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EFFECT OF DIGITAL TRANSFORMATION IN FINANCIAL INSTITUTIONS ON FINANCIAL INCLUSION; A CASE OF TIER ONE BANKS IN MOMBASA COUNTY KENYA

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ABSTRACT

The research analyzed effects of digital transformation in banks on financial inclusion, a case of tier one banks in Mombasa County. This research covered the issues related to digital banking. The research specifically pursued to establish adaptability of digital banking on financial inclusion in tier one banks in Mombasa County, to determine affordability of digital banking on financial inclusion in tier one banks in Mombasa County, to establish how speed of transactions of digital banking affect financial inclusion in tier one banks in Mombasa County and also to determine how accessibility of digital banking affect financial inclusion in tier one banks in Mombasa County. The study adopted a descriptive survey design because it provided a clear outcome and the characteristics associated with it at a specific point in time. The target population for the study were 150 staffs in tier one banks in Mombasa County. The study adopted a census technique to select the respondents from the population. The study obtained primary data through a structured questionnaire. The researcher employed a self-administration style of data collection. Responses in the questionnaires was tabulated, coded and processed using a computer Statistical Package for Social Science program. The relationship between the dependent variable and the independent variables were tested using multiple linear regression models. The data was analyzed and conclusions drawn. Descriptive and inferential statistics were used whereby the data was presented through tables. The researcher found out that the correlation between the independent variables (adaptability of digital banking, affordability of digital banking, speed of transactions of digital banking as well as accessibility of digital banking) besides the dependent variable (financial inclusion) results shows that all are positive and significant. In particular, adaptability of digital banking is positively and significantly correlated (r=.033, p<.05). Similarly, affordability of digital banking (r=.203, p<.05), speed of transactions of digital banking (r=.075, p<.05), and accessibility of digital banking (r=.230, p<.05) are positively and significantly correlated with drive for modern digital transformation on financial institutions. In conclusion, banking institutions adopt digital financial services to lower operating cost associated with opening and operating more branches to improve their profitability and financial performance and not to foster financial inclusion.

Key Words: *Digital Banking, Digital Affordability, Transactions Processing, Digital Banking Accessibility*

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INTRODUCTION

Since the introduction of the first mobile banking service in 1999, extensive change has been seen in the field of banking in the transformation of banking services into digitized banking services. Technology has since shifted the banking industry into a world of invention where we see the customer experience being transformed into digitized banking service. The banking sector is at a juncture of enormous digital transformation as well as automation, (Hirt and Willmott, 2018). It is therefore paramount for banks to adopt the digital strategy as a means to gain competitive advantage, offer custom-made products that suit their customer needs as well as adapting to the rapid change of the technological environment that offers financial inclusion, (Kithinji, 2017). Mobile banking is a revolt that is determined by the universe's fastest rising segment-Mobile telecommunications technology, (Bamoriya *et al.* 2016). Essentially, all industries are currently affected by diverse meadows of digitalization as well as digital alteration, (Kithinji, 2017).

Digital upgrading, is giving traditional monetary establishments a second opportunity to develop client gratification as well as allegiance, driving longstanding associations and productivity with the approach similarly embracing the latent to meet customers' expectations as well as bringing banking back to the financial establishments. How clienteles observe their establishments, the amenities they obtain from their financial establishment and whether financial firms deliver on this assurances is a worth following up. Digital banking channels increase clients' entrance, enable the contributions of more amenities, escalation of client allegiance, appeal to new clienteles, offer services accessible by opponents as well as reducing client attrition, (Khan, 2019).

In Kenyan perspective, the banking industry has been, since the introduction of sms banking in 1999, undergoing various transformations to help deliver to the rapid changing environment in technology and technological advancements not forgetting the various changing needs of their customers, (Kithinji 2017). In order to cope with these trends in the market that loom the survival of commercial banks in Kenya, the banks are continuously implementing a number of digital strategies including the adoption of mobile banking apps, internet banking and many others, (Manyenze, 2019).

Monyoncho (2018) inspected the relationship between E-Banking advances and money related execution of business banks in Kenya utilizing optional information for a time of five years. The discoveries of the study uncovered that ATM developments, Mastercards, portable managing an account and web keeping money offer the comfort of directing a large portion of the saving money exchanges at the time that suits the client. The study presumed that selection of E-Banking advances affected the execution of business banks in Kenya and prescribed that business banks ought to keep putting resources into saving money innovations.

Digitalization is the general word in lieu of the Digital Revolution of people as well as the frugality. It designates the change from an industrial era considered by analogue technologies to an era of acquaintance as well as inventiveness characterized by digital technologies as well as digital business invention. Together with business novelty, the growth of digital innovation is one of the most imperative business tendencies in lieu of the future of the frugality, (Rieker 2018).

Digitalization has insinuations in lieu of initiatives of all dimensions. On one hand, initiatives have to digitize their inner developments as well as events, on the other hand they have to grow novel amenities as well as digital commercial models, (Rieker 2018). The challenge for all organizations is to identify with today's clienteles who are more enlightened as well as nerdish and for banks to be able to provide to their specific requirements, every client needs exceptional knowledge from banking arising as an outcome of the developing acceptance of digital services apps, (Venkateswari 2018).

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This research dug deep into understanding the specific needs of customers ranging from all income levels in the Kenyan economy and their need to have information technology transform their needs into business solutions that will add value into their daily lives as well as build their journey of transformation towards a brighter future. This research will also enlighten the roles of banks towards supporting the needs of their customers as well as recognizing the importance of the customer towards achieving the business objectives, (Rieker 2018). Before the international fiscal crisis of 2008-2009, the banking industry shaped stockholder value via monetary leveraging. Today's augmented guidelines as well as modest challenges are compelling monetary establishments to deleverage and ascertain other bases of value. New digital replicas navigate monetary establishments in the direction of client associations that present novel bases of value. The emphasis is on appealing clienteles as well as building belief in the main events of digital banking: marketing as well as sales; client on boarding; account opening as well as servicing, (Kithinji 2017).

Central Bank of Kenya is the watchdog of all monetary establishments in the banking sector. CBK primarily classifies banks in order of ownership, whether local or foreign. Nevertheless, the CBK also classifies banks based on their assets. In this regard, they have classified banks into Tier1, Tier 2 and Tier 3. According to the article published by Bizna on March 17th 2021, Tier one banks are those that are considered safe for banking by the Central Bank of Kenya. This is owing to their net assets, customer deposits, Balance sheet, reserves, and deposit accounts. The Tier banks have an index of 1% to 5% as required by the Basel accord. Some of the banks are as follows; Equity Bank, Kenya Commercial Bank, Absa Bank Kenya, Cooperative Bank, Standard Chartered Bank, NCBA Bank Kenya, DTB Bank and the Stanbic Bank.

Research Problem

In the service industry where the client is the main focus, the gratification of the customer becomes the fundamental objective of the organization to ensure its going concern. The banking industry as it is is under massive competition with 44 banks operating in a country with a population of 53 million people, (Data from United Nations, 2020). This competition is often fueled by client's evolving needs as well as experiences from the many players in the market that offer similar products as well as amenities that are meant to add worth to their lives and business. This status has created a huge attitude from the client and it is imperative for the banks to retain them to ensure their needs are constantly taken care of by tailor making the products. In order to do so, the organization is kept on their toes to constantly listen, understand, invest, evolve and develop products to suit the customer needs because clienteles are making choices quicker in addition to having access to multiple deals leaving the banks struggling in lieu of client allegiance, (Beck *et al*., 2017).

Modern technological advancements that keep changing by the minute, give the banks a huge opportunity to deepen customer relations and satisfaction. How clienteles observe their monetary establishments, the amenities they acquire from their monetary establishments and if their firms deliver on these assurances is a matter worth considering. With superior monetary enclosure, persons who were formerly fiscally omitted may invest in edification, save as well as inaugurating businesses, and this contributes to scarceness decrease as well as fiscal development, (Beck et al., 2017; Bruhn & Love, 2018). A comprehensive fiscal system is required and will offer chances in lieu of all persons, chiefly the underprivileged, to access as well as moving monies, grow wealth, and decrease peril.

Superior monetary enclosure can similarly offer underprivileged families with chances to build reserves, make investments as well as accessing loan, (Ellis, Lemma, & Rud, 2019). Prabhakar, 2018). If the recital of a monetary establishment falls short of these anticipations, the client becomes disgruntled. If the recital matches anticipations, the

client is content. If the recital surpasses anticipations, the client is overjoyed. Only pleased clienteles or vastly content clienteles stay loyal to the services provider, (Salmen and Muir, 2017; Dubrovski, 2018). Though arrival of technology have improved client gratification in the monetary establishment sub segment, with influence on augmented clienteles retention, still plentiful is needed to make fiscal amenities firms become client's main penchant, (Waqarul and Bakhtiar, 2017).

Amongst an economy of inventive technologies as well as varying markets, deprived eminence of service has been responsible in lieu of client displeasure. Furthermore, inadequate novelties in founding new monetary products as well as amenities augment salt to the wound, worsening further the level of client displeasure. Many researches have been done on financial inclusion, however it is noted that the focus on Tier one banks only is something that has not been looked at and this study will focus on the analysis of financial inclusion in the drive for modern digital transformation in banks to devise products and services to substitute the physical banking that is getting outdated as the years go by. Studies of the effects of financial inclusion in the drive for modern digital transformation on financial institutions have yielded mixed findings. Githui (2017) found that the profitability of traditional banks compared with that of tier one banks peers was better. Wako (2017) found that in terms of return on asset ratio, tier one banking performance is about 98.19 percent; about 91.4 percent in terms of return on equity ratio; and 77.03 percent in terms of net benefit ratio. Locally, Tuitoek (2019) found that it has a positive impact on banks' financial results to sell novel products for instance Shariah acquiescent products, (Thomi, 2019).

Tier one banks has had a brief period of service in Kenya, (First Group Bank, 2018). Consequently, there is limited analytical literature on the manner in which credit risk management relates to the success of Tier one banks in the country, in particular. Apparently, most of the empirical research relating Tier one' financial results to credit risk management have been undertaken with regard to some countries, ignoring issues occurring in emerging markets where there is modern digital transformation in banks, a knowledge gap this research would aim to close by evaluating the effect of; adaptability, affordability, speed of transactions and finally accessibility of digital banking. The focus of Tier 1 banks was chosen for this study because the institutions had the highest number of customers from different sectors of the economy as well as from various social classes of people in the economy.

Research Objectives

The aim of the study was to analyze effects of digital transformation in financial institutions on financial inclusion, a case of tier one banks in Mombasa County. The specific objectives were;

- To establish the effect of adaptable digital banking on financial inclusion in tier one banks in Mombasa County.
- To determine the effect of affordable digital banking on financial inclusion in tier one banks in Mombasa County.
- To establish the effect of speed of transactions on financial inclusion in tier one banks in Mombasa County.
- To determine the effect of accessible digital banking on financial inclusion in tier one banks in Mombasa County.

The research tested the ensuing null hypothesis:

- H_{01}: Adaptable digital banking does not have a statistically significant effect on financial inclusion in tier one banks.
- H_{02}: Affordable digital banking does not have a statistically significant effect on financial inclusion in tier one banks.
- H_{03}: Speed of transactions does not have a statistically significant effect on financial inclusion in tier one banks.

- H_{04}: Accessible digital banking does not have a statistically significant effect on financial inclusion in tier one banks.

LITERATURE REVIEW

Theoretical Framework

Stakeholder Theory

A stakeholder is an individual, group, or organization who may be affected by project decisions. Stakeholder management involves identification of persons or organizations that could be impacted by the project, understanding their needs and putting in place measures to meet these needs to ensure project success, (PMI, 2017). The stakeholder theory prescribes the principles managing stakeholders of an organization. It classifies stakeholders and their needs and guides the organization on how to address these needs, (Freeman, 2018). Stakeholder theory seeks to assist organizations to deal with dynamic business environment and intricate needs of various stakeholder groups, (Wicks, Gilbert & Freeman, 2017). Yee-Chin (2018) further proposed that the degree of influence of each stakeholder group on the project be assessed.

Ackerman *et.al.*, (2017) noted that the importance of stakeholder's to strategy and overall planning of firms has been appreciated; however consideration of stakeholders in terms of performance has not been done sufficiently. The consumer of performance measurement information has not been clearly indicated. In the public sector, it is essential that performance measurement is done and the results be used for managerial purposes to improve an organizations rating. Corporate planning recognizes that stakeholders influence the activities of the organization. Management is required to incorporate the needs of stakeholders in its operations.

According to Marks, Komives and Davis (2019) the theory stresses on the significance of the relationship that exist between management and stakeholder. The managers more so should be aware that different stakeholders' participation can affect sustainability and success of digital banking. The relationship between stakeholders and the top management determines the level of participation but not with junior employees. In this theory, the key idea is that firm associate with diverse groups and by considering the interest of stakeholders such as relationship can be endangered or maintained which finally can result to their diverse projects.

The Instrumental Theory

The theory was developed by Bailey (1968), and focused on how well the public sector can use other budgeting systems in resource allocation to the overall budget execution. The theory articulates that the allocation of resources can improve managerial capacity toward budgetary processes in the organization. According to Pettijohn and Grizzle (2017), an alternative overall budgeting systems controlled by the public sectors are not biased by the policy process. The new approach of the budget theory lays a foundation on how allocations are made in organizations. The theory enables researchers to study the managerial capacity building on the new budgetary system which also includes theories of motivation, the relationships to the overall system and other administration issues.

Walker (2019) affirms that an organized and theoretically based knowledge are important during the budgetary decision making. This theory contends that technology does not control how persons obtain as well as how they use technology but that individuals control how as well as in what means technology is utilized. The theory postulates that usage of a technology cannot be unstated deprived of knowing how it is socially assimilated within society. Within diverse communal settings, technology can take diverse meanings as well as adoption rely on how society assess the technology, (Gurley, 2019).

Under this theory, the approval of a technology is not only owing to its technical dominance but also to social influences as well. The decomposition theories of planned behavior not only keep the theory of planned behavior values but also add

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significant value of the original theory, since it add a larger number of beliefs as well as concepts to the models, (Venkatesh, Davis & Morris, 2017). This theory remains internally focused and rather than being evaluated as an exterior planned emphasis on justifiable growth, it is assessed on its monetary advantage to the firm. Moreover, the theory can be applied at four diverse echelons, these are; enterprise, corporate, business and functional strategies. At this level, the role of an establishment in society which is the fundamental mission of a firm is determined. The firm's function, form and governance are talked about during initiative policy which similarly provides value in lieu of stockholders as well as clients who are more probable to integrate at this level, (Howcroft, 2017).

Diffusion of Innovations Theory

This theory was offered in lieu of adoption by Rodgers who issued it in 1962. It is separated into two phases, initiations as well as application. It concentrates on the features of how, why as well as the level at-which the IT concepts in any firm are espoused into the operations (Rogers, 2018). Application involves adoption, diffusion as well as acknowledgement of the problem which led to exploration for technology to resolve it. Rogers (2018) recognized three espousal phases which comprise origination, espousal as well as implementation. Additionally, Rodgers contended that inventions as well as products with superior compatibility as well as straightforwardness have high fortuitous of espousal, easy implementation and usage. The choice to espouse an invention depend on social system insight as well as the five characteristics of invention which comprise; compatibility, intricacy, measureable besides piloting of the system.

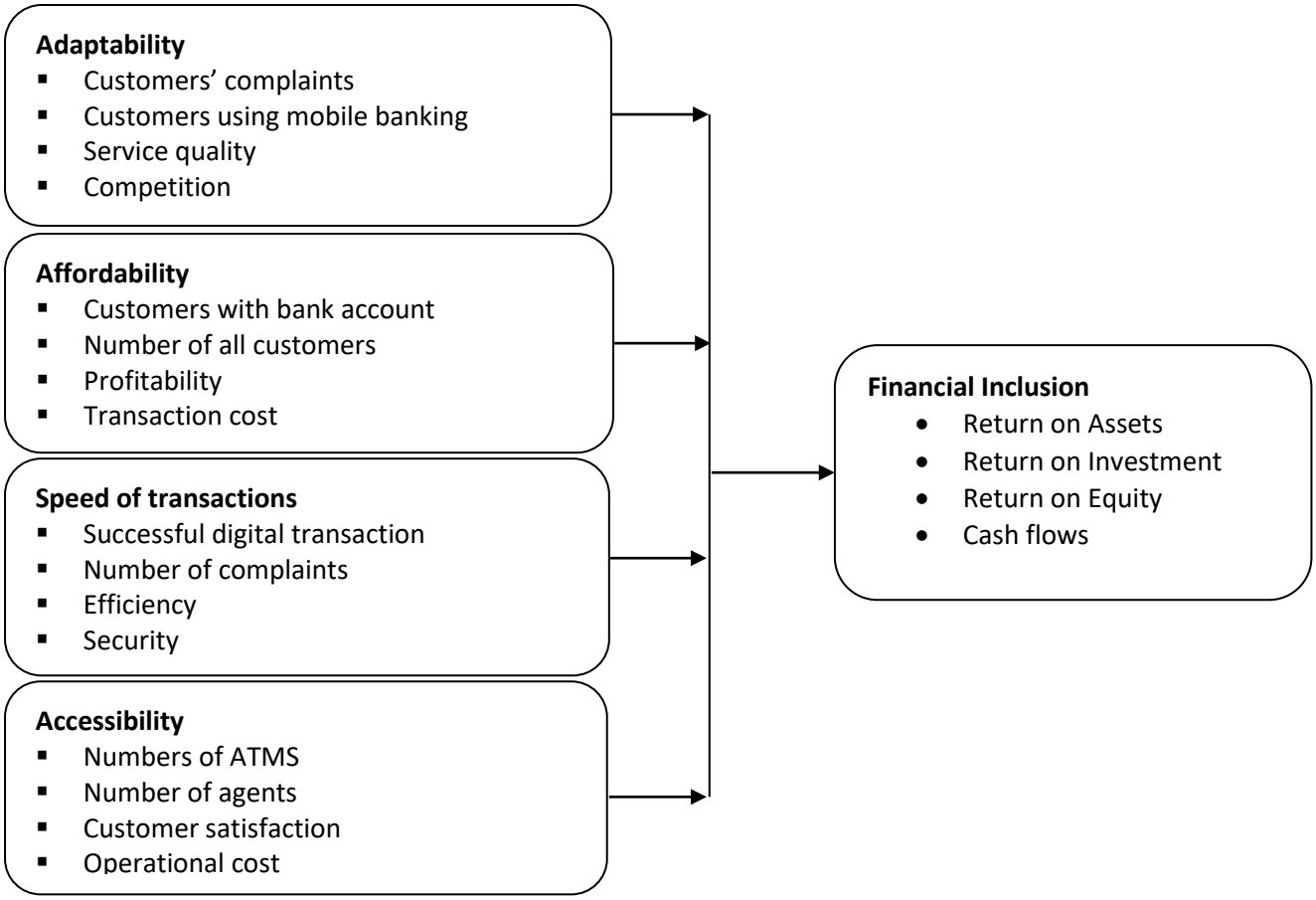
The adoption procedure is multifaceted as diverse individual groups are involved (Grove et al, 2018). At the company's level, the administrators play an enormous role as they have to exercise noble insolence towards the entire procedure. The inner structure of the organization similarly does contribute in the espousal of inventions owing to the proficiency level of persons. Similarly, the exterior influences of the company contribute to the level of the entire scheme espousal, (Rogers, 2018). The theory rendering to Rogers observes that any expansion in technology is espoused in a company's channels at a definite social scheme contingent on its worker's motivation.

System Theory

According to Schmidt (2017), this theory is described as information in the supposition that information is autonomous of flawless mind, as well as patterns rotating around what is recognized as the response in the system sequence. Basically, system might be info in the sense that it is a demonstration of something that is alleged to be likely, albeit it is not ready or offered in lieu of that exertion. Kang'ethe (2018) echoes that a system is an assortment of correlated as well as conjoining parts inside a constituent, they work together as a group with a vision of realizing their anticipated or professed objective. In his opinion, this researcher established that these workings must have a portion of control to safeguard the proposed results are realized, this is of quintessence because superfluous expenditure will be curtailed thus plummeting on the costs.

Puche et al., (2016) argue that a system refers to a group of objects that affect the other within an environment and also form a wider pattern that differs from any part. A system can as well be considered as a collection of entities that act to perform specific role, (Broks, 2016). Moreover, a boundary separates a system from its environment that is, separates what is within the system and what is not. A system can either be closed or open. A system that is open can interrelate with the environment and also it is exemplified by exchange of information as well as matter with external environment.

Conceptual Framework



Independent Variables **Dependent Variable**

Figure 1: Conceptual Framework

Review of study variables

Adaptability of digital banking

To survive, monetary establishment must be more nimble, malleable to change, embrace the novel connotation of trust as well as functioning as supple. Technology enabled information companies are using digital to re-discover their affiliation, (Moreno, 2018). The growth of advanced technology in the monetary establishment offers higher services to the clienteles. ATM, online as well as portable banking are the means of present banking and these are useful to preserve the client allegiance. Some researchers indicated that merely the upgrading in the monetary establishments services is the merely reason of operator's gratification, (Khan, 2018).

The current fiscal predicament has left customers with an acrimonious palate in their mouths, and the forfeiture of trust in their monetary establishments' is probable to remain in lieu of certain period. If monetary establishments are to reinstate that confidence —and revive their development apparatuses — they need to discover policies that potential clienteles a rehabilitated nous of sustenance, community, flexibility, as well as expediency. Monetary establishments have answered to this persistent requirement in a diversity of ways, comprising large-scale delivery, product novelty, as well as public banking. Nevertheless, it's merely by espousal the impending digitization of the monetary amenities segment can monetary establishments win back their clienteles and begin growing again. The Internet, high-speed broadband, as well as mobile connectivity allow monetary establishment offer their clienteles with an ample more appealing, extremely modified fiscal

capability, as well as stages for instance social networking are adding a transformed nous of public too. The outcome will be a novel period in monetary establishments in which firms as well as their clienteles will work collectively to generate value via inventive novel products as well as services with more well-organized operations, (Khan, 2018).

Affordability of digital banking

Where clienteles perceive that the inducement of digital investment is eye-catching, then they would be fervent to use them. The two matters found important are that, digital networks offers special tariffs, charge lesser dues as well as operation fee in lieu of the digital banking is practical regarding one visiting the outlet to carry out transaction in the old method. Yancy (2017) indicated that a client can similarly tell once his or her imbursement will arrive online. One may settle utilities or other dues online. Mobile banking decreases overall cost suffered by client. The monetary establishments provide mobile banking amenities at charges lesser than what the client would suffer if he/she was to use usual fiscal establishments' transactions. He/she would only go to the fiscal establishment if it is essential, (Flood, 2019).

The existence of ATMS since 1980s has assisted commercial banks in significant reduction of costs and also providing efficient and effective to customers. Optimized ATM networks can improve performance and increase competitiveness of banks. Normally commercial banks tend to maximize profit by selecting the concentration of their ATM locations. Galor (2018) asserts that the cost of an electronic transaction is cheaper when carried out through e-banking as compared to when it's done at the branch. Transactional charges seem to be a factor that champions for Electronic banking. Furthermore, technology is playing a contributory part in endorsing fiscal insertion. Mobile banking novelties for instance M-Pesa has decisively dropped the amount of unbanked persons in Kenya, (Gurley, 2019).

Accessible statistics display that while only 26 per cent of Kenyans had access to official monetary amenities in 2006 that figure had increased to 42 per cent in 2011. The World Bank forecasts that by 2020, mobile banking might influence the lives of 2 billion persons in emerging nations. Assumed this developing authenticity, banks as well as other monetary business players must keep stride with the fast hike of technology in the digital stage. E-banking has also facilitated interconnection of Automated Teller Machine networks of different banks this provides banks clients with an advantage since they access banking services on most Automated Teller Machines beyond those ones of their banks, (Hannsens, 2017).

Some notable examples in consideration in Kenya include Pesa Point network of ATMs, Kenswitch network of ATMs and VISA network of ATMs to which the majority of banks have subscribed to. In 1996 member banks of shared ATM networks are allowed by these networks to impose charges on nonbank clients using their ATMs. According to Public Interest Research Group (2018), ATM charges create an incentive for bank customers to migrate from smaller banks with smaller ATM networks to other larger banks which have larger infrastructure of ATM networks. This is because by moving to such networks they are exempted from charges levied to non-bank clients. This provides banks with a larger network of ATMs an upper hand in its clientele base and thus a large volume of profit, (Ivatury *et al,* 2016).

Speed of transactions

Deprived of using technology, the banking subdivision cannot provide clienteles with real amenities, (Sousa, 2019). Operative service provision is a novel or considerably better service notion put into practice, (Mizanur, 2017). Client prospects regarding service conference involvements as well as service distribution apparatuses and the whole notion of what establishes eminence service are consequently crucial subjects that essential to be measured preceding to the execution of any operational

alteration, (Sousa, 2019). Operative service distribution is a service product or service procedure founded on some technology or methodical technique. It can be a novel client communication network, a delivery scheme or a technical idea or a mixture of them, (Kimball, 2019).

Kumbhar (2017) found out that efficiency of service delivery have a momentous association with general client gratification. Actual service distribution is definitely connected to client gratification in that, when a client observes that the distribution style of the dealings that monetary establishment is supposed to give is fairly decent, the more the clienteles will be content with the bank amenities. When E-banking was introduced it was confronted by a lot of challenges such as security of the websites which were prone to hacking. Nevertheless, since a lot of people have adopted it due to its benefits such as convenience, saving time and being less costly.

The adoption of e-banking by masses implies that the income banks procure from e-banking increases and as a result the performance of the banks increases. According to Alexandru (2018), E-banking is vital in spurring development, growth and competitiveness of banks in terms of product innovation, service delivery and Profitability. E-banking enhances service delivery by banks this in turn expand its business volume and earnings. Electronic banking networks comprise of: Automated teller machines, points of sale (POS), Mobile banking as well as Personal computer banking (PC Banking) have really assisted the client to access many benefits that come with e-banking.

Accessibility of digital banking

Banks stand for a momentous as well as powerful segment of trade globally that plays a critical part in the Kenyan as well as international economy. Commercial banks are monetary mediators that function as monetary reserve enlistment points in the worldwide economy. The role of financial establishments in an economy is supreme since they implement fiscal strategy as well as deliver ways in lieu of enabling payment for belongings as well as amenities in the national as well as global trade, (Kiragu, 2017). They facilitate coffers required by business as well as domestic segments from excess expenditure to shortfall outlay components in the economy.

A well-established proficient banking segment is a vital requirement in lieu of saving as well as investment choices wanted in lieu of fast fiscal development. A well-operative banking segment offers a scheme through which a nation‘s greatest lucrative as well as ventures are methodically as well as unceasingly funded. Financial establishments are guardians of customer’s coffers as well as function by getting money deposits from the community as well as lending them out towards the penurious at statutorily permissible interest rates. Credits remain founded on loan strategy of the monetary establishment which is firmly fixed by the central bank interest rate strategy, (Maungu, 2017).

Monetary establishments have been positioning both old as well as new different networks in lieu of banking undertakings. M-PESA that is an electronic banking scheme that uses phones has enormously been espoused by entire monetary establishments hence making it the uppermost rising web in lieu of monetary dealings, (Kirimi, 2018). Financial establishments similarly began agency banking in Kenya where persons with reputable establishments are chosen to help as mediators in lieu of bank facilities. For example, cooperative banks have amenities named as —Coop kwa Jirani, Equity Agents as well as KCB Mtaani amongst others.

Munyoki (2017) scrutinized the outcome of online banking on the fiscal enactment of monetary establishments in Kenya. A descriptive study design was espoused as well as a study populace of all the 43 monetary establishments in Kenya. The primary data were gathered via questionnaires whereas secondary data was from yearly reports delivered by CBK. The research recognized a weak but positive as well as momentous relation amid online banking as well as fiscal enactment of monetary

establishment in Kenya. The affiliation is credited to online bank cut costs, upsurge commission revenue; decrease recruitment echelons as well as make banking more suitable in lieu of clienteles. The investigator then commended the monetary establishment ought to address safety concerns in lieu of the cumulative online banking deception cases.

Financial Inclusion

The literature on financial inclusion highlights several types of data that capture the determinants - and effects - of financial inclusion, (Fowowe, 2017). First, there are cross-sectional studies that combine household or firm-level data with macroeconomic indicators of financial development, as well as inclusion, (Demirguc-Kunt and Maksimovic, 2018). Second, there are country-specific studies that merge firm-level data and access data with financial development, (Butler and Cornaggia, 2019). Third, some studies use firm-level data on several indicators that capture access to financial markets, (Beck *et al*., 2019).

The first set of studies are of the highest interest; however, touch upon some of the main findings of the other two sets, for reference purposes. Although the impact of financial inclusion is beyond the scope of this analysis, it is important to note that despite the recent increase in the research on this topic and the fact that financial inclusion is a top policy agenda, there is still an unclear link between financial inclusion and macroeconomic outcomes, (Demirgüç-Kunt et al., 2017).

Until recently, and mainly due to limited data availability, most empirical research focused on financial development rather than financial inclusion and income inequality. As the literature on the determinants of financial inclusion is still at a relatively early stage, financial development was assumed automatically to lead to financial inclusion. This, however, is not necessarily the case. We argue that financial development is necessary but insufficient for financial inclusion. Relatedly, Evans (2018) holds that while financial development has increased over the last decade among African countries, the breadth and coverage of formal finance is still well below their peers.

In this context, most studies on financial inclusion focus primarily on EMs, and frontier markets, using mainly country-specific data rather than cross-country analysis. Once again, financial inclusion and financial development are two distinct concepts, both of which are of huge importance, with existing overlaps. Financial inclusion is normally captured by ownership of an account by households (and enterprises,) either at a financial institution, or even through a mobile money service provider.

Financial development, however, is measured by broader macro-level indicators that capture both bank and non-bank size, as well as health and efficiency of the financial sector. Financial development is also a necessary condition for financial inclusion, but is insufficient if financing constraints prevent households and firms from using the available financial services. Among the first studies to address the question of financial inclusion beyond the greater scope of financial development was that of Beck *et al*. (2017). Using data for banking sector outreach for 99 countries over the period 2003-2004, they found that institutional quality affects financial inclusion positively, while the degree of government ownership of banks has a negative effect. Other determinants of financial inclusion include GDP per capita, governance, and the institutional quality and the regulatory environment, (Rojas-Suarez, 2019, Karlan et al., 2017, Park and Mercado, 2019, and Allen et al., 2018).

Some of the most interesting studies on the determinants of financial inclusion include that of Sarma and Pais (2018), who employ data for 49 countries to study the determinants of financial inclusion. They find that higher GDP per capita, physical infrastructure, telephone and internet subscriptions, financial development, and adult literacy have a positive and significant impact on financial inclusion. However, a higher percentage of rural population, a high share of foreign bank ownership, non-performing loans, as well as highly

capitalized banking systems - as measured by the capital asset ratio (CAR) - were inversely associated with financial inclusion. The authors conclude that there is an element of cautiousness associated with lending when it comes to banks with a high CAR, (Sarma and Pais, 2018).

Honohan (2018) uses financial access data for 160 countries within an OLS context and finds that increased mobile phone penetration and better institutional quality (as well as governance) are positively correlated with their access variables - the number of bank accounts per 100 adults - even when per capita income is controlled for. Another important factor is greater proximity to financial intermediaries, which could also be in line with Honohan and King's (2019) result that mobile phone penetration matters for higher household financial penetration ratios. Generally, levels of economic development and financial inclusion are highly correlated (Sarma and Pais 2017), suggesting that for more developed economies, fewer unbanked households are to be expected.

Gimet and Lagoarde-Segot's (2017) study examines the link between financial development and access to finance, and specifically whether banking and capital market characteristics can increase banks' ability to increase credit to the private sector while boosting financial inclusion. Using data for 138 countries over the period 2002-2009, they employed GMM and panel vector error correction models. They found that financial development – evidenced by more developed equity markets – increases access to finance as they offer opportunities for banks to develop tools to increase access to their supply and services. They also found that a larger banking sector size hinders access to finance, and smaller banks with strong proximity to their clients are better for financial inclusion. The health, as well as efficiency of the banking sector is hugely important in terms of access to finance, particularly lower NPLs and higher bank capital to asset ratio, and lower fees on deposit accounts.

Institutional quality was also found to be a determinant for access to finance, and they found that an increase in Tier 1 bank capital asset ratio had a negative impact on credit. This implied that while higher capital requirements were effective in lowering credit boom related vulnerabilities, lower credit expansion meant lower financial inclusion. It is very important to note that Gimet and Lagoarde-Segot's (2017) paper is one of the few - to our knowledge - that linked financial inclusion to macro prudential policy. Beyond capital market development, the authors find that macro prudential regulation (as measured by tier 1 banking capital asset ratios as a proxy for capital requirements) is important for financial stability; however, it lowers financial inclusion, via lower credit extensions.

Empirical Review

Akhisar, Tunay and Tunay (2018) researched the impacts of the bank's productivity execution of electronic-based managing an account administrations in 23 created and building up nations' electronic keeping money administrations through 2005 utilizing dynamic board information techniques. The discoveries of the study set up that bank productivity of created and creating nations was influenced by the proportion of the quantity of branches to the quantity of ATMs and were profoundly critical and electronic managing an account administrations in huge. The concentrate likewise found that a few variables had a negative relationship, due to differing qualities in the level of advancement of the nations, the socio-social structure and electronic managing an account base.

Ranjani and Bapat (2017) analyzed whether individuals who have ledgers alongside access to different wellsprings of credit use financial balances adequately and whether holding financial balances encourage managing an account propensities in these individuals. This examination undertaking was led crosswise over 550 respondents for the most part borrowers of microfinance organizations to find out whether they had financial balances and what their observations about banks were. This study reasoned that basically having a record with a bank did not bring about the borrowers utilizing

saving money administrations and that they liked to manage organizations that permitted more adaptable administrations than the bank. The concentrate additionally found that to have the capacity to accomplish incorporation, it is insufficient if ledgers are opened.

Monyoncho (2018) inspected the relationship between E-Banking advances and money related execution of business banks in Kenya utilizing optional information for a time of five years. The discoveries of the study uncovered that ATM developments, Mastercards, portable managing an account and web keeping money offer the comfort of directing a large portion of the saving money exchanges at the time that suits the client. The study presumed that selection of E-Banking advances affected the execution of business banks in Kenya and prescribed that business banks ought to keep putting resources into saving money innovations.

Njenga, Kiragu and Opiyo (2018) inspected the impact of money related developments on budgetary execution of SACCO's in Nyeri County, Kenya. The study utilized a cross sectional overview research plan utilizing a specimen of 30 SACCO's and a semi-organized poll to gather information for the study. The study discoveries built up that phone keeping money and web saving money were measurably noteworthy. The study inferred that there is a remarkable relationship between monetary advancements and the money related execution of SACCOs and that phone managing an account and web keeping money are the fundamental drivers of the budgetary execution of SACCOs.

Dabla-Norris, Yan and Filiz (2018) examined three measurements of money related incorporation to be specific access, profundity and intermediation productivity. The study utilized firm-level information from the World Bank Enterprise Survey for six nations at different degrees of financial improvement—three low-wage nations (Uganda, Kenya, Mozambique), and three developing business sector nations (Malaysia, the Philippines, and Egypt). The study discoveries built up that lightening diverse monetary contacts have a differential effect crosswise over nations, with nation particular attributes assuming a focal part in deciding the linkages and tradeoffs between consideration, GDP, imbalance, and the dispersion of additions and misfortunes.

METHODOLOGY

Descriptive study design was espoused in the research. The study targeted head of credit departments, Finance director and Operations Directors from the 50 commercial banks within Mombasa County which gave a total of 150 respondents for the study. The researcher applied the Neyman distribution sample formula to calculate a sample size of 109. The research used stratified sampling method where the respondents were selected.

The base of information in lieu of the study was collected through primary as well as secondary data. The researcher administered questionnaires through 'drop-and-pick later' process, whereby she dropped the questionnaires to the employees and then collected them after one week. Descriptive analysis was widely used in terms of standard deviation as well as means, frequencies and percentages was applied for the presentation of data. Multiple regression analysis was applied to determine affiliation amid variables of interest. The researcher applied Statistical package for social sciences (SPSS) version 21 to scrutinize data. Regression, ANOVA, correlation and model summary was generated and data presented in tables. Inferential statistics that were chi square. The results was presented in terms of tables as well as figures in lieu of better understanding. To determine the effects of independent factors on the dependent variable - modern digital transformation in banks - a regression model was applied. Regression aids in evaluating and describing the relationship various variables. It also attempts to explain the movements between variables. ANOVA which is analysis of variance was utilized in challenging the significance of the model. The main

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variables of the research were adaptability of digital banking, affordability of digital banking, speed of transactions of digital banking and accessibility of digital banking. In this research, the extent of suitability of the regression model was tested by use of R2. The following is the model that was used to measure the variables:

$$Y = \beta 1X1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where;

Y: is modern digital transformation in banks

$\mathbf{X_1}$: is adaptability of digital banking

$\mathbf{X_2}$: is affordability of digital banking

$\mathbf{X_3}$: is speed of transactions of digital banking

$\mathbf{X_4}$: is accessibility of digital banking

Y intercept when X=0

β_1, β_2, β_3 and β_4: Coefficients of the independent variables which measures the responsiveness of **Y** to changes in X.

FINDINGS

Descriptive Statistics

Effect of adaptability of digital banking on financial inclusion in tier one banks

The researcher requested the respondents to respond on the effect of adaptability of digital banking on financial inclusion in tier one banks in Mombasa County. The result in table 1 showed the mean and standard deviation of responses to the four statements pertaining the effect of adaptability of digital banking.

Table 1: Effect of adaptability of digital banking

Effect of adaptability of digital banking	Mean	SD
There is service quality when using digital banking	3.4	1.310
Cost of service is relatively low	3.2	1.270
Competition is enhanced when using digital banking	2.9	.987
The bank frequent monitor how procedures are adhered to	3.12	1.310

From the result, a majority of the respondents were of the opinion that there is service quality when using digital banking with a mean of 3.4 and standard deviation of standard deviation of 1.31 (m=3.4, SD=1.31). They also indicated that cost of service is relatively low with a mean of (m=3.2, SD=1.27). To a greater extent they also believed that competition is enhanced when using digital banking with a mean of (m=2.9, SD=.987) and the bank frequent monitor how procedures are adhered to (m=3.12, SD=1.31). The result suggests that adaptability of digital banking influences financial inclusion in tier one banks. The research findings concur with those of Moreno, (2018) who posited that technology enabled information companies are using digital to re-discover their affiliation. The growth of advanced technology in the monetary establishment offers higher services to the clienteles.

Effect of affordability of digital banking on financial inclusion

The main reason for the researcher to ask this question was that, he wanted to know exactly whether the respondents had an idea on the effect of affordability of digital banking on financial inclusion.

Table 2: Effect of affordability of digital banking

Effect of affordability of digital banking	Mean	SD
There are high profits gained when using digital banking	3.52	1.712
Digital banking have low transaction and maintenance costs	3.81	1.363
Security when using digital banking is mostly better	3.17	1.202

The results indicate that most of the respondents to a great extent agreed that There are high profits gained when using digital banking with a mean and Standard Deviation of (m=3.52, SD=1.712), other

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respondents indicated that digital banking have low transaction and maintenance costs leading to high levels of profitability over their economic lifetime (m=3.81, SD=1.363) and others indicated that Security when using digital banking is mostly better with a mean of (M=3.17, SD=1.202). The result suggests that the affordability of digital banking is imperative in financial inclusion in tier one banks in Mombasa County. The findings concur with those of Yancy (2017) who indicated that a client can similarly tell once his or her imbursement will arrive online. One may settle utilities or other dues online. Mobile banking decreases overall cost suffered by client. Yancy posited that monetary establishments provide mobile banking amenities at charges lesser than what the client would suffer if he/she was to use usual fiscal establishments' transactions.

Effect of speed of transactions of digital banking on financial inclusion

The result in table 3 showed the responses regarding the effect of speed of transactions of digital banking on financial inclusion.

Table 3: Effect of speed of transactions of digital banking

Statements on the speed of transactions of digital banking	Mean	SD	
Accessibility of financial services is enhanced	2.89	.345	
Cash deposit is easier when using digital banking	3.81		.782
Cash drawing is faster and efficient when using digital banking	3.52	1.072	

The result shows that to a great extent that accessibility of financial services is enhanced with a mean of (m=2.89, SD=.345), cash deposit is easier when using digital banking with a mean of (m=3.81, SD=.782) and cash drawing is faster and efficient when using digital banking with a mean of (m=3.52,SD=1.072). The result suggests that speed of transactions of digital banking influences financial inclusion in tier one banks in Mombasa County.

Effect of accessibility of digital banking on financial inclusion

The results in table 4 show the responses concerning the effect of accessibility of digital banking affect financial inclusion.

Table 4: Effect of accessibility of digital banking

Effect of accessibility of digital banking	Mean	SD
Privacy is enhanced when using digital banking	2.77	1.245
Customers are satisfied when using digital banking	2.81	1.182
It enhances profits in the banks	2.52	1.272

The result showed the effect of default risk management on financial performance of banks in Mombasa. According to the findings, privacy is enhanced when using digital banking (m=2.77, SD=1.245). Additionally, the respondents indicated that customers are satisfied when using digital banking with a mean of (m=2.81, SD=1.182) while other respondents indicated that digital banking enhances profits in the banks with a mean of (m=2.5, SD=1.272). The findings concur with those of Kumbhar (2017) who indicated that efficiency of service delivery have a momentous association with general client gratification. Actual service distribution is definitely connected to client gratification in that, when a client observes that the distribution style of the dealings that monetary establishment is supposed to give is fairly decent, the more the clienteles will be content with the bank amenities.

Modern digital transformation in banks

The result in table 5 shows the mean and standard deviation. It shows the influence of modern digital transformation in tier one banks in Mombasa County.

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Table 5: Modern digital transformation in banks

Modern digital transformation in banks	Mean	SD
Return on Equity is high	3.77	1.445
Enhances Return on Investment	3.81	1.482
Enhances return on assets	3.52	1.173

The respondents indicated that return on equity is high with a mean of (m=3.77, SD=1.445), Return on Investment is enhanced with a mean of (m=3.81, SD=1.482) while other respondents indicated that return on assets is enhanced with a mean of (m=3.52, SD=1.173). The findings concur with those of Kiragu, (2017) who posited that the role of financial establishments in an economy is supreme since they implement fiscal strategy as well as deliver ways in lieu of enabling payment for belongings as well as amenities in the national as well as global trade.

Correlation Results

Correlation analysis is a technique used to determine how variables are connected with one another. Correlation matrix was created to express connotation amid independent as well as dependent variables. Table 6 shows the outcomes of the correlation analysis.

Table 6: Correlation Matrix

Variables		Digital T	Adaptability	Afford	Speed	Access
Digital T	Pearson Correlation	1				
	Sig. (2-tailed)					
Adaptability	Pearson Correlation	.033	1			
	Sig. (2-tailed)	.591				
Affordability	Pearson Correlation	.203**	-.067	1		
	Sig. (2-tailed)	.001	.277			
Speed of T	Pearson Correlation	.075	-.025	.330**	1	
	Sig. (2-tailed)	.224	.685	.000		
Accessibility	Pearson Correlation	.230**	.144*	.689**	.278**	1
	Sig. (2-tailed)	.000	.019	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Research Data (2022)

The result showed that there is a positive correlation between each pair of independent variable. The correlation between the pairs is moderate and significant at .05 significant levels. This indicates that the independent variables measure the same construct that is of modern digital transformation. This forms other strength of this study.

The correlation between the independent variables (adaptability of digital banking, affordability of digital banking, speed of transactions of digital banking as well as accessibility of digital banking) besides the dependent variable (modern digital transformation) results shows that all are positive and significant. In particular, adaptability of digital banking is positively and significantly correlated (r=.033, p<.05). Similarly, affordability of digital banking (r=.203, p<.05), speed of transactions of digital banking (r=.075, p<.05), and accessibility of digital banking (r=.230, p<.05) are positively and significantly correlated with drive for modern digital transformation on financial institutions. A regression model was assessed that links financial inclusion as well as drive for modern digital transformation. In the table above, there are some figures (with no stars) whose relationship with drive for modern digital transformation on financial

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institutions is not significant. The regression result is presented in the next section.

Regression analysis results

Regression was adopted in order to try and find out the correlation between financial inclusions and the drive for modern digital transformation on financial institutions. A positive or negative correlation was expected. The findings were as shown below.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.816[a]	0.667	0.589	0.65237

a. Predictors: (Constant), Adaptability, Affordability, Speed of T, Accessibility of digital banking

Source: Research Data (2022)

The model summary shows that there is a significant (R=0.816) relationship between financial inclusion and the drive for modern digital transformation on financial institutions. The research also arrived at an adjusted R squared of 0.667. This means that 66.7% of the total variance in modern digital transformation on financial institutions can be attributed to financial inclusion.

Coefficients of Determination

They show the general trend of the relationship between dependent and independent variables. The results of this study are illustrated in table 8.

Table 8: Coefficients of determination

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-.742	.429		8.725	.000
	Adaptability	.029	.138	.212	3.112	.005
	Affordability	.075	.175	.432	3.132	.005
	Speed of T	.041	.155	.252	4.057	.001
	Accessibility	.056	.152	.369	4.596	.001

a. **Dependent Variable: Digital transformation (ROA)**

Source: Research data (2022)

With 95% confidence level, Adaptability t=3.112, p=.005, accessibility of digital banking t=4.596, P=-001, affordability of digital banking t=3.132, p=.005 and speed of transactions of digital banking t=4.057, p=.001. The study produced statistically significant values with p values less than 0.05. Constant = -0.742 shows that the independent variables adaptability of digital banking, affordability of digital banking, speed of transactions of digital banking and accessibility of digital banking were zero, the drive for modern digital transformation on financial institutions would be -0.742. A one unit change increase in adaptability of digital banking would lead to increase in digital transformation on financial institutions by .029. A unit increase in affordability of digital banking will lead to a .056 increase in digital transformation on financial institutions. A unit increase in speed of transactions of digital banking would lead to .075 increase in digital transformation on financial institutions while a unit increase in accessibility of digital banking would enhance digital transformation on financial institutions by .041.

The regression model equation can be expressed as:

$Y = -.742 + 0.029X_1 + 0.075X_2 + 0.041X_3 + 0.056X_4$

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Yi = Modern digital transformation (ROA), X_1 = Adaptability of digital banking;
X_2 = Affordability of digital banking; X_3 = Speed of transactions;
X_4 = Accessibility of digital banking

Analysis of variance (ANOVA)

In order to determine the goodness of fit of the regression model an analysis of variance was sought. The results of this analysis are shown in table 9.

Table 9: Analysis of variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.449	4	.362	45.25	.000[b]
Residual	0.726	96	.008		
Total	2.175	100			

a. **Dependent Variable:** Modern digital transformation **(ROA)**

b. **Independent,** Adaptability, Affordability, Speed of T, Accessibility of digital banking**.**

The study found out that the regression model had a significance level of 0.00%. This is an indication that the model was an ideal predictor of financial inclusion of the tier one banks in Kenya given the drive for modern digital transformation on financial institutions. This is because the significant value (p-value) was far much less than 5% which was used as an indicator of statistical significance.

Discussion of Findings

The objective of the study was to analyze effect of digital transformation in financial institutions on financial inclusion case of tier one banks in Mombasa County. Return on asset was used to measure drive for digital transformation on financial institutions. The independent variables were as follows, adaptability of digital banking, affordability of digital banking, speed of transactions as well as accessibility of digital banking. The findings of the study indicated that there was a strong (R=0.518) relationship between financial inclusion and the drive for digital transformation. A 0.141 value of adjusted R-squared was arrived at.

This means that 14.1% of the total variance in digital transformation on tier one banks in Kenya can be attributed to financial inclusion. ANOVA statistics revealed that the regression model was ideal since it had a significance level of 0.0%. The study further established that adaptability of digital banking, affordability of digital banking, speed of transactions as well as accessibility of digital banking affects financial inclusion of the of tier one banks in Mombasa County, positively and in a statistically significant way. As such, Mbutor and Uba (2013) established that growing financial inclusion improves the effectiveness of monetary policy however; the number of bank branches had the wrong sign because by opening branches, banks mainly pursue profits but not financial inclusion.

CONCLUSIONS AND RECOMMENDATIONS

This study sought to examine the effect of digital finance on financial inclusion in the banking industry in Kenya. The study adopted the Stakeholder Theory, The Instrumental Theory, Diffusion of Innovations Theory, System Theory. The study considered four objectives which are adaptability of digital banking on financial inclusion in tier one banks, affordability of digital banking on financial inclusion in tier one banks, effect of speed of transactions of digital banking on financial inclusion and finally the effect of accessibility of digital banking on financial inclusion in tier one banks. This study targeted 10 respondents from tier one banks, which offered all the three digital finance services including mobile banking, agency banking and internet banking.

The descriptive statistics results revealed that there is service quality when using digital banking with a mean of 3.4 and standard deviation of standard deviation of 1.31. They also indicated that cost of

service is relatively low with a mean of 3.2 and a Standard Deviation of 1.27. To a greater extent they also believed that competition is enhanced when using digital banking with a mean of 2.9 and Standard Deviation of 0.987 and the bank frequent monitor how procedures are adhered to with a mean of 3.12 and a Standard Deviation of 1.31. The regression results established that the independent variables explained only 14.1% of the variation in the dependent.

The results of the regression coefficients found that there is an insignificant negative relationship between agency banking measured in term of the number of agents, mobile banking measured by the number of mobile banking transactions and internet banking measured in terms internet banking transactions with financial inclusion in the banking industry in Kenya. Finally, the ANOVA results established there was no significant relationship between digital financial services and financial inclusion in the banking industry in Kenya.

The findings of the study found that the variables influences financial inclusion in the banking industry in Mombasa County. This study concludes that variables affects financial inclusion and that the forms digital financial services adversely and insignificantly affect financial inclusion in the banking industry in Kenya. Overall, the study concludes that digital finance does not have a significant effect on financial inclusion in the banking sector in Kenya. Thus, banking institutions adopt digital financial services to lower operating cost associated with opening and operating more branches to improve their profitability and financial performance and not to foster financial inclusion. Additionally, the study observes that the adoption of digital financial services is more of a competitive strategy and policy used by banking institutions to increase their bottom lines and not a financial inclusion strategy.

The study concluded that digital financial services have an insignificant effect on financial inclusion in the tier one banks in Kenya. As such banking entities charge fees and commission on digital finance services, which may discourage their usage by customers. This study recommends that to ensure the usage and adoption of digital financial services, bank should create more awareness of such services and offer them at lower cost to enhance the usage of such services. The study has observed that digital financial services do not foster financial inclusions hence the conclusion that digital financial services are aimed at lowering operating cost and improving banking institutions profitability.

This study recommends that the Government of Kenya and the various policy institutions in Kenya should come with policy structure, which will enhance financial inclusion since financial inclusion promotes financial intermediation and economy growth. Financial inclusion is essential to improve the ways of groups unable to reach financially and drive the sustainable economy. There must be joint strategies between financial and non-financial institutions from the private and public sectors to develop criteria, foundations and indicators for financial inclusion, while creating a supportive implementation framework for this strategy with policies in place. And appropriate financial regulations and infrastructure.

Suggestions for Further Research

This study combined different forms of digital finance to establish their effects on financial inclusion in the banking sector in Kenya. However, the adoption of digital finance had been varying with the earliest forms of digital finance that were introduced in 2010 in Kenya. This study suggests an independent examination of each form of digital finance on financial inclusion in the banking industry to establish their individual effects.

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