resource development and (3) ICT infrastructure. This multifaceted approach enabled the researcher to develop a clear understanding of the commercial banks in Kenya and the environment within which they operate, with particular regard to the aforementioned components. A well-researched study on the

process of e-transformation within the banking sector affords a platform through which other sectors can be similarly studied and transformed using a similarly adapted framework.

3.3 The main research question

How can the process of e-transformation in the commercial banks in Kenya be made more effective to reap the benefits of digitalization?

3.3.1 Sub questions

1. How do the policy and regulatory frameworks impact on the process of e-transformation within these selected institutions?
2. In the process of e-transformation in the banking sector in Kenya, what is the role of human resources development and ICT infrastructure?
3. How are the above factors currently contributing to the successful digital transformation of the commercial banks in Kenya?
4. What challenges are faced in the process of e-transformation in the banking sector in Kenya?

3.4 Methodology

Research methodology refers to the researcher's general approach to carrying out a particular study. Leedy and Ormrod (2013) also found that the research methodology dictates the particular tools that the researcher would need to select in carrying out his research, and additionally, will aid in establishing the relevance of the study. Based on the problem and the research questions, this study adopted a qualitative rather than a quantitative approach. Qualitative research is concerned with looking at the characteristics or qualities of a phenomenon, rather than looking the numerical values (Leedy & Ormrod, 2013). This kind of research looks at the complexities behind issues and seeks to describe them with words and expressions, rather than with numbers or statistics.

On the contrary, quantitative research looks at amounts and quantities and seeks to measure variables in quantifiable terms, rather than using words (Leedy & Ormrod, 2013). Looking at the current phenomenon and the problem statement, the researcher found that

the quantitative approach was not ideal because the aim was to understand a complex situation by looking at its qualities and characteristics. Additionally, the proposed research questions required an in-depth study which would enable the researcher to be flexible in the data collection process. This allowed the researcher to understand the process of e-transformation and apply this to the current state of the commercial banks in Kenya by analyzing and establishing the strengths and weaknesses. Additionally, the qualitative approach was more beneficial because the intended audience for this research was comprised of regulators and policy makers in the explored environments. Therefore, the statistics and numerical analyses would be of less relevance to them as they strive understanding in this under-explored area.

3.5 Research Paradigm

"At the core of any research is a research paradigm which can broadly be defined as a set of interrelated assumptions about the social works which provides a philosophical and conceptual framework for the organized study of that world" (Filstead, 1979, p.34). The paradigm selected guides the researcher in philosophical assumptions about the research and in the selection of tools, instruments, participants, and methods used in the study (Denzin & Lincoln, 2000b). Having settled on the qualitative approach to this particular study, our selection of paradigms was narrowed down as quantitative studies call for a different kind of paradigm. For this study, the researcher therefore adopted the constructivist – interpretivist paradigm which will be explored in more detail below to lay the foundation for the research design that was adopted.

3.5.1 Constructivist-Interpretivist

Ponterotto (2005) has, in his paper on paradigms and philosophy of science, stated that the constructivist-interpretivist paradigm provides a core foundation and anchor for qualitative research methods. The constructivist–interpretivist paradigm holds that, at the center of any investigation, there must be interactive researcher-participant dialogue. This school of thought emphasizes that in such a scenario, the findings are jointly created through interaction (Ponterotto, 2005). One of the key essentials of this kind of research is therefore to understand the lived experience from the point of view of those who live it

every day (Schwandt, 1994, 2000). It is emphasized that in order for these points of view to be made relevant, they would need to be prompted so as to bring them to the fore. Based on the aforementioned introduction to research methodology, and the reasons behind selecting qualitative research, this paradigm strongly supports the intent of the researcher and would elicit the most relevant form of data. Below we will delve deeper into the selected qualitative approach, to further highlight elements of the research design that will best address the research problem in adherence to the research paradigm selected.

3.6 Case study approach

There are a number of qualitative research designs to choose from which include case study and ethnography, among others. The researcher here adopted the case study approach which is an in-depth study pertaining to a single situation that is unknown or poorly understood (Leedy & Ormrod, 2013). Schols and Tietje (2002) have also defined the case study approach as an empirical inquiry that examines a problem within its real-life context. The case study approach is similar to the idiographic approach to research where the researcher seeks to explain one case fully and understand the dynamics of that one particular instance (Babbie, 2014).

The current study employed an exploratory approach because this particular area is currently under researched and the researcher set out to develop a greater understanding of this area and the factors that impact on the digital transformation in commercial banks in Kenya. According to Yin (1994), a case study design should be considered when the focus of the study is to answer how and why questions.

3.6.1 Embedded Case study

Yin (1994) has gone further and differentiated between holistic and embedded designs under the case study approach. Holistic case study is characterized by a thoroughly qualitative approach that relies on descriptions, and seems to focus on only one unit. Under the embedded case study, the researcher had the option to obtain information in sub units with focus on significant aspects of the study. The researcher therefore incorporated more than one focus for the study and allowed for quantitative and qualitative analysis (Schols

& Titje, 2002). Based on the above, the study of the banking sector in this research looked at specific organizations in order to obtain and analyse the key points that pertain to this research.

3.7 Research methods

In a case study, the researcher will need to select appropriate research methods to collect the relevant data for the study (Leedy & Ormorod, 2013). In this instance, the researcher opted for in-depth/semi structured interviews and also employed document analysis as a research method. Document analysis is often used together with other research methods as a means of developing a better understanding through triangulation (Denzin, 1970). These two types of research methods will allow the researcher to elicit information that is converged and corroborated through the use of different data sources and methods (Bowen, 2009). Below we will explore these two research methods in greater depth.

3.7.1 Data collection: Interviews

According to Leedy and Ormrod (2013), interviews are at the core of case studies in terms of data collection. There are different types of interviews that can be carried out which range from open-ended unstructured questions, to focused, structured interviews (Leedy & Ormrod, 2013). Yin (2014) notes that interviews are an essential source of case-study evidence due to the fact that case studies tend to be based on human behaviors, or affairs/events.

For this study, the researcher opted to use the in-depth/semi-structured interviews. Britten (1995) defined semi-structured interviews as loose open ended questions that define the area to be explored, and from which the interviewer or interviewee may converge in order to understand an idea in more detail. Denzin and Lincoln (2005) advocate for semi-structured interviews because it generates conversation and allows for better understanding of a situation's complexity. Yin (2011) supported this and referred to it as a conversational mode which allows for two-way interactions and allows both parties to question each other, thus generating more insight. He goes on to emphasize that the type of questions in this scenario would need to be open-ended so as to avoid one-word

responses. Therefore, in this study, closed/structured questions would be very limiting as they would not be able to provide the relevant insight into the current research phenomenon. This would go against the aim of qualitative research which is to depict a complex situation through a participant's perspective (Yin, 1994).

The researcher was able to identify specific individuals to interview, and then proceeded to make contact and schedule meetings. During the interviews, the researcher begun by introducing herself and the study to each participant. This was then followed by a brief overall discussion of the banking sector from the perspective of the interviewee which helped the researcher to better hone in on the issues she aimed to explore. The researcher applied the semi-structured interview approach, and this ensured that the interview was more of a discussion as the two parties explored the various themes of the research. The researcher took steps to ensure that the interviewee was comfortable and was aware that he/she could withdraw from the interview at any stage. On average, the duration of the interviews ranged from 30 - 60 minutes and were all voice recorded with the consent of the participants, and for transcribing purposes.

3.7.1.1 Ethical considerations

In order to ensure adherence with the ethical requirements of the academic institution, the researcher submitted an application to the ethical committee prior to carrying out any interviews which was duly approved and is annexed hereto. During the data collection phase, the researcher ensured that each participant read the participation information sheet and signed the consent form, copies of which are included in this report as annexures. The participants were therefore aware of their right to terminate the interview at any time, and that they could also set the standards for confidentiality and anonymity.

3.7.2 Data collection: Document analysis

Document analysis has been defined as a systematic process whereby documents are reviewed or evaluated and interpreted in a way that will elicit meaning and aid the researcher gain understanding that can be developed into empirical knowledge (Corbin & Strauss, 2008). Unlike a literature review where the researcher seeks to analyse and

interpret previous studies, the process of document analysis does not rely on previously analysed and described data, but seeks to obtain analysis from raw data in the documents chosen for analysis. (Bowen, 2009). The procedure therefore in this particular instance will include finding, selecting and making sense of data that is contained in the documents. Such an analysis will result in excerpts and quotations that can then be organized into major themes, categories and case scenarios through content analysis (Labuschagne, 2003).

As stated earlier, the process of document analysis is often used together with other research methods which ultimately results in less biases, and increases credibility of the researcher's work. In this particular instance, the researcher sought to analyse policy and legislation that touch on digital transformation process in the banking sector. These will help the researcher understand the extent to which the governance of this sector has taken an active approach towards enabling the process of digital transformation within the sector. The document analysis will either seek to support or contest the information that is obtained from the interviews, and based on this the researcher will be able to formulate a clear understanding of the impacting factors, and especially the role of policy and legislation. Merriam (1988) holds that documents of all types are able to aid the researcher to develop understanding and deeper insights into any particular research problem.

The strength of document analysis lies in its capacity and role in formulating different approaches to the understanding of a particular phenomenon (Bowen, 2009). In some scenarios, document analysis was found to complement interviews, as it prompted the researcher to develop new interview questions. In this instance, document analysis served to provide supplementary data that acted as an instrument for tracking change and development, if any. Additionally, it authenticated findings from other sources of data as was anticipated by Bowen (2009).

Essential to the process of document analysis is objectivity, as well as an in-depth understanding of the intention of the words contained within the documents. Bowen (2009) holds that the researcher should seek to establish the meaning of document and the intended purpose, and apply it to the research problem. The researcher should, and did in

this instance, avoid lifting entire passages or excerpts without having explored its true intention in that particular context.

3.7.3 Sampling methodology

The sample used by the researcher was determined by the research questions that were formulated as a result of the existing problem statement. Therefore, in this instance, the sampling method used was non-probability, and specifically purposeful sampling, which seeks to select those individuals or objects that would generate the most information about the topic at hand (Leedy & Ormrod, 2013). Yin (2011) stated that participants holding different views should be selected so as to avoid bias and ensure that the study does not only focus on participants who support the researcher's opinion. Additionally, the researcher sought to select participants widely so as to gain broad perspective on the matters at hand.

The researcher chose three commercial banks as part of the sample, which were selected from the peer groups as classified by the CBK. The aim was to study at least one bank from each of the peer groups which are small, medium and large (CBK, Annual Supervision report, 2015). From each of these institutions, the researcher selected relevant individuals who would be best placed to inform the study, and proceeded to interview them. These would be individuals who are versed with the technology implantation process, and have a good understanding of the need for technology in this area. Additionally, the researcher opted to include the KBA as a respondent, so as to develop a more holistic understanding of the banking sector. Collectively, the researcher was able to collect data from three different institutions, the details of which are captured at the end of this report at Annexure B.

The researcher included at least two participants from each of the regulatory bodies, being the CA, and the CBK, and also interviewed someone from the sector policy maker, namely the Information Communication and Technology Authority of Kenya (ICTA).

The researcher analyzed three key documents as part of an insight into the policy and regulatory framework that is in place. Details of these are found in Annexure C at the end

of the research report. When selecting the documents, the researcher sought to look at one policy document, one piece of primary legislation, as well as one piece of subsidiary legislation. The process of narrowing it down to the above three included a quick overview of a number of documents that govern the two sectors, being banking sector and ICT sector. Through this, the researcher was able to identify the key documents that would elicit the most relevant data for this particular problem context.

The initial documents reviewed by the researcher were:

1. Prudential Guidelines
2. Banking Act (2015)
3. National Payment Systems Act (2011)
4. Draft - Kenya Information and Communications Act (Electronic-transactions regulations 2016)
5. ICT Sector Policy (2006)
6. Kenya Information and Communications Act (2013)
7. National Payment Systems Regulations (2014)

Through this review, and subsequent analysis of the key documents (found in Annexure C), the researcher was able to establish the extent to which the existing legal and regulatory framework contribute to or hinder the e-transformation process in commercial banks, and opted to follow the aforementioned process in analyzing the documents.

3.7.4 Thematic analysis

Creswell (2002) has described data analysis as the process by which information is made sense of by the researcher. In qualitative research it is characterized by an interpretation of the collected data and involves asking analytical questions about the data that will result in an appropriate response to the research questions. This is therefore based on the theoretical framework that has been developed by the researcher, and which prompted relevant conclusions and recommendations for the study.

Thematic analysis has been described as a form of pattern recognition within the data with stimulates themes which later constitute the categories for analysis (Fereday & Muie-Cochrane, 2006). Through a process of coding and construction of categories, the researcher is able to reveal themes that are pertinent to the research problem at hand (Bowen, 2009).

Strauss has defined coding as a process which "fractures the data, freeing the researcher from description and forcing interpretation to higher levels of abstraction" (Strauss, 1987:55). Coding can therefore be applied to both interview transcripts and document analysis, and serves to generate themes that will integrate the data that is collected via different methods. In this instance, the researcher applied thematic analysis in order to develop the overarching themes that will address the phenomenon at hand. For the interviews that were carried out, this was done manually by transcribing interviews, and picking out the key resounding themes which emerged. The current legislation and policy documents that pertain to the identified research problem were also analysed and subsequently coded in a manner that elicited better understanding and appreciation of the problem statement. These will be introduced in the next chapter, as a pre-requisite to an analysis of the collected data.

3.8 Chapter summary

In attempting to answer the research question, the researcher opted to adopt the case study approach, and specifically that of embedded case study which allowed the researcher to focus on sub units to holistically elicit information pertaining to the overall context and the research problem at hand. This was then followed by carefully selected research methods designed to collect data in the most efficient and reliable manner. Sampling methodology was then highlighted, followed by a summary of the analysis process that the researcher embarked upon. This chapter is important to this research as it lays out the research design from the inception of the problem statement, to the analysis of the data collected, and acts as a foundation for the data presentation and data analysis that are core to the study. These will lead to developing answers and recommendations for the study.

Chapter 4: Insights on digital transformation in commercial banks in Kenya

The findings presented in this chapter are drawn from the data collected as per the research approach that was set out in chapter 3. This chapter seeks to identify specific categories of data, which are important to understanding the three core components in the digitization of commercial banks in Kenya. The presentation therefore weaves together data from the interviews and document analysis and is categorized according to the key components and the key themes that emerged under each. The themes were elicited as per the data coding approach highlighted in chapter 3. The chapter therefore sets the foundation for analysis of the data that takes place in chapter 5.

4.1 Policy and institutional framework

4.1.1 Regulation lagging behind technological advancements

Most interviewees agreed that the regulation was definitely lagging behind technology (MPG2; BR2; MPG1; SPG1). MPG1 stated that this was the reason why technology in the sector was not as well advanced as it should be. The interviewee stated that more could be done by government in policy, or even in investments, as financing of technology in the sector was lacking. According to her, regulations need to be able to back up already existing initiatives in the sector. She added that the state of mobile and Internet banking is still very basic, but felt that this could be boosted if incorporated into policy and legislation. She further stated that when it comes to technologies, the regulators were only quick to approve what they knew, and this caused somewhat of a hindrance as it is not progressive. MPG1 and a number of other interviewees also stated that banks are motivated to be technologically forward due to their competitive advantage, and not as a result of policy (SPG1; SPG2). For this reason, technology in the sector is not advancing as quickly as it would, if the same was backed by legislation.

Another common view among the participants, particularly the banking institutions, was that although the regulator did not actively drive the technological advancements, it was not a hindrance to their own initiatives either. Some like LPG felt this was sufficient,

whereas SPG2 and MPG1 felt that the regulators ought to be able to promote the technological drive in the sector. ICTR2 was of the opinion that practice has shown that regulators and government are very slow in reacting to technology, and that red tape stops them from moving as fast as they could. "The leadership is always attempting to catch up with technology" he said during the interview. This is evident in the creation of the most recent laws in the sector that touch on electronic payment systems; The National Payment Systems Act (2011) and the National Payment Systems Regulations which were formulated in 2013. KICA (2013) is also constantly being amended to cater for technological advancements, and this is witnessed with the most recent amendments in 2013 which provided for the creation of infrastructure sharing regulations, as well as cybersecurity regulations and electronic transactions regulations. Although these provisions are certainly a step in the right direction as will be discussed later, the trend here is that the legal and regulatory framework is almost always falling behind technology. For example, M-pesa was introduced as early as 2007, and yet the laws that touch on payment systems only came into force four years later.

BR1 stated that the regulator was not responsible for promoting technological advancements in the banks, but rather that this was the responsibility of the industry association. BIA was of the same opinion and stated that it was not within the mandate of the CBK to promote technologies, but rather to create an enabling environment for technology to develop, and hence they would always be lagging as they respond to the market.

4.1.2 Regulation that enables digital transformation

BR2 intimated that the current approach taken by banks was a light touch approach where the rules were not hard and fast, but rather sought to look at the outcome rather than the method of implementation. This meant that banks could make decisions according to their institutions, and ensure compliance with the regulator based on the outcome, rather on the method. Therefore, from the perspective of the regulator, the approach to regulation

in the sector was already extremely flexible and was responsible for positive results in the sector.

Also commended was the Unified Licensing Framework (ULF) that is currently in force at the CA. This framework allows the authority to license operators based on the services that are provided, and not the device (ICTR2) and is based on the principle of technology neutrality. Applying this to practice, this means that the thin-sim technology that was recently introduced by Equity bank would not need to go through a rigorously new procedure, but would be licensed under the same category as a telecommunications provider (ICTR2). This is great for the market as it reduces barriers of entry.

4.1.3 Regulation that hinders digital transformation

With regard to regulation, BR2 started by highlighting some of the key challenges that he felt hindered the process. These included institutional weaknesses and poor leadership, resistance to change as well as political interests which veered away from the interests of technological advancements, and more towards political agendas.

BR2 went on to state that currently, the laws surrounding certain aspects of regulating the sector were inadequate, and highlighted issues such as virtual currency which is currently not provided for in the regulations, and is actually quite a controversial issue in the country at the moment due to the stringent regulatory requirements in the sector. Further, BR2 found that the sector suffered from lack of information sharing mechanisms, particularly with regard to cybercrime within the banks, an opinion that was also held by BIA and SPG1. He stated that this, coupled with the lack of a legal and regulatory framework for cybersecurity, only served to perpetuate the issue. BR2 felt that information sharing could be adequately addressed through regulatory approaches, and SPG2 also felt that the only way information sharing mechanisms in such an area could work, was if it was embedded in policy, so as to overcome issues of competition between the financial institutions.

MPG1 stated that she understands that the regulators are not responsible for leading the technological drive, but however hoped that they would put systems in place to quickly adopt or match up legislation to support technology uptake. She proposed periodic reviews

of legislation to ensure that it is relevant to the current times. In her opinion, the current legislations on the sector are archaic and do not provide adequately for the issues faced today. This arose in the document analysis where it was noted that the sector policy document had not been reviewed since 2006. The researcher found that there was a draft floated in 2014 but that it was never actualized. Therefore, based on this it is difficult to view the policy and regulation as advancing technological advancements when it is clearly far behind. MPG1 proceeded and gave the example of Europe where the regulators would prompt their banks to adopt certain technologies and issue deadlines on the same. This opinion was also held by ICTR2 who felt that the right policies and institutions, and a top-down approach would aid in mitigating some of the bigger issues that are currently faced in the process of digital transformation in the sector.

ICTR1 felt that the introduction of electronic commerce regulations in the ICT sector (also originating from KICA) would be very relevant to the issue of digital transformation in the banking sector. He saw these regulations as a huge opportunity for the economy through the ICT revolution and that this would inevitably impact on the banking sector. However, he added that these particular regulations are yet to be promulgated. ICTR1 however appreciated the efforts and saw the potential for the future.

4.1.4 Jurisdictional overlap

As stated earlier, the overlap between jurisdictions in such a study cannot be discounted due to the proliferation of mobile technology and the subsequent development of mobile financial service providers which was alluded to in chapter 1. Increasingly, services offered to the end consumer require regulation from two different bodies. In this instance, the mobile operators are licensed by the CA under the aforementioned ULF (ICTR2), while the financial element is provided for by the by the National Payment Systems Act (NPSA, 2011) and the National Payment Systems Regulations (NPSR, 2014). Although the Act and the regulations came into few years after M-Pesa did, they only served to harmonize the laws on the different payment services that exist (ICTR3). She indicated that prior to these laws and regulations, there was already a well-established collaborative approach by both

sectors which was working very well. ICTR2 and ICTPM felt the same way about this, and both were happy with the relationship between the sectors.

MPG1 started by stating that the effectiveness of the regulator was largely dependent on its independence, and therefore this should not be compromised even in the quest for co-jurisdiction. She proposed that regulators increase interaction with industry stakeholders, and seek to engrain industry approach to regulation making. She stated that the Kenya Banker's Association would be a good avenue for this, as it exists as a neutral ground between the banks and the regulators.

BR1 highlighted that, in a bid to work with the CA in terms of co-jurisdiction, the CBK and the CA both have a representative in the Kenya Bureau of Standards (KEBS) which work in the development of the ICT policies and standards in the sector. This is an approach that was embedded in the NICTP (2006) which requires that the two bodies participate in a technical committee that will govern IT systems in the country. In this way, the CA and the CBK are able to come together and promote the requirements of the ICT sector best practices. The interviewee indicated that he sits on two committees, namely the IT security technical committee which focuses on ICT as a whole as well as the electronics committee which are focused on developing standards for the ICT sector (BR1). BR1 felt that if standards were implemented from above, that this would be better adopted through the banks and positively impact on the consumer.

ICTR3 and ICTR2 both informed me that the willingness of the regulators to work together and ensure the technology succeeded, was motivated on a national level by the need for competition in the sector which would lead to innovation and better service delivery for the consumers. The same was thought about the thin-sim technology that was introduced recently. While the MNOs were against the new technology, the two regulators were able to present a united front to the parliamentary committee in support of the new technology and the good working relationship between the CA and the CBK led to the success of this technology (ICTR2). This opinion is supported by ICTPM who felt that co-jurisdiction has been very good, and attributed the huge success of mobile money to this. He indicated that

the CBK allowed the market to dictate the growth of mobile money, and that their reluctance to over-regulate in this regard was commendable. This opinion was also held by MNO1 who similarly felt that the success of mobile financial services was due to the light touch approach to regulation that was taken by the CBK.

4.1.5 Lack of a cyber security legal and regulatory framework

Cyber security emerged as an extremely large issue in the e-transformation of the Kenyan commercial banks. All participants mentioned this as an issue, and stated that it was a huge problem for banks at the moment. A number of participants also stated that this was further perpetuated by the lack of a proper legal and regulatory framework surrounding the issues of cybercrime and cybersecurity (ICTR1; SPG1; BIA; ICTPM). LPG stated that fraudsters are more innovative than the banks, and this is proving to be a hindrance in the process of digital transformation. KICA (2013) provides for cybersecurity defines it as "the collection of tools, policies, security concepts, security safeguards, guidelines, actions, training, best practices that can be used to protect the cyber environment" it also goes on to provide for the creation of a framework that will facilitate cybersecurity in the sector, although the researcher noted that nothing substantial is in place as yet.

MPG1 acknowledged that cyber security was a huge challenge for digital banking platforms, and that it needed to be addressed. She stated that as a bank, they endeavored to send out information on security to their customers in order to boost their confidence in the products. These included security notifications and warnings, as well as text verifications for online transactions. On top of this, the bank also sought to instill confidence in the customers by ensuring that the verification process makes it difficult for security breaches.

From the regulatory perspective, CBK seeks to ensure that the banks' systems are secure for the end consumer and does this by requiring these banks to submit audit reports indicating this (BR2). Banks have to prove to the CBK that they have created awareness on the security issues surrounding digital banking security. Both regulators worked together in the implementation of the Kenya Cyber Incidents Reporting Team (KE-CIRT) and seek to identify, and record incidents on cyber security and attempt to curtail the same. He

highlighted that the KE-CIRT team does receive a lot of reports and that the same need to be addressed accordingly through an appropriate legal framework that would address procedural matters in prosecuting such crimes. Currently, this is not provided for (BR2).

ICTR1 however informed me that the Ministry of ICT (MoICT) was in the process of formulating regulations for cybersecurity in the sector under KICA, and that the Office of Deputy for Public Prosecutors (ODPP) was in the process of formulating a Cyber-crime bill through a task force that is comprised of various relevant agencies such as CA, ODPP, CBK, ICTA as well as the Kenya Law Reform (KLR).

4.1.6 Competition

When discussing the banks' relationship with non-financial service providers, ICTR2 was of the opinion that working with the MNOs was actually an impediment to the digitization of the banking sector. He stated that the MNOs have very high requirements from the banks, and the banks are bound to them because of the need for infrastructure. SPG1 somewhat supported this sentiment when he said that he felt that the banks were in need of the mobile operators' infrastructure, but that the mobile operators could pick and choose who to work with, mostly to the detriment of the smaller banks. This therefore created barriers and limited their ability to compete with the larger banks.

However, SPG2 took a different approach to it as he indicated that mobile operators were able to indirectly increase the uptake of their banking services because they provided coverage to areas that would be ordinarily out of reach. He stated that the bank could use this to their advantage by adapting their sales strategy and promoting mobile banking in these areas. This would eliminate the need to partner with the operators, but would still allow them the benefits of the infrastructure.

Previously, competition in the telecommunications sector was regulated by the CA as was provided for in KICA. This was different from other sectors who all fell under the mandate of the Competition Authority of Kenya (CAK). ICTR1 informed me that the reason for this was that the telecommunications sector was slightly different from other sectors and so it required a different approach to competition. However, a recent law towards the end of

2015 changed the wording of the KICA to ensure that the sector was now subject to the provisions of the Competition Authority of Kenya.

4.2 Human resource development

4.2.1 Consumer education and awareness

The National ICT Policy of 2006 (NICTP, 2006) identified the lack of appropriate skills and education levels as a hindrance to National ICT development. It went on to state that government should be responsible for ensuring that ICT is incorporated in schools at every level, and that there is a framework in place for evaluating and certifying ICT training programmes (NICTP, 2006). However, interestingly there is no current law that touches specifically on the issue of skills shortages in the country, as even KICA (2013) does not make any provisions for addressing this particular issue. KICA does however indicate that the USF shall support widespread access and support capacity building in the country.

Most respondents agreed that consumer knowledge and capacity presents a problem with regard to the transition to Internet banking. On the other hand, consumers have developed high capacity to operate and use mobile banking platforms. MNO1 was of the opinion that consumer education was a large factor in the success of M-Pesa. He indicated that at the inception of this mobile money financial service, there was a massive consumer education drive to ensure that consumers were able to use the services effectively. He stated that although the technology was rolled out in 2007, it was only widely adopted in 2010 after years of focused consumer education which influenced its increasing popularity. SPG1 argued that, if mobile banking could be adopted, Internet banking could also evolve if barriers such as access and cost were addressed; and further, through the appropriate awareness strategies and much needed regulatory measures.

Respondents from many banks, including SPG1, agreed that as part of consumer education, it is necessary to ensure that the public is aware of the benefits of the technologies, so that they can use them for long-term benefit. MPG1 stated that they have in place satellite centres for training and informing customers about new offerings. The bank in question had set up centres in other cities outside of Nairobi to provide platforms for and introduce

customers to Internet banking, boosting the uptake of these services. ICTR2 and ICTR3 both stated that from their perspective, a number of banks and MNOs are actively encouraging consumers to leverage mobile and Internet technologies.

Speaking from government, ICTPM stated that one of the government initiatives is the Digital Literacy Programme (DLP), which seeks to cultivate a digital culture on a national level, by introducing digital learning in schools. This is in accordance with the NICTP (2006) which requires that ICT education is incorporated at all levels of schooling, so as to boost human resource capacity for all forms of digital activity.

From the banking perspective, BR2 indicated that the mandate of the regulator was focused on the banks, and not directly to the consumer. He stated that it was important that mandates should be kept clear in order to avoid duplication of efforts. This was the opinion also held by ICTR1 and BIA. BR1 indicated that where new technologies are rolled out, there are workshops and training sessions that seek to ensure capacity is developed. BR1 also states that the CBK trains the staff from commercial banks who are essentially their users. Once the commercial banks have undergone training, then they are able to enable dissemination of information to the end consumers. He indicated that training in the rural areas is lacking and that they need to be able to reach them in order to increase uptake.

However, ICTR1 was of the opinion that consumer education initiatives should extend to policy makers, law enforcement agencies and the judiciary in order to ensure that they are aware of the challenges and the risks in the sector, and better address them in creation and implementation of the law. Such initiatives would also assist in ensuring that the role of the regulator is not misconstrued. ICTR1 also spoke of the regulators role in bringing Internet access to libraries which brought access closer to the people and sought to create capacity and support in ICT technologies. He felt that once a hub had been created for this purpose, members of the public would be able to visit and build their skills from there. This is also enshrined in legislation (KICA) which states that “there is hereby established a fund to be known as the Universal Service Fund which shall be managed and administered by the Commission” the provision goes on to state that, “the object of the fund shall be to

support widespread access to, support capacity building and promote innovation in information and communication technology service"

4.2.2 Consumer protection

ICTR3 stated that the role of the regulator to the consumer was centered around consumer awareness and protection. She stated that the regulators mandate is to create an enabling environment, and other participants added that the role of the regulator was to provide information regarding availability of ICT services and to ensure consumers were aware of their rights and stayed protected (ICTR3; BIA; BR2). The role of the regulator was therefore to look at issues from a consumer protection perspective and to ensure that they are able to leverage these technologies from an informed point through initiatives like Kikao-Kikuu which is a roadshow that is organized by the regulator for purposes of ensuring that they are able to create an avenue to communicate directly with the end consumers of the ICT services, and address any issues or growing concerns. This consumer protection approach was reinforced through the document analysis of Kenya Information and Communications Act (KICA, 2013) which provided for the creation of the Consumer Protection Regulations (2010) and which are to be implemented in accordance with the Consumer Protection Act of 2012.

4.2.3 Organizational strategy and knowledge management in banks

MPG2 was of the opinion that human awareness and capacity constituted one of the more important aspects of their business. Weekly "knowledge in progress" sessions were held to ensure that the staff were up to date with the current technologies. The purpose of this was to ensure that all members of staff know about the technologies, and are able to share the information with the customers. MPG1 emphasized the importance of ensuring that the digital transformation starts from within, in order to boost uptake among consumers.

LPG informed me that her institution houses a learning academy that is responsible for ensuring that the members of staff are kept up to date with the new technologies that emerge. This indicates a very clear vision and strategy for human capital development, as it provides a platform for learning, and even allows for refresher courses in cases where

material is not fully grasped. The organization therefore also has clear knowledge management strategy with regard to ICT technologies, and for the purpose of ensuring that relevant material is available through the academy.

SPG1 informed me that the strategy at their institution had just been reviewed, and as a result, digital transformation was now placed at the forefront. Based on this, a competency test was carried out in the company to gauge the level of ICT capacity in the bank and aims to develop appropriate strategies to successfully boost human capacity. He indicated that currently the organizational policy had little to no focus on digitization, but that this was going to change soon with the newly implemented strategy. SPG1 added that it was a disadvantage that the organization was not as technologically forward as it should be.

MNO1 stated that in their organization, training on new technologies was offered to members of the tech team, and that this was as far as it went. He stated that there was no need to extend these trainings to other departments as it did not directly impact on them. MNO1 also stated that there was a clear strategy but again, this only directly impacted on the innovations team and only extended to all members of staff on a need-to basis.

Overall, the interviews revealed that incorporating digital transformation into the organization's strategy was key for success, but the different participating banks seemed to be at different levels of the strategy implementation process.

4.2.4 Technological culture as a barrier to adoption

A resounding theme that emanated from the interviews carried out was that of culture as a barrier to adoption of technologies in the sector. All the participants noted that the current financial culture in Kenya did not promote technological advancements as most Kenyans still took the brick and mortar approach to managing their money (MPG2; MPG1; LPG; ICTPM; ICTR1; ICTR2; BIA). Currently, it is the position that a large percentage of the people do not trust the technological advancements, and are therefore very slow to adopt and use them in their daily lives. SPG2 stated that currently, only 15% of the people in Kenya are able to fully leverage technologies for their own benefit. This represents the minority, and thus makes it difficult for digital transformation to take place. One of the technologies

that seems to have bypassed this culture barrier is mobile money, which has caused somewhat of a revolution in the industry. According to most of the respondents, this was caused largely by a need for financial services that existed in Kenya prior to M-Pesa which came about in 2007, as well as the rise in mobile penetration. However, MNO1 indicated that this was a result of a massive drive on their part to boost awareness/consumer education to even remote areas of the country, and that the cultural barrier still presented a problem for a while.

LPG found that uptake has been very good for young executives and new users who are looking for solutions that do not require them to be in the bank. However, the same does not fully apply to the older generation who are still in the brick and mortar frame of mind, and therefore are not quick to adopt. They ordinarily preferred to deal with hard cash rather than on devices. She felt that mobile banking was more popular because there is a limit on the amounts that can be transferred, and as such more people felt there was less at risk. This was an opinion that was also shared by ICTPM. Additionally, with regards to mobile banking, LPG found that the users were reluctant to use mobile banks due to the incurred costs.

4.3 ICT infrastructure

4.3.1 Infrastructure gap

MPG2, an expert in infrastructure at a medium sized bank stated that there are different facets of infrastructure. From one perspective, infrastructure can be viewed in terms of access to the consumer, which looks to ensure that there is adequate network coverage, while the second aspect of infrastructure is with regards to the financial infrastructure and systems in place.

MPG2 went on to state that the issues arise in ensuring the service reaches the end consumer. Loss of network coverage and any related interruption leads to loss of revenue, and such issues were dominant in the rural areas. ICTR1 added on to this and stated that Internet penetration in the country was still relatively low, although mobile Internet has

helped to improve this as currently the level of 2G network coverage is quite high. He highlighted the role of the USF in addressing this particular issue, and further noted that the ongoing ICT access gap study which intends to ensure that the fund is applied in the most effective manner. KICA provides for the establishment of a Universal Service Advisory Council whose mandate is to advise the sector regulator on the best approach to administering the fund.

BR2 agreed with other interviewees that the current infrastructure was not conducive for Internet banking because the Internet penetration levels were still quite low. He however stated that there was potential for it as some banks had already begun to roll out services on the online platform. This was echoed by MPG2 and SPG1 who confirmed that they did have that option of banking available to their clients. LPG informed me that her particular organization had one of the best online platforms for transactions, and as such is currently very competitive. Although the uptake is currently lower than mobile, she felt it had promise. BR2 went on to state that Internet banking had potential because it was not subject to the transactional limits that existed in mobile banking, and further that the same could be accessed cross-border. SPG2 however felt strongly that in banking, the Internet would never be able to grow to the same levels that mobile platforms did due to the fact that mobile banking had already filled that particular gap.

NICTP (2006) has also considered the role of infrastructure and has highlighted the manner in which the lack of an adequate infrastructure in the country could lead to the hampering of efficient and affordable ICT services. It calls for promotion of locally assembled infrastructure, as well as provisions for investments in order to address these concerns of infrastructure. However, as has been mentioned before, this policy is outdated and may not be addressing some of the issues faced today, ten years later. Therefore, the policy needs to be reviewed and amended by the Ministry of ICT (MoICT) so as to ensure that it is relevant and incorporate solutions to some of the current challenges in this area.

4.3.2 Poor supporting infrastructure networks

Supporting infrastructure networks arose as an issue in the infrastructure deployment for ICT in the banking sector. MPG2 stated that the road infrastructure in the country is poor, and therefore deployment needs a lot of construction which leads to cable cuts and affects service delivery. The interviewee also indicated that the poor road networks also increased the costs of deployment in certain areas.

Yet another issue that arose in the deployment of infrastructure was with the failure to implement a duct system during the construction of roads. ICTR2 stated that a huge opportunity was missed when ducts were not incorporated during major road constructions that recently took place. He indicated that these plastic ducts would have made it easier for fiber, and other utilities to be laid down at a later date. Despite discussions with various regulators and service providers such as the Energy Regulatory Commission (ERC) and the Kenya Power, ICTR2 informed me that the ducts were still not incorporated, and that was a lost opportunity because any future plans to lay down fibre would be extremely difficult and disruptive. ICTR2 was of the opinion that a top-down approach is most important particularly when considering infrastructure because it is extremely involving, but that currently the existing opportunities were not aligned to such an approach. KICA was amended in 2013 to provide for the formulation of infrastructure sharing regulations that ought to cure this particular problem. At the time of the interview, the regulations were at public consultation phase which is a requirement that is set out in the Constitution of Kenya. Once this phase was completed, the regulation would then be amended to incorporate the changes, before they are promulgated into law.

4.3.3 High costs of infrastructure and access

BIA indicated that when making considerations for planning and deploying technology, finances were very important as technology is costly. This was similar to MPG2 and LPG who also found that resources would be a key consideration in the roll out of any technologies. Virtually all interviewees felt that resources, or lack thereof, acted as a hindrance to e-transformation in the sector as they indicated that infrastructure was

expensive and that the players were reluctant to purchase new technologies every so often for this reason.

On the other hand, MPG2 indicated that reduced taxes on ICT technology would go a long way in promoting the shift to the ICT revolution in banking. He felt that everything boils down to cost, and that the government could address issues on excise duty – e.g. opting to reduce duty on the mobile and online banking platforms, and increase on traditional banking so as to promote technological advancements.

ICTR2 was of the opinion that a top-down approach would be the best for infrastructure because the cost is quite high as has been intimated by several other interviewees. He stated that this would be beneficial because while private companies sought to recoup their investments in 7-10 years, and government looks at 50 years which allows it to make the services available to the end consumer at a lower cost. ICTR2 felt that wiser governments were seeking to initiate the rollout of infrastructure, which was proving beneficial to the economy of the country as a whole. Examples of these included South Korea and Malaysia. In seeking to propose ways as to how such an approach could be operationalized, he suggested that government could appoint a manager or managing company that would be solely responsible for allocation of infrastructure in a manner that was not biased. He highlighted that currently in Kenya, there was a project that could have grossly changed the infrastructure landscape in the country, but that this was hindered by politics and other such issues. This was the National Optic Fiber Backbone (NOFBI) which had started out well, but is currently only being utilized at 10% which according to ICTR2 is a huge disappointment. However, across the board, the respondents felt that the USF which is provided for both in policy and in legislation (NICTP, 2006; KICA, 2013), held huge potential for increasing access and connectivity throughout the country. ICTR3 was of the opinion that for it to work, a third party would need to be appointed and outsourced to act as a neutral party. This would see the universal service access fund be more successful as they would outsource the operationalization of the fund.

MPG2 stated that currently in Kenya, the major cities have good connectivity but the larger issue exists with regard to cost. So when putting out services in the cities, the cost is almost ten times less than it would be if it was in a more remote area – e.g. ATMs and other services. This can be discouraging to investors.

4.3.4 Customer value proposition

MPG1 felt that ultimately, the spread of technology would need to consider the relevance to the end-consumers, as people need to be able to establish the value of this technology, before they can adopt. Therefore, on the part of the banks, it is imperative that they understand the market before they roll out technologies in order to ensure that they are relevant to their users. MPG1 stated the need and importance of ensuring that training is put in place for both new and old customers, and particularly according to the offerings that continue to be rolled out.

LPG also stated that a key factor that would boost deployment would be increased value addition for the consumer, and she emphasized that such a proposal would need to address a problem in the market before it was rolled out to ensure that there was indeed uptake. This was also echoed by MPG2 who stated that technologies need to be able to make business sense before they can be rolled out. BR2 indicated that banks which sought to adopt technologies were reaping huge benefits, but also went on to say that the mere adoption of technology did not automatically lead to good performances within the organizations. He attributed this to other factors such as leadership and the quality of customer services, and stated that these were just as important in ensuring that the technology results in positive outcomes for the organization.

4.4 ICT industry and innovation

4.4.1 Locally developed applications

In discussing systems that are used in their bank, MPG1 stated that the technologies would be selected based on the current trends, in order to ensure that their products are meeting developed applications were most relevant as they were able to address most issues that exist on the ground. However, despite this, MPG1 also felt that the capability locally was

not as developed as it was in other countries such as India. For this reason, the banks were reluctant to trust their local developers in providing the systems for their banks. MPG2 held the same opinion and went on to state that there was minimal exposure locally which further led to the lack of locally developed applications. This was the same opinion held by SPG1 and SPG2. SPG2 expanded on this in a slightly different perspective, stating that the lack of professionalism amongst our local developers makes it difficult for the financial institutions to rely on them.

However, interestingly, ICTR2 held a different perspective and stated that the issue with the market was that there were too many people creating applications and digital platforms, but that the same was not being taken up by the general public. According to him, the market was actually flooded with too much technological know-how, but not enough users.

ICTR3 somewhat agreed with her counterpart, ICTR2, when she stated that there wasn't a shortage of locally developed applications, but that the key problem existed in the uptake of these applications. She stated "A smart phone is only as smart as its user" and therefore attributed the lack of locally created applications to a lack of uptake within the market. ICTR3 also highlighted connectivity as an issue. She acknowledged the existence of information hubs in the country, but stated that connectivity was currently serving as a huge hindrance to this aspect of digital transformation. She emphasized that the know-how already existed, and that if this was complemented by good infrastructure and connectivity, this problem could be swiftly addressed.

MPG1 stated that they opted to partner with a local ICT hub in order to explore the aspects of technology development locally. This is a positive step towards promoting innovation in the country. From an overall banking perspective, BIA stated that the banking regulator is bound by the procurement laws when it comes to the systems that they use. He highlighted that policies do support local developers, but that the local capacity is currently lacking and could do better. He stated that foreign investors have often come in to partner with

local developers in order to better understand the market. During her interview, MPG1 also indicated that the proliferation of technology in other countries made it cheaper for them to acquire externally rather than locally. She added that the problem with this, was that once an outside developer has provided the core systems of a bank, the bank was inevitably bound to them for all future services and maintenance. The developers design their systems in this exact manner for this purpose.

From a multinational perspective, LPG indicated that that sourcing of applications and systems was done from different markets depending on what is required. Because it is an international company, they attempt to align to the other branches around the world. It is therefore not locally sourced. BR2 also noted that multinational banks had less faith in the local markets, and therefore sought to rely on international rather than locally developed software applications.

4.4.2 Working with non-financial service providers

As earlier stated, BR2 indicated that mobile money truly revolutionized the banking sector and admitted that mobile financial service providers were initially met with huge resistance from the banks, an opinion that was shared by MNO1. However, he stated that this new introduction to the market took the banks out of their comfort zone, and forced them to adopt a more technological approach to their service delivery.

Stemming from the above, it seemed there was an appreciation for the need to work closely with MNOs to widen their scope, and this is an opinion that was held by all of the participants. BR2 and ICTR2 both held the opinion that these technologies assisted the banks in reducing the number of branch visits, which were more of a burden to them than a benefit. LPG stated that mobile banking is currently giving the banks a run for their money and noted that currently, the bank does not partner with the MNOs in delivery of services. She felt that this would be a good approach for the bank as it would increase the reach to a wider group of people. The NPSR (2014) has included a provision that requires all payment services providers to use systems that are capable of being interoperable with

other payment systems in that country and internationally. This seeks to ensure that the parties are able to work together to increase reach to the end consumer

The MNOs have the infrastructure in place, and therefore serve to greatly influence the uptake of services that are rolled out by the bank. Furthermore, some banks have adopted the Mobile Virtual Network Operator technology (MVNO) which also relies on mobile infrastructure to operate. MPG2 also highlighted that the banks are now doing a lot of work with the MNOs, and that their bank specifically works largely with Safaricom and Airtel in terms of payment services. MPG2 also indicated that in terms of infrastructure, Orange had the widest coverage as it previously belonged to the incumbent, Telkom Kenya.

4.5 Chapter summary

This chapter provides a foundation for the analysis of the data that is to take place in the next chapter. The researcher grouped the data from the interviews and from the document analysis and classed them into various themes/topics as they arose during the data collection process. What arose in the data is that the laws do make provisions that will boost digital transformation, but that the same is not always adequately implemented in practice. Furthermore, it would appear that more often than not there is a slight disconnect between what is happening on the ground, and what is being provided for in policy, legislation and in regulation. As is highlighted, there appears to be a lag between technological developments, and the laws that ought to govern this sector. In the quest for a top down approach towards e-transformation, policy and legislation are critical for success, and as such, this is an area we will need to further consider in the analysis stage, and while developing recommendations.

Another emergence from the process of data presentation as well as the literature review revealed that elements may vary where the original framework is applied to the context of commercial banks. The researcher discovered sub-components that are specific to commercial contexts and which will complement some of the obvious components that are already provided for in literature and in the original framework by Hanna (2011) which

largely focusses on the digital transformation on a national level. This will serve to enrich the data and formulate a framework that will be specific to commercial contexts as well as considering the larger picture to understand how operations on the national level impact on business processes as well. This chapter therefore provides a sound foundation through which further analysis can be done effectively.

Chapter 5: Scrutinizing the state of digital transformation in Kenya's commercial banks

Creswell (2002) has described data analysis as the process by which information is made sense of by the researcher. This chapter therefore serves to present a detailed analysis of the data that was presented in chapter 4. As was detailed earlier, Chapter 4 serves as a foundation to this analysis process and presents the collected data in groups/codes of information that are particularly relevant for this study. Overall, the analysis of the state of digital transformation in Kenya's commercial banks looks at the results from the content analysis of the selected documents, as well as the perspectives that were elicited from the semi-structured interviews. These perspectives complement the document analysis findings in a manner that will prompt a better understanding of the research problem as a whole. The analysis of the data is carried out in accordance with the theoretical and conceptual framework that was formulated in chapter 2, and the aim of this process will be to answer the research questions set out in chapter 3. The main research question for this research report was identified as "How can the process of e-transformation in the commercial banks in Kenya be made more effective to reap the benefits of digitalization?"

The sub questions that stemmed from the aforementioned research question were as follows:

1. How do the policy and regulatory frameworks impact on the process of e-transformation within these selected institutions?
2. In the process of e-transformation in the banking sector in Kenya, what is the role of human resources development and ICT infrastructure?
3. How are the above factors currently contributing to the successful digital transformation of the commercial banks in Kenya?
4. What challenges are faced in the process of e-transformation in the banking sector in Kenya?

Chapter 4 has been able to assist the researcher in answering sub-questions 1 and 2 which are largely exploratory. To develop a sound analysis of the data that was presented, the

researcher will seek to answer questions 3 and 4 which are more analytical in nature. Applying the theoretical framework to the data presented in chapter 4, the researcher sought to answer the sub questions that had been developed in chapter 3. The analysis focused on the implications of the aforementioned elements in the digitization of commercial banks, and further explored the contributing and hindering aspects of each towards the overall process.

5.1 Implications of policy and institutional framework

Hanna (2011) identified policy and institutional frameworks as being key to the success of the process of digital transformation. In his framework highlighted in chapter 2, the policy and institutional framework aspect of digital transformation exists at the core of the process. This constitutes the environment within which the process is to take place, and as such can either be enabling or obstructing to its progression. This is coupled with the vision and leadership which are just as important in ensuring that the trust in the digital economy is fostered (Hanna, 2016). Therefore, below we will explore the emerging issues that arose from the data in this particular area.

5.1.1 Contributing factors to digital transformation

5.1.1.1 Light touch regulation

Almost all of the participants indicated that regulation in the sector was currently lagging behind technological advancements. On the surface, this can appear to be a hindrance to the process of digital transformation, as was held by some participants (MPG1) however, looking closely, it is apparent that the sector can only thrive in an environment that is not overly regulated, and hence it is important that regulation lags behind technology (BIA). This is further emphasized in the adoption of mobile financial services, whose success has been attributed to the slowness of the regulators to react, and the willingness to let the market discuss the way forward as they allow for a technology neutral environment that boosts innovation. This could not be possible if regulation was leading technology. The arguments for regulation leading technology are however sound, as the argument is based on ensuring that the environment is able to promote the growth of such technologies, however, this only applies to certain areas such as competition. However, it is important

that although regulation may lag behind technology, the relevant institutions should able to keep a watchful eye on the progress of the sector to ensure that the light touch regulatory approach does not work against them.

A clear example of the light touch regulatory approach was seen during the introduction of the mobile financial services, when the regulators opted to let the market dictate the progress of the technology. From 2007, the two regulators allowed this to happen, and only introduced legislation and regulations for these technologies in 2011 (NPSA) and the regulations in 2014 (NPSR). Although this can be viewed as disadvantageous, it is important to note that these regulations are not only specific to mobile systems, but all electronic systems that may be introduced later. By allowing the market to lead the technological advancements, they were able to formulate a more efficient legal and regulatory framework in this particular regard that would cater to a wider range of services. Similar data was discovered in the review of the National ICT Policy (2006). The researcher in this instance found that although futuristic, the policy was unable to keep up with some of the current technological advancements. Arguably however, this provided for the light touch approach and a technologically neutral environment.

5.1.1.2 Approaches to the existing jurisdictional overlap

From the data that was collected, majority of the participants felt that the current approaches to co-jurisdiction in process of digital transformation were satisfactory and led to innovation in the sector. An example of this was seen earlier as well as the new thin-sim technology that was introduced recently by one of the larger commercial banks, CBA. The participants indicated that this was important for the sector as it ensure that there was competition, which would lead to innovation in the sector. One of the participants, ICTR2 informed me that for this particular area, the two bodies, CBK and CA, had on several occasions presented a united front for the benefit of both sectors.

NPSR (2014) includes provisions that make direct reference to the KICA which further demonstrates the level of co-jurisdiction that exists within the sector as it makes cognizance of the role of ICT in the provision of these payment services. This is also

beneficial for the consumers and potential licensees who are well aware of the requirements to operate electronic systems for payment services, unlike before when there was uncertainty between the regulators.

Additionally, the data revealed that the co-jurisdictional approach leads to the forging of relationships between other agencies that are impacted by issues such as cybersecurity. The current taskforce is comprised of a number of agencies which include but are not limited to CA and CBK who seek to formulate adequate legislation that will govern issues of cybersecurity in all relevant areas of application, not just the banking sector.

Hawkins and Prencipe (2000) found that cross sectoral collaboration may be difficult as a result of the difference in mandates between regulatory bodies. In their opinion, this would create hindrances as the bodies would be conflicted in their approach. However, the data reveals that this is not necessarily a hindrance once bodies are able to hone in on a particular issue and address it together as it impacts on them. As was evident, the task forces and the MOUs are very specific in the issues they seek to address and therefore this would cure the problem of different mandates as they exist between the different institutions. By ensuring that specific members of various organizations are brought together towards a recognized goal, this approach also addresses some of the issues that arise in implementing appropriate policy and institutional frameworks, such as a scarcity of leaders and weak involvement of core ministries that were identified by Hanna (2011)

5.1.2 Hindrances to digital transformation

5.1.2.1 Lack of cybersecurity legal and regulatory framework

Currently in Kenya, there is no adequate legal and regulatory framework for cybersecurity. KICA (2013) lays out a provision that a cybersecurity framework is to be established through regulation, however this is yet to be completed. Throughout existing legislation, there exist provisions that touch on cybersecurity, but there is much need for a stand-alone piece of legislation that touches specifically on cybersecurity and cybercrime. A holistic approach is imperative for this legislation which will also provide for the adequate procedure and handling matters. Currently, lack of such a framework presents a significant barrier to

digital transformation as banks may find it difficult to assure their customers of security and privacy when using their digital products. This coupled with the evidence of a culture of mistrust that is highlighted in the data at 4.2.4, only serves to perpetuate that culture and cause the consumer to be apprehensive of going digital, which inevitably costs them a host of benefits.

In exploring the specified elements of digital transformation, and how they are currently being applied to commercial banks in Kenya, the researcher had not fully addressed her mind to the impact of cyber security on the process of digital transformation. However, in the course of data collection, it became apparent that this was a significant factor as it directly impacted on the uptake of technologies in the sector. This is an issue that cuts across all sectors, but which is without a doubt, more pronounced, and can be deemed more threatening in the financial services sector where there may be more to lose.

5.1.2.2 Competition

In the course of the data collection, an interesting consideration was raised when SPG1, a small bank, revealed that MNOs were only keen to partner with the larger banks, and they had no incentive to partner with the smaller banks. This was supported by ICTR2 who also felt that in some way, the MNOs created some kind of barrier to this partnership as they offered unilateral contracts to the banks who were in need of their infrastructure. This creates a clear disadvantage for the smaller banks as was indicated by SPG1 and SPG2. MNO1 however stated that the MNOs were now partnering with banks to provide banking services such as M-Shwari, however so far this has only occurred with one of the large peer group banks. This constitutes a large barrier to the process of digital transformation in the form of barriers to entry, which ultimately affects the end-consumer. Although the researcher had not considered this aspect of regulation at the inception of the study, its relevance is clear now.

5.2 Implications of human resource development

All of the participants agreed that the human resource development aspect of digital transformation was extremely crucial. As was stated in chapter 2, human capacity is crucial

in developing the ability to operate current technologies, and ultimately adapt them in a manner that will lead to economic growth, through creation of competitive edge (Hanna, 2011). To the researchers understanding, this largely revolved around ensuring there was a top down approach to building ICT skills capacity in the country so as to ensure that it is possible to leverage technology for maximum results. However, in the course of literature review and data collection, other aspects of human resource development became apparent to the researcher, and it was no longer confined to simply capacity building awareness initiatives. As indicated above, there is a distinction to be drawn between initiatives on a national level and on an organizational level which became most evident in this particular area that touched on human resource development and awareness. On an organizational level, it is clear that there needs to be mechanisms in place that will ensure the process of digital transformation is successful and impactful. We will explore both national and organizational elements below and specifically how they may enable or hinder digital transformation in commercial banks in Kenya.

5.2.1 Contributing factors to digital transformation

5.2.1.1 Consumer education

A key issue that arose from the data was with regard to consumer education. A number of participants felt that the technologies were present, but that the end consumers were not always aware or capable of leveraging them. MNO1 emphasized this point when he pegged the success of M-Pesa on consumer education drive that was carried out by their organisation. He indicated that the drive went to the most rural of areas and is what led to the proliferation of the technology which took off in 2010. This grossly emphasizes the need for consumer education as a tool for digital transformation in the sector.

However, because the research was carried out in an urban area with high levels of literacy, the researcher felt that the interviewee's perspectives may have been slightly skewed. This will be explored later, but does not and should not take away from the importance of consumer education as a contributing factor to the digital transformation of the Kenyan commercial banks. In a research carried out in Botswana, it was found that a shortage of

skills constituted a large barrier towards implementing ICTs in certain firms (Maitlamo, 2004). The participants agreed that consumer education initiatives ought to be market led, but it was the view of others (ICTR2; MPG2) that government needed to increase access points in order to enable the integration of technologies into the day to day lives of the people.

5.2.1.2 Organizational strategy and knowledge management in banks

Across, the board, it was agreed that this is one of the key contributing factors to the process of digital transformation, particularly within an organisation. From the data, it was clear that incorporating digital adoption and diffusion was important to the banks on an overall basis, and that banks such as SPG were now seeing the need to do the same in order to adequately compete in the market. During his interview, BR2 noted that although some banks have adopted technologies into their service delivery mechanisms, this is not an automatic recipe for success. He stated that more important than the introduction of technology was the adequate leadership and incorporation into the daily operations of the bank, through appropriate strategies.

It also arose from the data that knowledge management was a key contributor to the success of the digitization process, a concept that is supported in already reviewed literature (Jimenez-Jimenez & Sans Vallez, 2001). Participants such as MPG2 and LPG indicated that their organisations were keen to engrain it into their employees' who are then able to boost uptake amongst the consumers. Now considering the data collected, it is clear that a lack of such a clear strategy for the codification of such information, acts to the detriment of the process as a whole, as was seen in the case of SPG (SPG1; SPG2).

5.2.2 Hindrances to digital transformation

5.2.2.1 Awareness

Beyond ensuring that the members of the public are well equipped to leverage these technologies in the banking industry, it is a common theme that the awareness is just as fundamental if not more. The awareness of the convenience and the opportunities that come from technology need to be communicated to the consumers so that they can take

advantage of them. For the banks, it was important to ensure that the services they rolled out were maximized upon by their consumers, and so marketing and crating this kind of awareness was imperative for them. To some extent, one can argue that awareness is actually more vital to the process of digital transformation, and can use the example of mobile financial services as an illustration. This is because, part of the revolution that took place was as a result of word of mouth, and awareness, coupled with the active drive to educate the masses of people. People readily adopted the technology once they understood that it could satisfy a need that they were experiencing. Therefore, the success of digital transformation in the banking sector can be hinged upon the ability to market the benefits and ease of these kinds of technologies. This should extend beyond payment services, and should apply to all services that are available through a bank. These would range from loans, investments and insurance, just to name a few.

5.2.2.2 Culture

Culture appeared to form a large and very important component of human capacity development. A resounding theme that came from this research was that there is a dire need for sensitization in the sector, aimed at the end consumers with regard to technology, as well as addressing the issue of financial services. Currently, it is the position that a large percentage of the people do not trust the technological advancements, and are therefore very slow to adopt and use them in their daily lives. As mentioned in chapter one, Kenya is now ranked highest in the region for financial inclusion, however this was not always the case. The older generation have long operated without financial structure or systems. Therefore, both financial and technological cultures are lacking which can and ought to be adequately addressed through consumer education which is better explained in 5.2.1.1 under the contributing factors to digital transformation. One of the technologies that was able to transcend the cultural barriers is mobile money financial services, which has caused somewhat of a revolution in the industry. According to most of the respondents, this was driven by the developmental gap that existed in Kenya prior to M-Pesa which came about in 2007. In summary, there was a need and once the service providers had filled it, they

sought to make this known to the consumers. This is crucial to the process of achieving a mind shift among the consumers, and increasing the uptake of such services.

5.3 ICT Infrastructure

Hanna (2010) highlighted the importance of affordable and competitive infrastructure which includes affordable access to the Internet, as well as other modes of connectivity. In the banking sector, it is important that the end consumer has access to these modes of connectivity in order to leverage the available products and services. Therefore, the factors surrounding this need to be considered. Additionally, banks also have their own specific infrastructure and this also arose in the data that was collected.

5.3.1 Contributing factors to digital transformation

5.3.1.1 Interoperability

Interoperability has been considered by policy makers and the regulators and is currently enshrined in subsidiary legislation (NPSR, 2014), which demonstrates its importance in the sectors. The NPSR (2014) defined interoperability as "a commercial interconnectivity between providers of different payment systems or payment instruments including the capability of electronic systems to exchange messages…" Looking back at the benefits of interoperability highlighted in chapter two which include product efficiency, greater customer value as well as dynamic efficiency (Porteous, 2006), it is not difficult to conceive that this exists as a contributing factor to digital transformation. The inclusion of this requirement in the sector regulations emphasizes its importance, and indicates a positive move towards e-transformation in the sector through a top-down approach as envisioned by both the researcher, and Hanna (2016).

5.3.2 Hindrances to digital transformation

5.3.2.1 Financial resources

From chapter 4, it is apparent that cost of infrastructure was a large factor that impacted on the successful digital transformation of banks as a whole. The issue arose when speaking to respondents across the sector, from the regulators, to the banks, as well the policy makers. All participants acknowledged that the cost aspect served as a hindrance

to digital transformation as it left little room for trial and error. When speaking about the cost of infrastructure, ICTR2 stated that the government would be best placed to fund the roll out of these technologies in order to ensure that the benefits of socio-economic development through ICTs are experienced, and particularly, for this context of Kenyan commercial banks. However, this is not the case as currently, the avenues that would prove fruitful in achieving such issues appear to be mismanaged or unexplored. NOFBI and the USF are examples of this, and although they are designed to address these issues, they are currently unable to achieve their full potential in achieving and enabling digital transformation.

5.3.2.2 Universal access

A common issue that arose from all interviewees was the actual level of coverage in the country. The interviewees all exhibited a lot of hope on the USF which is enshrined in legislation, and has regulations to facilitate its implementation in an appropriate manner. However, at the time of the research, the fund was yet to be disbursed for purposes of increasing access to the under-served areas in the country as a whole. A lack of the successful implementation of the service fund despite the existence of it in legislation raises concerns, as it goes against the envisioned success of digital transformation as centered around policy and institutional frameworks. Even with the existing provisions in place, access is still an area for concern and a hindrance to the process of digital transformation in the banking sector and on a larger context.

USF is two-fold as it has the potential to address issues of cost and accessibility in one sweeping blow. This is an area that needs to be carefully and seriously looked at if the digital transformation of the sector is to achieve its full potential.

5.3.2.3 Supporting infrastructure networks

During the analysis of the data, it became apparent that the ICT infrastructure was impacted upon by the networks of other sectors such as roads, and electricity. A number of participants were able to find that the failure of ICT access to certain areas, or the lack of proliferation of ICT infrastructure was as a result of poor supporting networks. Although

the issues of ensuring that ICT infrastructure was provided for in the country's infrastructure development, the same was bypassed and as such now exists as a hindrance to the entire process.

Additionally, participants such as MPG1 have indicated that the lack of good road networks has led to increased costs of rolling out relevant infrastructure in particular areas which acts as a deterrent as it decreases commercial viability. For private entities such as the banks in question, revenue generation is the key concern and therefore they would have no incentive to extend their services to underserved areas, as it could more expensive.

5.3.3 ICT industry and innovation

Although the researcher did not set out to explore this particular element of digital transformation, there were results from the data that fell in this particular component. This not only highlights the importance of ICT industry in the digital transformation of commercial banks in Kenya, but also stresses the holistic approach that is required for this process to succeed.

5.3.3.1 Demand for ICT technologies

A large number of participants attributed the success of technology proliferation in the country to the high levels of adaptability among the users. However, this opinion did not apply to all members of society, as some felt that there was still a cultural barrier to the widespread adoption of technologies. However, for regular users of ICT, the demand levels were quite high, and this kept the sector innovative.

5.3.3.2 Local innovation

Local innovators are not readily relied upon within the industry due to various reasons which range from mistrust, lack of professionalism (SPG2), and a lack of expertise in the development of these applications. Based on this, it was common amongst the banks that most of their core systems were developed outside of the country, and brought in. as a result of this, and the way the core banking systems are designed, all maintenance and follow up engagements regarding the systems, were done by the company that provides the

core banking system. This essentially bound the banks to their providers for long periods of time, and it was difficult to bring in any local systems providers during that time.

The banking sector is extremely sensitive and as such, such an attitude is understandable as the level of capacity and professionalism in Kenya is not up to the necessary level. It is important that the local innovators seek to develop their skills on a professional level in order to appeal to the banks. However, with the development of locally suited applications, the general theme was that this was currently in plenty but that perhaps the ability to leverage these in an advantageous manner was quite low.

5.4 Chapter Summary

Expanded and applied theoretical and conceptual framework

The analysis of the data that is presented in this chapter sought to interpret the data, and to answer the sub-questions that are set out in chapter 3. To better make sense of the data as collected, the researcher grouped the data further from core elements of the e-transformation, to contributing and hindering factors of digital transformation within each element. During the application of the framework to the data, the researcher was able to develop new sub-elements of the framework which are included in the framework below. It became apparent during the study, that although the researcher only set out to explore a selected number of elements, that there were others that could not be ignored particularly for the Kenyan commercial banks in question. Below is an illustrated version of the framework that was elicited from the analysis of the data.

It is important to note that this framework does not seek to alter Hanna's framework as presented in chapter 2, but merely seeks to expand the adapted framework that was developed by the researcher for this particular study. Essentially, the framework below is built on the framework by Hanna, and serves to provide more detailed version, specific to this context that pertains to commercial banks in Kenya as undertaken by the researcher.

Figure 5: E-transformation framework applied to Kenya's commercial banks (2016)



Chapter 6: The state of digital transformation in Kenya's commercial banks, and the way forward

Several insights have emerged from the data that was collected in chapter 4 and the subsequent analysis. The study was able to elicit components of digital transformation that are specific to Kenya's commercial banks, and prompt a better understanding of the under-explored area. The study broadly begun by applying an already existing framework to the problem at hand in a bid to align it and achieve digital transformation in the commercial banks. However, Hanna (2010) only provides a simplified framework, which he hopes to be adapted to each context differently. For this particular study, the research adopted an approach which culminated in a more detailed framework specific for the three components that were chosen, and for the context at hand. The same will be explained in this chapter.

In answering the sub-questions that were raised, the researcher managed to group the data according to contributing and hindering factors for digital transformation. Looking back to the main research question, the researcher now seeks to develop an appropriate response, and further make recommendation for improvement as well as for further research.

The main research question is stated as follows:

- How can the process of e-transformation in the commercial banks in Kenya be made more effective to reap the benefits of digitalization?

Below, the researcher will use the analysis presented in chapter 5 to answer this key question vis-à-vis the new and applied theoretical framework.

6.1 Outcomes from the expanded and applied theoretical framework

6.1.1 Policy and Institutional framework

Based on the analysis that was carried out in chapter 5, it became evident that a sound policy and institutional framework is key to the success of digital transformation in any

sector. The policy and regulatory frameworks need to be adequately established and, what's more, there needs to be effective implementation of the same through the creation of sound institutions. Currently, it has emerged that the regulations are in place and where they are not, the regulators are watchful of the market to ensure that they are able to regulate when necessary. Essentially, the light touch regulatory approach to the sector seems to be working effectively so far, with the regulators playing the role of "watch dog". Additionally, this particular context calls for a collaborative approach towards regulation by both the sectors involved, and currently the data reveals that this is being addressed in an adequate manner. On several occasions, the success of pervasiveness of technology in the sector has been attributed to the manner in which both sectors are able to collaborate.

However, going forward, it became evident that the lack of a cyber security legal framework was acting as a hindrance to the process of digital transformation due to the inability to offer customer assurance, and furthermore, an inability to prosecute in the case that one does fall victim to such crimes. This acts as a significant deterrence and should be a huge source of concern for both parties, and on a national level. Additionally, it was proposed in the data that an information sharing system for issues of cyber security in the sector would be beneficial as the banks would be able to openly discuss and address the current major concerns. If enshrined in regulation, this could be well monitored to the benefit of the sector as it would transcend issues of competition between the institutions.

Additionally, there are issues of competition that arose from the data analysis that the researcher had not envisioned at the inception of the study. It appears that there are barriers within the process of digital transformation which arise due to the dominance of particular institutions in the relevant sectors and this is unacceptable. Going forward, this particular issue will need to be addressed with adequate competition measures specific for the actualization of an information society. This could also constitute areas of further research on the matter.

6.1.2 Human resource development

The ability to leverage technologies for their maximum potential is dependent on the end consumer and this is reflected in the human resource development element of digital transformation. The data revealed that the ability to use these technologies was indeed important, but also revealed other factors that were just as central to the process. These include culture, awareness, consumer education and organizational strategy and knowledge management, as it pertained to the institutions in question. The researcher here also noted the different issues that arose on an organizational level, as well as on a national level.

Awareness and financial culture were found to be hindrances to the process as most participants felt that the people were set in their ways and had no real incentive to adopt new technologies. Interestingly, this opinion was held by all the participants, but who they directed it towards varied between older generations, and people living in the rural areas. Another perspective was that these technologies only tend to be relevant to people who already work with technology on a day to day basis, therefore for others, it would not have the same effect. On the plus side, MNO1 was able to confirm that providing members of the public with sufficient consumer education was effective as was the case in the introduction of M-Pesa. It was the opinion of this particular organization that the success of this service was due to the consumer education drive that took place.

The need for ICT capacity development is engrained in policy, both on an organizational level and on a national level. However, as was seen from the data, this is not enough as the same needs to be supported by effective implementation strategies. With regard to the national strategies, this appears to be lagging. Although there is a DLP in place, it is not yet in effect and therefore not currently beneficial to development of a knowledge economy. However, the organizational strategies directed at increasing ICT capacity development seem to be more efficient, and are generating positive results. Going forward, it will be necessary to ensure that the provisions of the policy document (NICTP, 2006) are brought

to life through the creation of relevant institutions and effective leadership and implementation schemes.

6.1.3 ICT infrastructure

The importance of sound and widespread infrastructure in such a study cannot be over emphasized. The ability to reach the end consumers far and wide is core to the success of any technological advancements. Levels of penetration and network coverage throughout the nation inevitably impact on the process of e-transformation in the banking sector, among others.

Although generally network coverage is quite high in the country, the quality and reliability has arisen as an issue as some consumers complain of lost signal. The banks are yet to invest in ICT infrastructure, and instead have opted to partner with the MNOs who already have the infrastructure in place. This symbiotic relationship has allowed for banks to increase points of service delivery, and to increase the number of users using their services through a channel that is carried by an MNO. The access gap study that was mentioned earlier seeks to provide specific information which can be used by the Universal Service Fund to increase access in underserved areas. All of the participants seemed to have high hopes for this fund, and felt that although it was not currently in the disbursement phase, that it was better to ensure that the application of it was catered for in a manner that would be beneficial to all the relevant stakeholders (ICTR1).

6.1.4 ICT industry

As earlier stated, the researcher did not embark to explore this particular element of the digital transformation process. This was however not due to its lack of importance or significance. Nevertheless, in the course of the data collection, elements of ICT industry arose which the researcher could not ignore as they were vital to the process in the sector. This included innovation and the demand for these ICT technologies which are important in the consideration of digital transformation in the commercial banks in Kenya.

The researcher found that the level of innovation in the sector was not as high as it should be, and the interviewees gave a number of different reasons as to why this was the case

which ranged from lack of capability, to a sense of mistrust among our own local developers. This therefore is an area where there is huge potential to elevate the local capability and professionalism so as to increase the reliance on our own local innovation.

6.1.5 Challenges with ICT in the banking sector

ICT development in any sector is not without its challenges. For the banking sector, security has been a growing concern in Africa as incidents of cybercrime continue to be on the rise. In the banking industry, this presents a great risk to digital transformation, as there is a huge sense of insecurity amongst the users. The CBK annual supervision reports (2015) found that credit card fraud has increased, partly as a result of digitalization and this constitutes a discouraging factor and has led to a decreased uptake in technology.

The current legal and regulatory framework in Kenya does not adequately address issues of cyber security, and as such, the same cannot be prosecuted to completion. Currently in Kenya, attempts to bridge this gap exist in the form of a Cybercrime Bill that has been generated by the Office of the Department for Public Prosecutors (2014) (ODPP). Although this is yet to be enacted to law, it forms a basis upon which the gaps in cybersecurity can be addressed, to create a more enabling environment for digital transformation in banks in time.

6.2 Limitations of study

When collecting the data, the researcher noted a trend with regard to the interviewees and some of the perspectives they held. The research was carried out in Nairobi, an urban area with high levels of literacy and proliferation in terms of technology. Therefore, it at times became apparent that the interviewees may have been speaking from a biased perspective as they related to urban areas, and knew less of the rural contexts. The researcher however mitigated this limitation by enquiring specifically about rural areas. Additionally, the researcher here did not explore all the elements of the framework that was introduced in Chapter 2 and has therefore excluded a number of other vital considerations. The research was also unable to have a large sample group in this study which further acts as a limitation to the study.

6.3 Future research

Based on the above, the researcher would propose that future research seeks to consider this study in non-urban areas, and not limit it to areas where technology and accessibility are the norm. it is believed that this would provoke some interesting discussions, that would be distinctively different from the context in which the researcher was able to study.

Future research could also contemplate exploring all five key components of Hanna's framework and applying them to the financial services sector as a whole, rather than merely to the commercial banks. This would be a wider more comprehensive research.

Additionally, this research has been conducted in a manner that makes it easy to generalize and apply to other contexts. Its provides a platform that will allow future research to consider digital transformation frameworks on both a national level as well as at sectoral level and even organizational level. Going forward the researcher would propose such areas to be explored in a similar manner to this study and seek to focus on the key issues that allow for technological advancements to impact on socio-economic development.

As stated earlier, the issues that pertain to cybersecurity particularly in this sector really stood out for the researcher. It is alarming to think that the benefits of technology in a developing country such as Kenya could be lost due to the threat of cybercrime which can and has been mitigated in several jurisdictions around the world. For future research, exploring cybersecurity across sectors and industries in Kenya could prove beneficial in ensuring that the wealth of potential that is housed by ICTs can be actualized in a manner that will allow the county to overcome some developmental gaps and compete on a global scale.

6.4 Conclusion

To conclude this research report on the digital transformation of commercial banks in Kenya, the researcher upholds the assertion that the sector houses a wealth of potential that can be achieved through the ICT revolution. It is common in the study and implementation of ICT technology that the areas of Human resources and infrastructure, as well as policy are left out. As Hanna had indicated, the problem is that ICT is viewed as

an industry, rather than as a cross-sector enabler of socio-economic growth and development (Hanna, 2010). Silos in institutions and in ministerial approaches to ICT reflect this, and going forward, it will be important that such issues are addressed.

6.5 Recommendations

Some of the recommendations that were provoked by the study are highlighted below:

Policy makers should consider adopting practices from other jurisdictions that seek to achieve top-down approaches to the ICT revolution, rather than leaving it entirely in the hands of the market. This, combined with the current market driven approach, will lead to a more synergistic approach towards some of the challenges being faced today, and breed more success.

In addressing the growing concern of cybersecurity and cybercrime in the county, it is recommended that information sharing mechanisms are considered and incorporated into legislation and regulations so as to facilitate the fight against cybercrime.

Review the 2006 National ICT Policy to make it more relevant to date by factoring in and providing for the challenges that we are currently seeing in the sector. Additionally, it needs to be able to provide for future technological advancements in a flexible manner. Developments such as the Internet of Things (IoT) and Over the Top services (OTT) will need to be considered and factored in.

Introduce capacity building and awareness initiatives for policy makers and law enforcement agencies so as to ensure assimilation of ICT development with national strategies, and the development of able leadership.

Encourage sectoral investments in ICT infrastructure as it is evident that this would positively impact them as well. Once such investments have been made, the next step is to ensure that they are protected through various initiatives such as infrastructure sharing mechanisms. Additionally, there is a critical infrastructure protection bill that is being developed for this purpose which ought to encourage investors and boost development in the sector.

The development of the aforementioned regulations that formalize the requirement to share infrastructure in the sector will go a long way in addressing some of the major concerns that have risen in the course of research. One such specific one is the issue of laying down fiber which was raised in chapter 4. Such an initiative ought to be formalized and supported by the law.

Introduce the Competitions Authority of Kenya as a core agency in enabling the digital transformation in the commercial banks of Kenya. The research shows that competition in the sector may be acting as a hindrance to the success of digital transformation. CAK is one of the less obvious players that would be vital in the process of digital transformation, however, the data shows that it is just as central and should be encompassed accordingly.

The success of digital transformation is hinged on collaboration. Collaboration between various sectors, between various institutions, and education institutions, just to name a few. To this end, one of the recommendations would be to create mechanisms which allow for easy and collaborative and synergistic approaches towards digital transformation. This would include but not be limited to, banks and telcos and banks and innovation hubs/universities which would lead to increased innovation that is tailored to the local needs. Additionally, these collaborations will also serve to build confidence in the local ICT service providers.

Beyond applying and implementing the aforementioned recommendations, one of the key requirements for success will be to have in place instruments that allow for the monitoring and review of the overall process, and provide success indicators. The regulator, or even the industry association should be able to use their position to implement such a monitoring and evaluation program in order and promote success, while better addressing the many challenges that arise.

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ANNEXURE A – INTERVIEW PROTOCOL

PARTICIPANT INFORMATION SHEET

A MULTI-FACETED PERSPECTIVE ON E-TRANSFORMATION IN COMMERCIAL BANKS WITHIN KENYA

Dear Participant,

I am a student at the **UNIVERSITY OF WITWATERSRAND, Johannesburg, South Africa** currently undertaking **a Masters of Arts in ICT Policy and Regulation**. In part fulfillment of this Masters programme, I am in the process of conducting a research study on the e-transformation process in the private commercial banks in Kenya.

You are invited to take part in this research study as an interviewee. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully.

Deciding whether to participate
Taking part in the research is completely voluntary and you may withdraw your consent and participation at any time and without giving a reason. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. Additionally, if you do agree to take part in this study, you will be asked to take part in an interview that will last for a maximum of 60 minutes. The interview may be recorded. There are no direct risks in participating in this interview. There will be no direct monetary benefit to you for your participation.

Anonymity and confidentiality
Any personal information collected about you will be kept strictly confidential. Identifiers will be removed from the data when the research findings are consolidated into a report and will not be included in any subsequent publications. The anonymized data generated in the course of the research will be kept securely in paper or electronic form for a period of five years after the completion of a research project. It may be used for further research and analysis. This report will can also be made available to you upon your request.

Research Ethics
If you have concerns about the research, its risks and benefits or about your rights as a research participant in this study, you may contact Lucienne Abrahams, see contact details below.

Contact for Further Information

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INFORMED CONSENT FORM FOR SIGNATURE

MASTERS RESEARCH REPORT:

A MULTI-FACETED PERSPECTIVE ON E-TRANSFORMATION IN COMMERCIAL BANKS IN KENYA

Please tick box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason. ☐

3. I understand that the researcher will not identify me by name in any reports using information obtained from this interview and that the views I express will remain confidential ☐

4. I agree to the interview being audio recorded. ☐ Y ☐ N

5. I agree to the use of anonymised quotes in the dissertation. ☐

6. I agree that data gathered from me in this study may be stored (after it has been anonymised) and may be used for future research. ☐

Name of Research Participant	**Date**	**Signature**
_____	_____	_____
Name of Researcher	**Date**	**Signature**
_____	_____	_____

A multi-faceted perspective on e-transformation in commercial banks within Kenya

JULIET WANGUI MAINA - 1113363

MA in ICT Policy and Regulation at the University of Witwatersrand, South Africa.

Research Instrument: Interview Guide

1 ICT Infrastructure for Commercial Banking

- Briefly describe the highlights of the introduction of ICT infrastructure in this particular bank and in the commercial banking sector.
- What is the current state of infrastructure development usage in the banks?

2 e-Banking Services

- What is the current state of telephone banking in Kenya?
- What is the current state of mobile banking in Kenya, including use of low-cost devices?
- What is the current state of Internet banking in Kenya?
- To what extent are these forms of banking (telephone, mobile, Internet) available in all the major cities and smaller towns in Kenya?
- What, in your opinion, are the two or three most important considerations when planning and deploying ICT for banking?
- What have been the challenges to implementing these solutions in Kenya?
- What advances and innovations in the use of ICT in banking are taking place or are expected in the future?
- To what extent has the creation of locally designed software applications fuelled the e-transformation process in the private banks in Kenya?

2 Human Capital Development

- To what extent can Kenyans be deemed to have the capacity to actively participate in e-transformation, and leverage its benefits through commercial banks?
- How is awareness about new technologies and e-services in the banking sector promoted?
- How easily do members of staff familiarize themselves with new ICT technologies and e-services?

- What provisions are in place to ensure a smooth shift to technology in such instances?
- Does the bank have a clear vision and strategy for human capital development for digital transformation?

3 Policy and Legislation (Leadership)

- Do you think that e-transformation within the banking sector is up to speed or ahead of prediction or lagging? Please elaborate.
- Which aspects of government policy would you commend or criticise as promoting or hindering m-banking or Internet banking uptake?
- How could government policy or legislation further enable e-banking?
- To what extent and in what ways does current regulation stimulate the shift to the ICT revolution in banking?
- Are there any particular current regulations that either promote or hinder m-banking and Internet banking uptake? Can you explain why?
- Do you think that the overlap between the regulation of telecommunications and the regulation of banking (co-jurisdiction) is being adequately addressed? Please explain.
- Can you suggest how telecoms / banking co-jurisdiction might be better dealt with?

If time allows: Challenges and Concerns:

- What are some of the major challenges that exist in the banking sector with regard to e-transformation?
- What would you recommend as some of the solutions to such challenges?
- In your opinion, how can issues such as security, privacy and cyber-crime be best addressed in policy?

ANNEXURE B: INTERVIEWEES

Participant group	**Naming Convention**
Banking Institution (Small Peer Group)	SPG1, SPG2,
Banking Institution (Medium Peer Group)	MPG1, MPG2
Banking Institution (Large Peer Group)	LPG
ICT Sector Regulator	ICTR1, ICTR2, ICTR3
Banking Regulator	BR1, BR2
ICT Policy Maker	ICTPM
Banking Industry Association	BIA
Mobile Network Operator	MNO1

ANNEXURE C: ANALYSED DOCUMENTS

1.	National ICT Sector Policy (2006)
2.	Kenya Information and Communications Amendment Act (2013)
3.	National Payment Systems Regulations (2014)