Digital Banking Strategy and Financial Inclusion among Commercial Banks in Kajiado County. A Case of Kenya Commercial Bank in Kajiado County, Kenya

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Authors' contributions

This research work was carried out in collaboration between both authors. Author JMM designed the study, performed statistical analysis, wrote the protocol, wrote the first draft of the manuscript, edited and made all the corrections. Author COO supervised all the processes involved in preparing the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

Despite the expansive infrastructure of commercial banking in Kenya, a large percentage of the country's population is excluded from access to formal banking services/products. Further, there is insufficiency of credible information on the manner that digital banking strategies relates to inclusion on access to financial services. Accordingly, this study was in search of bridging the gap with the objective of evaluating the effects of the digital banking strategy on financial inclusion midst commercial banks in Kajiado County (a case of Kenya commercial bank in Kajiado county). This research utilised quantitative methods and espoused descriptive research design. It regarded the 323 Kenya commercial banks outlets (branches and bank agents) in Kajiado County for its target population and obtained a sample size of 179 respondents. A closed-ended questionnaire was administered using drop and pick approach, was developed for gathering data to be acquired from primary sources. This research adopted quantitative analysis approach to yield descriptive statistics

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and inferential statistics. The study concludes that at 5% error level, digital banking channels, digital financial infrastructure, convenience of digital financial services, have a statistical positive significant effect on financial inclusion among commercial banks in Kajiado county while digital service offering has a statistically insignificant effect on financial inclusion among commercial banks in Kajiado county. The study recommends that the commercial banks in Kajiado should, provide digital banking services to areas that are not easily accessible, acquire adequate infrastructure facilities and adopt efficient technology, offer simple, cost effective and secure services to their customers and provide wide variety of digital service.

1. INTRODUCTION

1.1 Background of the Study

Nowadays, the most dominant channel of financial intermediation in emerging economies, like Kenya, is that of commercial banks [1]. More so, Ongore and Kusa [2] indicate that commercial banks have their core function as being; accepting deposits, lending money (funds) and to offering funds' transfer services which links them to the rest of the economy. Access to banking is thus essential in any country and this explains the need of making banking services accessible and attractive to everyone without prejudice [3]. Financial inclusion ensures that more people are included in the formal financial system, which promotes commercial banks to being the dominant financial intermediation channel for financial inclusion and thus requiring these banks to initiate easy accessibility of financial services [2,3].

World Bank [4] approves financial inclusion as a viable avenue for promoting poverty reduction and socio-economic inequality, playing a key role in fostering sustainable and balanced economic growth. This demands for everyone to be capable of equally accessing every foreseeable products/services provided by commercial banks in terms of bank accounts, money transfer services and the like in order to claim sufficiency in financial inclusion [5]. However, Soriano [3] postulates that, as of today, an estimated 2 billion adults are financially excluded. More so, World Bank [6] poses that majority of the financially disadvantaged and the vulnerable Bottom of the Pyramid [BoP] society live on wages of less than $2.00 a day. Consequently, with no doubt, the unbanked population would abruptly shoot to the tune 3.5 billion when they continue being discriminated from formal banking services such as loans [7].

In their effort to spur financial inclusion, commercial banks are adopting digital banking strategy as a financial channel for delivering services/products securely, effectively and reliably to satisfy increasingly complex demands and challenges of globalization [8]. Importantly, it increases protection for the cash of the people and is more comfortable than keeping money at home / moving with the money [9]. It is cheap to access digital finance, this allow low-income and disadvantaged people to be able to participate in the financial system, this has positive impacts on financial inclusion [10]. This strengthens households as it allows majority of the country's population to play their role of economic growth and employment, which aims to further promote programs that bring about social development [11].

Digital banking strategy is in the lineage of automated teller machines (ATM), whose origin is telephony lines banking that expanded to M-banking and I-banking [8]. It extends traditional banking services to innovative, modern platforms including solutions for electronic money (E-Money) which include the M-Banking solutions, Internet banking (I-banking) solutions and digital payments. This strategy generally involves the use of modern technology, including electronic money (e-money), electronic money (M-Cash, e-card and EFT) as an avenue for the transacting financially [12].

1.2 Statement of the Problem

Today, an estimated 2 billion adults around the globe are financially excluded; accounting for around half the global population of adults [6,3]. In Kenya, an estimated 61.6% of its population is still unbanked [13]. While accessibility to financial services has been a problem in Kenya for a long time, financial sector stakeholders have unanimously agreed that financial services access is limited in Kajiado County. Also, large

percentage of Kajiado County's population is financially excluded, a situation ameliorated by the geographical location of the commercial bank; which are far from the prospective customers. Accordingly, majority of the Kajiado County residents have been derived accessibility to formal banking services, propagating household poverty. Gichuki and Jagongo [14] claims that there is no validly reliable information on digital banking strategy and its connection with financial inclusion in Kenya. This demands for immediately producing more empirical research to reveal the hidden valuable and treasured information to assist in propelling financial inclusion and hence mitigate financial exclusion. This persuaded the researcher to carry out a research for unlocking this knowledge gap.

1.3 Objectives of the Study

The main objective of this study was assessing the effects of digital banking strategy on financial inclusion among commercial banks in Kajiado county and specifically,

i. To establish the effects of digital banking channels on the financial inclusion among commercial banks in Kajiado county.
ii. To establish the effects of digital financial infrastructure on the financial inclusion among commercial banks in Kajiado county.
iii. To determine the effects of convenience of digital financial services on the financial inclusion among commercial banks in Kajiado county.
iv. To find out the effects of digital service offering on the financial inclusion among commercial banks in Kajiado county.

2. LITERATURE REVIEW

2.1 Theoretical Literature

2.1.1 Theory of financial innovations

The theory suggest that innovations are a crucial motivating force of the financial system for creating greater technical maturity and maximizing the economic advantage of recent and ongoing improvements [15]. Financial inclusion characterizes financial developments by considering better production approaches, technical solutions that ensure higher rates of return and thus boost the economy of the country. Financial inclusion ensure that assets

are distributed to insufficient areas and further enable deepening of financial inclusion to the rising prospects in the future. According to Omwansa and Waema [16] the emerging, innovative financial inclusion models propagated using digital banking strategies, particularly in many African countries.

2.1.2 Financial growth theory

Bagehot [17] suggested a theoretical financial growth theory, through the introduction of an efficient modern financial system, to create a stable and productive environment for economic growth. This theory presupposes an underlying high level of indifference in income levels partly contributing to derailment in economic growth as well development across the world, particularly, accessibility to financial products experienced by most individuals [1]. Countries should therefore encourage policymakers to prioritize financial mobility by focusing on factors which impact financial growth as an all-inclusive mechanism for fostering economic inclusion. As a result, this theory has become the fundamental hypothesis for informing this study; concerning financial inclusion to develop an inclusive economy. Access to stable, readily accessible and affordable financing is established as a requirement for increasing employment and economic growth and thereby growing inequalities in incomes earnings. Digital banking strategy establishes equal prospect and hence fostering socially excluded individuals into participating in economic activities [17].

2.2 Empirical Literature

Certain empirical research and related studies, which were acknowledged as convenient in relating financial inclusion to the embracing digital banking channels were meticulously reviewed in this section. At the beginning, the research looks at digital banking strategy and the manner in which it relates to financial inclusion and thereafter, there is review of each strategy as driven by specific research objectives.

While Durai and Stella [5] found that M-banking positively impact on accessibility, ease, precise timing and fast interbank account facilities, Shofawati [18] revealed that when digital finance is availed then there would be experienced considerable improvement in financial inclusion especially among SMEs (Small and Medium-Sized Enterprises). As Misati et al. [19] showed digital financial services as significantly affecting

bank performance positively, Ozili [10] explains digital financing as relevant for providing low-and middle-income people with services.

Sindani et al. [20] reveals that embracing I-banking has wired Kenya's banking industry by increasing its profitability and effectiveness while Kithinji [21] justifies that M-banking as well as ATM, agency banking, and online banking were the most preferred and importantly employed digital banking strategy.

In India, D'Silva et al. [22] indicate that India is committed to providing digital financial infrastructure which helped India to bring most of its population into formal financial arrangement. Soriano [3] revealed that banks were facing challenges of financial infrastructure in rural areas which acted as barriers to financial inclusion among the poor and marginalized who would not access financial products. Agufa [9] posits that digital financial services are valuable to the people for boosting their cash protection and are more comfortable compared to keeping money at home.

Durai and Stella [5] study found that the effect on financial inclusion of digital finance is substantial, and that everyone intends use digital finance in their lives. Moore et al. [23] indicated that financial inclusion is being strangled by failure to fully understand the most effective design and delivery mechanisms of financial products/services. Shofawati [18] shows that there is need to improve the digital finance mechanisms so as to ensure they are simple, cost effective, and secure in which case it will increase the financial inclusion. Sindani et al [20] concludes that financial inclusion and ATM Banking have a strong positive relation.

Haider [24] established that banks had innovated a wider variety range of DFS for the unbanked which were providing convenience to the customer and were more affordable to the low-income and BoP society in developing countries. As Mbama [25] showed brand, trust, integrity preventing fraud, perceived usability and service quality as important for improving customer experience, McKee, et al. [26] say that developments in advanced customer management have significantly created widened low-wage individuals with income-related managerial opportunities. Monyoncho [27] established that adoption of digital banking strategy offered give the low income an opportunity to save money and exchange money as they enjoy many more financial services with comfort.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study opted for adopting the descriptive research while considering the various research designs. This was informed by descriptive research design's ability of effectively provide comprehensive understandings of the problem under investigation and accurately describing all the variables at hand, which was required in this study. This study required comprehensively describing the characteristics of existing phenomenon; digital banking strategy coupled with its relation to and financial inclusion.

3.2 Target Population

The target population must have similar traits of interest to the study. Accordingly, this study had 4 Kenya commercial bank (KCB) branches and 319 licensed KBC Mtaani agents that are operating in Kajiado County as its target population [27]. Thus, the target population was 323 branches and agents (banking outlets) Table 1 captures these classifications.

Table 1. Classifications of target population

Outlet classification	Population	Sub total
KCB Branches	4	4
KCB Kajiado Agents	43	319
KCB Kiserian Agents	102	
KCB Kitengela Agents	96	
KCB Namanga Agents	78	
Total	**323**	**323**

Source: Computed from KCB Group Limited (2020)

3.3 Sampling Procedures and Techniques

Sampling is a practice of obtaining fewer observations from the entire population to represent the whole population. Sampling includes description of the sampling method and sample size calculation. In determining the sample size, the study was informed by the formula suggested Yamane (1967) which is expressed as

$$n = \frac{N}{1+N(e^2)}$$

Where n is the sample size, N is the target population size and e is the level of precision (specifically ±5% precision at 95% confidence level).

Thus $n = \frac{323}{1+323 \cdot (0.05)^2} = \frac{323}{1+323 \cdot (0.025)} = \frac{323}{1+.81} = \frac{323}{1.81} = 179.0055 \approx 179$

So, the study will use 179 elements as its sample size.

The study then used stratified proportionate sampling to establish the sample size per classification. This size of sample from each classification was obtained by multiplying the population of the classification by sample size and dividing this by target population After this, the study adopted simple random sampling to select the outlets or branches that participated in data collection from each classification. For each classification, the study first established a sampling interval (n) given by the population of the classification divided by the sample size of that classification. Starting for one, the study picked the nth elements as participants in the study until the sample size of that classification was reached. Once the outlets were selected then their managers/owners were considered the respondents.

3.4 Research Instruments

In this study primary data originating from primary sources, was used for analysis. This data was collected using a structured questionnaire which were administered to the respondents. More precisely, a self-administered structured questionnaire was used as the tool for collecting data in the study. This questionnaire was administered using drop and pick up technique. The study embraced a 5-point Likert scale during tool construction. The study data was collected using a 5-point Likert scale (1 - 5) for assisting converting the qualitative responses into quantitative values [28]. The data was collected using drop and pick method.

3.5 Testing for Validity and Reliability

In advance of administration of the research tool, the tool was pretested for validity and reliability.

The content validity test was found useful for testing for validity in this study. The research sourced services of; supervisor and a financial management specialist, who had strong financial management experience and knowledge. As the supervisor assessed the instrument to establish concept being measured, the other expert was seeking to ascertain the validity of the tool in accurately measuring digitally banking channels as well as accurately measuring financial inclusion. These experts (reviewers) surrendered comments on the statistical validity and appropriateness of the questions to the research experts.

The present study conducted reliability tests for internal consistency to obtain Cronbach's alpha (α) coefficient. The data for reliability testing was collected from 18 outlets of commercial banks operating Narok County, a neighboring county. The results on reliability are captured in Table 2.

Table 2. Financial inclusion reliability statistics

Item	Cronbach's Alpha if item deleted
Financial inclusion among commercial banks in Kajiado county	0.895
Digital channel	0.947
Digital financial infrastructure	0.924
Convenience of digital financial services	0.88
Digital service offering	0.895
Cronbach's Alpha = 0.927, N= 5	

Source: Research Data (2021)

Informed by Table 4, Cronbach's alpha (α) coefficient among the five variables (N=5) was 0.927, an indication of highly reliable tool in that the reliability coefficient was approaching 1 while threshold is 0.7 [29]. Using the threshold provided Kothari [29], the it was deduced that the tool was having high internal consistency and highly consistent over time; financial inclusion among commercial banks in Kajiado County (α = 0.895), digital channel (α = 0.947), digital financial infrastructure (α = 0.924), convenience of digital financial services (α = 0.88), and digital service offering (α = 0.895). Since the instrument was found to be highly consistent, the research retained all the time in the tool and presented the too for administration.

3.6 Data Analysis

During analysis, quantitative approach was used to produced descriptive statistics for establishing the properties of independent variable (IV) sought to establish how it relates to the dependent variable (DV), financial inclusion among commercial banks in Kajiado county. These descriptive statistics included; frequency, percentages, means as well as standard deviations. After successfully carrying out quantitative analysis, the study performed a multiple regression analysis. predict a model that would be used in future to estimate the DV; financial inclusion among CBs in Kajiado county, in terms of the IVs; digital banking channels, digital financial infrastructure, convenience of digital financial services, and digital service offering. That is;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \square \quad \ldots\ldots\ldots(i)$$

Where:

Y = Financial inclusion among commercial banks in Kajiado county
X_1 = Digital banking channels
X_2 = Digital financial infrastructure
X_3 = Convenience of digital financial services
X_3 = Digital service offering
β_0 is a constant, which is the value of Y when each of X_1, X_2, X_3 and X_4 is zero.
β_{1-4} is the regression coefficients or change induced by X_1, X_2, X_3 and X_4
$\square$ = error term

4. RESULTS AND DISCUSSION

The response rate was 37(76.54%] which was high according to Mugenda and Mugenda [30]

since it exceeded 69%. A response rate of 76.54%, was very high to lead to credible results. A majority of 77(56.20%) respondents were singe while 50(36.50%) indicated that they were married. While a majority of 72(52.55%) were male, 65(47.45%) indicated that they were female. Thus, most of the people working in the banking industry were male. However, the number of females were closing in on the male counterparts. According to the results, the highest age group was those between 26 and 35 s who were 41(33.33%) of the total response while majority of respondents were between the ages of 18 and 45 years which was more than 70% of the respondents. A majority of 81(59.12%) showed that they were Secondary school leaver while 21(15.33%) had college diploma as 17(12.41%) were primary school dropouts and 14(10.22%) were university undergraduate. In the results, 4(2.92%) had postgraduate qualifications while most of the respondents, making up 64(46.72%) showed that they did not have any professional qualifications, 22(16.96%) showed that had accounting level 1 (such as CPA II) while 21(15.33%) showed that had diploma (including CPA I) and 18(13.14%) indicated that they had technician certificate (such as KATC). As 8(5.84%) showed that they and professional accounting level 1I (such as CPA III), 4(2.92%) indicated that they were certified accountants While a majority of 80(58.39%) showed that they had been in the banking industry for between three (3) to five (5) years, 37(27.01%) showed that they had been in the industry for between six (6) to 10 years an, 20(14.60%) showed that had been in the industry for more than 10 years.

4.1 Assessment of Objectives

Guided by the objectives, the research analysed data collected using the questionnaire using quantitative approach to obtain descriptive for establishing the properties of the variables. The results obtained were presented in tables were interpreted accordingly.

In that the questionnaire measured on a 5-point Likert Scale (1-5); strongly Disagree = 1: disagree= 2: neutral = 3: agree =4: strongly agree = 5, was analysed to produced mean (M) and standard deviation (SD) with decimal points (fractions), the results were transformed into scales in 1 to 1.8 for strongly Disagree, above 1.8 to 2.6 to mean disagree, above 2.6 to 3.4 to imply neutral, above 3.4 to 4.2 to mean agree and above 4.2 to 5 for strongly agree.

Meanwhile data measured using the scales; Not at all = 1: Low = 2: moderate = 3: high =4: very high = 5, was analysed to produced mean (M) and standard deviation (SD) with decimal points (fractions), the results were transformed into scales in 1 to 1.8 for Not at all, above 1.8 to 2.6 to mean Low, above 2.6 to 3.4 to imply moderate, above 3.4 to 4.2 to mean high and above 4.2 to 5 for very high.

4.1.1 Financial inclusion among Kajiado County CBs

In advance the research assessed the financial inclusion among CBs in Kajiado county to establish the level. After this analysis, the study returned the contents in Table 3.

The results show that they disagreed to the assertion that the ratio of the bank account to the population of adults in the area is very high (M= 2.21; SD = 1.31) implying it was not exceeding 75% as they also disagreed to the sentiment that all the bank account in their bank were active (M= 2.09; SD = 0.84). Further, they disagreed to the claim that the all customers were always able to access their accounts using digital banking services (M= 2.34; SD = 1.07) and again disagreed to the proposition that all bank accounts actively access digital banking services (M= 2.47; SD = 1.15). While they disagreed to the proclamation that There is very high bank usage by their customers (M= 2.38; SD = 1.09), they disagreed to the assertion that the customers easily adapted to their digital banking services (M= 2.39; SD = 0.86). Overall financial inclusion among commercial banks in Kajiado county was shown to be low (M= 2.31; SD = 1.05). Accordingly, there was low financial inclusion among commercial banks in Kajiado county agreeing to CBK (2016) financial services access is limited and accessibility to financial services has been a problem in Kenya where in Kajiado County. The low financial inclusion was informed by; low ratio of the bank account to the population of adults in the area, significant inactive bank account, customers inability able to access their accounts using digital banking services, bank accounts not actively accessing digital banking services, low bank usage by their customers and customer note easily adapting to their digital banking services. Since majority of the residents have been derived accessibility to appropriate financial services, household poverty in the county has been propagated and hence strangling the county's economic growth.

4.1.2 Effects of digital banking channels on the financial inclusion

While guided by objective one, to establish the effects of digital banking channels on the financial inclusion among commercial banks in Kajiado county, the research analysed digital banking channels as establish the effect on financial inclusion of CBs in Kajiado county to yield Table 4.

Table 3. Formal financial inclusion in Kajiado County

Financial inclusion among commercial banks in Kajiado county	M	SD
The ratio of the bank account to the population of adults in the area is very high (above 75%)	2.21	1.31
All the bank account in our bank are active	2.09	0.84
All out customers are always able to access their accounts using digital banking services	2.34	1.07
All bank accounts actively access digital banking services	2.47	1.15
There is very high bank usage by our customers	2.38	1.09
Our customers easily adapt to our digital banking services	2.39	0.86
Financial inclusion among commercial banks in Kajiado county	2.31	1.05

Source: Research data (2021)

Table 4. Analysis by digital banking channels and financial inclusion

Digital channel	M	SD
Mobile banking strategy such as Mobile Wallets (apps)	3.53	0.99
Online banking strategy (Internet banking, e-banking)	3.72	1.01
ATM banking strategy	3.31	0.94
Credit card and debit card.	3.66	1.02
Agency banking strategy	3.57	0.98
Digital channel	3.56	0.99

Source: Research data (2021)

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Table 4 is indicative of the participants showing that; a mobile banking strategy using mobile wallets and apps would highly influences financial inclusion among commercial banks in Kajiado county (M= 3.53; SD = 0.99) while financial inclusion among commercial banks in Kajiado county would be highly affected by online banking strategy including I-banking and e-banking (M= 3.72; SD = 1.01). While ATM banking strategy moderately affected financial inclusion among commercial banks in Kajiado county (M= 3.31; SD = 0.94), credit card and debit card highly affected financial inclusion among commercial banks in Kajiado county (M= 3.66; SD = 1.02). Also, financial inclusion among commercial banks in Kajiado county was highly affected by agency banking strategy (M= 3.57; SD = 0.98). On overall, the effects of digital channel on financial inclusion among commercial banks in Kajiado county was shown to be high (M= 3.56; SD = 0.99). Thus, digital channels were shown to have had highly affected financial inclusion among commercial banks in Kajiado to agree with Shofawati [18] that when digital finance is availed then there would be experienced considerable improvement in financial inclusion [5,8,10,14,19,21].

4.1.3 Effects of digital financial infrastructure on the financial inclusion in Kajiado County

This research assessed objective two; to establish the effects of digital financial infrastructure on the financial inclusion among commercial banks in Kajiado county to yield Table 5.

Outcome contained in Table 5 contains indicators of digital infrastructure and show that the participants indicated that financial data privacy would have highly affected financial inclusion among commercial banks in Kajiado county (M= 3.76; SD = 0.93) while financial inclusion among commercial banks in Kajiado county would be highly affected by data sharing policy (M= 3.47; SD = 0.88), While distribution infrastructure of the digital financing systems would have highly affected financial inclusion among commercial banks in Kajiado county (M= 3.75; SD = 1.01), interoperability for ease of transfer of funds between banks would have moderately impact on financial inclusion among commercial banks in Kajiado county (M= 3.39; SD = 0.86), and financial inclusion among commercial banks in Kajiado county would have been moderately affected by traceability of funds (M= 3.33; SD = 0.99). Also financial inclusion among commercial banks in Kajiado county would have been affected by financial education (consumer digital literacy) moderately (M= 3.32;SD = 0.85) while creating awareness of the digital financing would have had a moderate effect financial inclusion among commercial banks in Kajiado county (M= 3.24; SD = 1.02), and enhancing trust on the digital financing systems would have highly affected financial inclusion among commercial banks in Kajiado county (M= 3.80; SD = 0.91). On average, digital financial infrastructure was found to highly affect financial inclusion among commercial banks in Kajiado county (M= 3.51; SD = 0.93). Accordingly, the effect of digital financial infrastructure on financial inclusion among commercial banks in Kajiado county was shown to have been high the confirm [22,9,3].

4.1.4 Effects of convenience of digital financial services on financial inclusion

This research assessed objective three; determine the effects of convenience of digital financial services on the financial inclusion among commercial banks in Kajiado county which produced Table 6.

Table 5. Analysis by financial infrastructure and financial inclusion

Digital financial infrastructure	M	SD
Financial data privacy (unique, verifiable identity)	3.76	0.93
Data sharing policy	3.47	0.88
Distribution infrastructure of the digital financing systems	3.75	1.01
Interoperability for ease of transfer of funds between banks	3.39	0.86
Traceability of funds	3.33	0.99
Financial education (consumer digital literacy)	3.32	0.85
Creating awareness of the digital financing	3.24	1.02
Enhancing trust on the digital financing systems	3.80	0.91
Digital financial infrastructure	3.51	0.93

Source: Research data (2021)

Table 6. Convenience of digital financial services and financial inclusion

Convenience of digital financial services	M	SD
Cost effective process of operations	3.29	0.96
Pricing of transactions (money related consideration)	3.48	0.91
Affordability of digital connectivity	3.33	0.93
Connectivity of the digital devices for ensuring customers to communicate with ease and effectively	3.38	0.90
Digital finance mechanisms	3.65	0.89
Availability of digital finance	3.34	0.89
Convenience of digital financial services	3.41	0.91

Source: Research data (2021)

Assessment of convenience of digital financial services as affecting financial inclusion is shown in Table 6, where the participants showed that the effects on effective process of operations on financial inclusion among commercial banks in Kajiado county was moderate (M= 3.29; SD = 0.96) and that financial inclusion among commercial banks in Kajiado county was impacted by pricing of transactions highly (M= 3.48; SD = 0.91). Affordability of digital connectivity was shown to moderately influence the financial inclusion among commercial banks in Kajiado county (M= 3.33; SD = 0.93) while connectivity of the digital devices for ensuring customers to communicate with ease and effectively would moderately affect financial inclusion among commercial banks in Kajiado county (M= 3.38; SD = 0.90). While financial inclusion among commercial banks in Kajiado county would be highly affected by digital finance mechanisms (M= 3.65; SD = 0.89), availability of digital finance was shown to moderately influence financial inclusion among commercial banks in Kajiado county (M= 3.34; SD = 0.89). Overall, the effects of convenience of digital financial services on financial inclusion among commercial banks in Kajiado county was shown to be high (M= 3.41; SD = 0.91). The study found that convenience of digital financial services highly affected financial inclusion among commercial banks in Kajiado county. These findings are related to those in the study by Mbama [25] that the perceived value of digital banking services by customers cuts across; enjoyability, usefulness, timeliness cost reduction (saving), and easy life. So, banks improve their customers' experience should offer services that; add value, are accessible, are enhance and possess functional qualities as well as security [18].

4.1.5 Effects of digital service offering on financial inclusion

The fourth objective; find out the effects of digital service offering on the financial inclusion among commercial banks in Kajiado county was assessed to bring about Table 7.

The Table 7 results show the participants indicated that using digital merchant payments by small/informal businesses had a moderately influence on financial inclusion among commercial banks in Kajiado county (M= 3.39; SD = 0.89) while digitizing bulk disbursements such as salaries highly affected financial inclusion among commercial banks in Kajiado county (M= 3.42; SD = 0.86) and financial inclusion among commercial banks in Kajiado county was highly influenced by

Table 7. Analysis by digital service offering and financial inclusion

Digital service offering	M	SD
Digital merchant payments by micro and small business payments	3.39	0.89
Digitizing bulk disbursements	3.42	0.86
Pay-as-you-go (PAYG) financing	3.54	0.89
Digital savings (including pension and investment)	3.37	0.92
Savings group digitization	3.45	0.95
Digital credit (digital loan disbursements and collection)	3.55	0.81
Crowdfunding lending for lowering risks to the participants	3.32	1.03
Value chain digitization	3.49	0.92
Digital service offering	3.44	0.91

Source: Research data (2021)

Pay-as-you-go (PAYG) financing such as paying loans (M= 3.54; SD = 0.89). While digital savings such as Mshwari was found to moderately influence financial inclusion among commercial banks in Kajiado county (M= 3.37; SD = 0.92) Savings group digitization (M= 3.45; SD = 0.95), and digital credit (digital loan disbursements and collection) (M= 3.55; SD = 0.81) highly influenced financial inclusion among commercial banks in Kajiado county. Although Crowdfunding/alternative lending for lowering risks to the participants moderately affected financial inclusion among commercial banks in Kajiado county (M= 3.32; SD = 1.03), Value chain digitization (such as agricultural purchase, digital trading platforms) highly affected financial inclusion among commercial banks in Kajiado county was (M= 3.49; SD = 0.92). Digital service offering was shown to have had a high effect on financial inclusion among commercial banks in Kajiado county was (M= 3.44; SD = 0.91). Thus, the effect of digital service offering on financial inclusion among commercial banks in Kajiado county was high. Moore et al. [23] identified the various service for leveraging financial inclusion as savings, digital payment, credit and insurance. Household members with low income prefer to protect their resources and as such desire for restrictive access to finances and feature that highly ensure reduction of liquidity of savings so that they can meet savings target [31].

4.2 Inferential Analysis

The study tested the goodness of fit of the model using ANOVA with Table 8 holding the results.

So as to effectively interpret this table, the research used the beta value; coefficient of X_1, X_2, X_3 and X_4, in equation (i) where the study suggested that on one side, they are are all zero to signal $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$. Alternatively, it might be that at least one of the betas is 0 and to mean $\beta_i \neq 0$. The research then went ahead to check satisfaction of either occurrences at 5% level of significance. Notably, $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ is only true and then accepted when the p-value exceeds 0.05 (p >.05)> when this happens, the it is accepted and assumption $\beta_i \neq 0$ accordingly rejected. In case p-value ≤0.05) then the assumption $\beta_i \neq 0$ is true and then accepted to the detriment of rejecting proposal $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$. In our case, using (p-value = 0.000, F = 24.012), it can be observed that p-value < 0.05 to mean accepting the assumption $\beta_i \neq 0$ and rejecting $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$. Accepting assumption $\beta_i \neq 0$ provides evidence that at least one of the

betas 0 and this consequently means that at α=0.05, there is sufficient evidence that at least one of the IVs; digital channel, digital financial, convenience of digital financial services, digital service offering. Can reliably estimate financial inclusion among commercial banks in Kajiado county and accordingly, the respective estimated model reliably explains financial inclusion among commercial banks in Kajiado county in terms of; digital channel, digital financial, convenience of digital financial services, digital service offering.

The associated regression results obtain during this exercise is shown in Table 9.

Using Table 9, an estimation model was construed from the beta values and guided by equation, obtaining equation (ii) linear regression mode;

$$\hat{Y} = 0.389 + 0.171X_1 + 0.161X_2 + 0.353X_3 + 0.140X_4 \ldots\ldots\ldots\ldots\ldots \text{(ii)}$$

This is actually implies that;

Financial inclusion among CBs in Kajiado ($\hat{Y}$) = 0.389cons + 0.171 digital channel strategy (X1) + 0.161 digital financial infrastructure (X2) + 0.353 convenience of digital financial services (X3) + 0.141 digital service offering (X3)…………… (iii)

Thus, financial inclusion among CBs in Kajiado increases by 0.389 units regardless of whether the digital banking strategy indicators are active or not. The estimated model further exposes the effect the exploratory variables of digital banking strategy on the financial inclusion among CBs in Kajiado. Starting from the first a unit (1) change in the digital channel strategy (X1) leads to a 0.171 rate of increase in the financial inclusion among CBs in Kajiado and vice versa. When digital financial infrastructure (X2) increases with one-unit, financial inclusion among CBs in Kajiado increases at a rate of 0.161 and when digital financial infrastructure (X2) decreases with one-unit, financial inclusion among CBs in Kajiado decreases at a rate of 0.161. Meanwhile, one unit increase in convenience of digital financial services (X3) causes a rate of increase of 0.353 in financial inclusion among CBs in Kajiado and vice versa. When digital service offering (X4) increases by one-unit, financial inclusion among CBs in Kajiado increases at a rate of 0.140 and when digital service offering (X4) decreases by one-unit, financial inclusion among CBs in Kajiado decreases at a rate of 0.140.

Table 8. ANOVA for financial inclusion

ANOVA[a]					
	Sum of squares	Df	Mean square	F	Sig.
Regression	25.513	4	6.378	13.673	.000[b]
Residual	61.577	132	.466		
Total	87.091	136			
a. Dependent Variable: Financial inclusion among commercial banks in Kajiado county					
b. Predictors: (Constant), Digital service offering, Convenience of digital financial services, Digital financial infrastructure, Digital channel strategy					

Source: Research data (2021)

Table 9. Multiple regression results

Coefficients[a]					
	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	.389	.427		.911	.364
Digital channel strategy	.171	.077	.172	2.220	.028
Digital financial infrastructure	.161	.060	.198	2.687	.008
Convenience of digital financial services	.353	.062	.421	5.709	.000
Digital service offering	.140	.087	.124	1.601	.112
a. Dependent Variable: Financial inclusion among commercial banks in Kajiado county					

Source: Research data (2021)

Table 10. Summary of model for financial inclusion

Model summary			
R	R square	Adjusted R square	Std. error of the estimate
.541[a]	.2930	.2715	.68300
a. Predictors: (Constant), Digital service offering, Convenience of digital financial services, Digital financial infrastructure, Digital channel			

Source: Research data (2021)

Lastly, the study model was obtained as shown in Table 10.

Summary model result in Table 10 shows the coefficient of determination as being .2715 to explain the variation in financial inclusion among CBs in Kajiado explained by change in; digital channel strategy, digital financial infrastructure, convenience of digital financial services, and digital service offering as being 27.15%. Therefore, all the variable; digital channel strategy, digital financial infrastructure, convenience of digital financial services, and digital service offering are determinants of financial inclusion among CBs in Kajiado.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study concludes that at 5% significance level, digital banking channels high has a statistically significant and positive affect financial inclusion among commercial banks in Kajiado. Thus, digital banking channels affect financial inclusion among commercial banks in Kajiado positively through use of M-banking strategy (mobile wallets and apps), ATM banking strategy, credit cards and debit card as well as agency banking strategy.

The study concludes that at 0.05 level of significance, the effect of digital financial infrastructure on financial inclusion among CBs in Kajiado county is positive and statistically significant. Thus, digital financial infrastructure designed for addressing the large gaps existing in financial inclusion amongst the vulnerable population would spur financial inclusion. Its dimensions are; financial data privacy, data sharing policy, distribution infrastructure, enhancing trust, interoperability for ease of transfer of funds between banks, traceability of funds, financial education (consumer digital literacy) and creating awareness.

While concluding the research poses that at 5% significance level, convenience of digital financial services has a statistical positive significant effect on financial inclusion among commercial banks in Kajiado county. The positive effect of convenience of digital financial services on financial inclusion among commercial banks in Kajiado county is informed by, effective process, pricing of transactions, affordability of digital connectivity, connectivity of the digital devices, and availability of digital finance moderately affect financial inclusion among commercial banks in Kajiado county.

The study concludes that at 5% significance level, digital service offering has a statistically insignificant effect on financial inclusion among commercial banks in Kajiado county. The positive effect of digital service offering on financial inclusion among commercial banks in Kajiado county, although insignificant, is build on; digitizing bulk disbursements such as salaries, PAYG financing features, savings group digitization, digital credit and collection and, value chain digitization (such as agricultural purchase, digital trading platforms) digital merchant payments by all, digital savings and alternative lending for lowering risks.

The study reveals that at $\alpha= 0.05$, digital channel strategy, digital financial infrastructure, convenience of digital financial services, and digital service offering are estimators of financial inclusion among CBs in Kajiado. It was further revealed that 27.15% of variation in financial inclusion among CBs in Kajiado is explained by change in; digital channel strategy, digital financial infrastructure, convenience of digital financial services, and digital service offering. At 0.05 level of significance; financial inclusion among CBs in Kajiado = 0.389cons + 0.171 digital channel strategy + 0.161 digital financial infrastructure + 0.353 convenience of digital financial services + 0.141 digital service offering.

5.2 Recommendations

The study suggested policy recommendation for mitigating low financial inclusion Firstly, the study recommends that the CBs in Kajiado should conduct in depth market research on the needs and demands of the people in Kajiado to obtain sufficient information to position their channels effectively to customers. They should provide banking services to areas that are not easily accessible. Secondly, the study recommends that the CBs in Kajiado county should support their digital financial infrastructure by acquiring adequate infrastructure facilities and adopting efficient technology. Thirdly, the research recommends that CBs in Kajiado county should considers convenience of digital financial services by offering simple, cost effective and secure services to their customers. Lastly, the study recommends that CBs in Kajiado county should provide wide variety of digital services.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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