EFFECT OF SERVICE INVESTMENT ON FINANCIAL INCLUSION AMONG COMMERCIAL BANKS AND MOBILE SERVICE PROVIDERS IN KENYA

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Abstract: Financial inclusion has an impact on economic growth by enabling localized development. While every bank is looking at innovation as a way of enhancing reach to its customers, enhancement of financial inclusion is still elusive. Similarly, mobile phone companies grow their customer base through the ease of access of mobile phones as well as the ability for customers to store their money on their phones. However, despite these facts, millions of adult Kenyans remain unbanked. Several empirical studies have been done locally that are related to financial services and financial inclusion. However, despite the massive inquiry into the field of financial inclusion and financial services, none of the studies known to the study seeks to establish the effects of service investment in mobile-led financial services on financial inclusion in Kenya. Against this backdrop, the aim of this study was to establish the service investment in mobile led financial services and its effects on financial inclusion in Kenya. This research problem was studied through the use of a descriptive research design. The target population of this study was the Kenya commercial banks and the mobile financial services providers while the study population was the management staff who deals directly with the day to day operations of the organizations. The study used a sample of 384 managers drawn from the business development, finance and research departments of the 42 sampled banks and the 6 mobile service providers. The study employed a questionnaire to collect primary data. The study generated both qualitative and quantitative data. Quantitative data will be coded and entered into Statistical Packages for Social Scientists (SPSS Version 24.0) and analyzed using descriptive statistics. Quantitative data will be presented in tables and graphs and explanation were presented in prose. Inferential statistics, including Pearson correlation and regression analyses were also performed to test the hypotheses of the study. The study also found that service investment has a positive and significant effect on financial inclusion among commercial banks and mobile service providers in Kenya. Most of the companies have heavily invested in the adoption and sustenance of mobile led financial services by engaging customers in reduced transaction costs and adding value to customer depository services. The study recommends that commercial banks and mobile service providers should continue investing in the establishment and maintenance of infrastructure supporting mobile led financial services. This will help in increasing efficiency in service delivery and hence customer satisfaction.

Key Words: Service Investment, Financial Inclusion

Introduction

Financial inclusion is an important development metric globally as one of the factors which can drive widespread economic development by enhancing financial access which increases liquidity in the economy, accelerates the level of economic activity and reduces poverty levels in the country (Ishengoma, 2011). The introduction of money transfer services in Kenya has seen mobile operators partner with financial institutions to offer wide range of financial products that include payment options, mobile banking, insurance and saving products.

Claessens (2006) indicated that competitiveness in financial firm may be measured through service investment. Net investment refers to an activity of spending, which increases the availability of fixed
capital goods or means of production. Net investment is the total spending on new fixed investment minus replacement investment, which simply replaces depreciated capital goods. This ratio helps to give a sense of how much money a company is spending on capital items used for operations (such as property, plants and equipment).

In Bangladesh, the widespread network coverage allows for around-the-clock account access and eliminates travel time and costs. Siddik et al., (2014) indicate that mobile banking gives customers access to additional products, such as credit and insurance policies, thereby breaking the chicken-and-the-egg cycle and providing Bangladesh’s population with a much-needed opportunity to build credit histories. In Europe, Klein and Mayer (2016) indicate that since it lies at the interface between financial services and telecoms, mobile banking also raises competition policy and interoperability issues. Finally, by unbundling payments services into its component parts, mobile banking provides important lessons for the design of financial regulation more generally in developed as well as developing economies.

According to Mago and Chitokwindo (2014), the mobile banking system in Zimbabwe, as a result of investments by mobile money service providers, is ideal for the remote areas given that it is an easily accessible, cheaper, more convenient and faster means of sending and receiving money. In Nigeria, Yawe and Prabhu (2015) found that partnerships should be established between and among commercial banks as well as between mobile network operators providing mobile money services to fast track interoperability. In addition, David-West (2015) found that unlike banking, mobile telephony access and adoption has revolutionized traditional perspectives of financial access and inclusion. This has warranted regulatory changes and the introduction of a new cadre of financial service providers: Mobile Money Operators (MMOs). In Tanzania, Ishengoma (2011) found that 79% of the population was using the Mobile banking system technology in accessing financial services in an easy way. This has been enabled by the heavy investment in mobile money infrastructure, mobile money agent’s enrollment as well as efficiency and low transaction cost of mobile money. Mbidde (2017) found that found technical challenges in the use of MMS with network breakdown being the highest constraint in financial inclusion in Uganda. The results also revealed that utilization of MMS was also constrained by security issues such mobile robberies and fraud on MMS Agents hence affected financial inclusion. Omwansa and Waema (2014) indicate that the poor need financial tools that are appropriate, flexible, convenient, quick and affordable. The mobile money channel and the agent network provide the best avenue so far for reaching the very poor, but the business case for serving this segment of the market has not been well developed to incentivize the main players to be actively involved.

**Statement of the Problem**

Financial inclusion has an impact on economic growth by enabling localized development. As desirable as financial inclusion is, the concept faces unique demand and supply-side challenges that impede its development and consequent impact on a population (Mutua, 2016). While every bank is looking at innovation as a way of enhancing reach to its customers, enhancement of financial inclusion is still elusive (David-West, 2015). Banks are adopting innovative technologies to enhance financial inclusion like agency banking, introduce systems for payments which can better accommodate small value transfers like Near Field Communication (NFC) and mobile money services (Aker & Mbiti, 2013). Mobile phone companies grow their customer base through the ease of access to mobile phones as well as the ability for customers to store their money in their phones. However, despite these facts, millions of adult Kenyans remain unbanked.

Mobile led financial services in Kenya are particularly very important. Kamana (2017) noted that, by 2017, 23,018,500 individuals were mobile money users representing a 74% of the adult population.
The average value per transaction was $29.3. Accumulated balance of all mobile account as a percentage of total bank deposits was at 1.2% in the same period. There were 56 million transactions worth 142 billion in that period. Despite these attractive figures, as shown by United Nation Conference on Trade and Development (UNCTD) (2015), a whopping 35% of Kenyan adult population are totally financially excluded.

UNCTD (2015) noted that financial services play a catalytic role in the efficient allocation of productive resources thereby contributing to trade, investment and economic growth in Kenya. The sector is singled out as one of the key drivers of high growth identified in Kenya’s Vision 2030. Therefore, for Kenya to achieve its vision 2030, a lot is needed to close the gap of financially excluded population. Financial inclusion has still been very elusive especially due to the fact that Kenya is a developing country. The rapid uptake of mobile financial services in Kenya has demonstrated the potential of reaching the poor using mobile technology and thereby enhancing financial inclusion.

According to World Bank (2013), an estimated 46% of the population lives below the national poverty line. Access to formal financial services has however grown more in the urban areas; between 2012 and 2014, those accessible to formal banking services rose 12% while access in rural areas it increased only from 17.6% to 21.2% in the same period.

With the rapid growth of the mobile phone usage at penetration level of 78.0% (30.7 million subscribers) Kithinji (2017), reports there is a potential that is yet to be utilized fully to ensure that a significant proportion of the population if not all have access to financial services. Institutions including banks, micro finance institutions, and utility service providers should thus take up that opportunity to align their product and technological investments base towards incorporating Mobile Money Transfer services in an effort to lock in increased users. As noted above, this opportunity is yet to be tapped as a significant proportion of Kenyan are yet to be financially included.

Several empirical studies have been done locally that are related to mobile money services and financial inclusion. For instance, Kenya, Agufa (2016) examined the effect of digital finance on financial inclusion in the banking industry in Kenya; and Oumaa, Odongo and Wereb (2017) conducted a study on the relationship between Mobile financial services and financial inclusion. However, despite the massive inquiry in to the field of financial inclusion and mobile money services, none of the studies known to the researcher sought to establish the effect service investment on financial inclusion among commercial banks and mobile service providers in Kenya. This study focused on the effect of service investment on financial inclusion among commercial banks and mobile service providers in Kenya.

The following was the hypothesized relationship between service investment and financial inclusion among commercial banks and mobile service providers;

**H0:** Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.

**Theoretical Framework**

This study focused on Theory of Financial Deepening (TFD). The argument that advocates that financial sector liberalization leads to financial development and eventually to economic growth is based on the theoretical framework and analytical underpinning by Ramo (2013). The concept of financial deepening is usually employed to explain a state of an atomized financial system, that is, a financial system which is largely free from financial repression. Financial deepening results from the adoption of appropriate real finance policy, namely relating real rates of returns to real stock of finance. Conversely shallow financial system is partly the consequence distortions in the relative
process of finance. Financial intermediation of growth allows for financial deepening. Ho et al. (2018) contends that an increase in the real size of the monetary system will generate opportunities for the profitable operations of other institutions as well, from bill dealers to industrial banks and insurance companies. In its own right, financial depth contributes to growth by improving the productivity of investment. This linkage corroborates further the positive role played by financial liberalization on growth (Yao, Wu, & Kinugasa, 2015).

It is well established that a vibrant, dynamic, and well-functioning financial sector leads to a host of improved economic outcomes, as surveyed first by Abosedra and Fakih (2017), then by Demirgüç-Kunt and Levine (2009), there is a vast literature showing the benefits that accrue to countries in which financial development is greater. The proponents of the theory of financial deepening, Yao, Wu and Kinugasa (2015), highlighted the key role in economic development that could be played by a banking system free of the types of controls on interest rates and quantities that were prevalent at the time. In addition, Karimo and Ogbonna (2017), another proponent of theory of financial deepening, indicates that reveals that it is the necessity from high economic growth that creates demand in the financial sector. Thus, in this view, it is the improvements in the economy that drive higher demand for the use of money, which consequently promotes financial development. In other words, financial markets develop and progress as a result of increased demand for their services from the growing real sector.

The theory of financial deepening is used to explain the role of mobile money services in financial inclusion. Mobile money facilitates financial inclusion as a key variable of financial deepening which helps to address the basic issue of growth with equity. Large population mostly the low-income households and microenterprises do not have ready access to financial services but they have access to mobile phones. Once people start using mobile money they become financially included and are likely to consider other financial products, such as a bank account or microfinance. Rapid growth in the mobile money industry, in particular, has led to increased access for the less privileged and the disadvantaged population to affordable financial services not only within, but also across borders (David-West, 2015). Financial inclusions across the world empower the underprivileged population who are a major driver of social and economic development. Money mobile agents act as financial intermediaries or banks branches since they have sufficient liquidity to satisfy consumers’ needs to deposit and withdraw cash. This network of agents can expand the mobile operator’s reach to rural areas in order to achieve a higher level of financial penetration in unbanked markets where there is no physical bank presence, essentially enabling a branchless payment system, outside the traditional bank-led business model.

**Conceptual Framework**

Conceptual framework is a diagrammatic presentation of a theory and is presented as a model when research variables and the relationship between them translate into a visual picture to illustrate the interconnections between the independent, intervening and dependent variables. The conceptual framework is the scheme of concepts this study will use to achieve the set objectives. The researcher conceptualizes that the dependent variable of this study will be financial inclusion while the independent variable was service investment.
In recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce) (Aker & Mbiti, 2013; Mbiti & Weil, 2013; Mbogo, 2014). Ndung’u et al., (2012) argues that governments have also started using mobile money transfer services for making payments to citizens (salaries and pensions) and to collect revenues such as taxes.

Aduda and Kalunda (2012) examined the utilization of mobile money systems in microfinance institutions. The study adopted a descriptive research design. The results indicated that insurance, credit, and savings services are now being developed atop mature mobile money systems. Kilimo Salama is a micro-insurance product that uses Mpesa to provide payouts to smallholder farmers whose crops fail. In its second year of operation, 12,000 farmers were insured, and 10 percent of those received payouts of up to 50 percent of their insured inputs. Likewise, Equity Bank and Safaricom have partnered to offer M-Kesho, a mobile service that offers micro savings accounts, credit, and insurance. As individuals develop financial histories with mobile money, the ability to provide credit can expand because financial institutions will be able to analyze those histories and assign credit scores.

Mas and Morawczynski (2014) conducted a study on mobile money for the unbanked using a critical review of literature. The study opined that connecting Kenyan households to an electronic payment system for cash transfers would have considerable impact through reduced leakages, transaction costs, and overheads. It would also improve the government’s ability to monitor financial flows, collect tax revenues, and reduce illicit activity. Government use of mobile money—such as salary disbursements—could prove to be an enormous driver of the service throughout the economy on the whole.

Zutt (2014) explored the role of mobile banking on poverty reduction using a survey research design. The results indicated that savings via mobile money are expected to grow especially since most mobile networks are increasing mobile phone and bank collaborations that will enable mobile phone savers to earn certain benefits like interests and loans on savings. A good example is the Safaricom and Equity Bank introduction of a form of account called M-Kesho that can be accessed via Mpesa and pays an interest on savings. Similar products include M-Shwari which is a product between Mpesa and Commercial Bank of Africa (CBA).

Oluwataya (2013) examined the banking of the unbanked in rural Southwest Nigeria using mobile phones as mobile banks among farming households. A descriptive research design was used and data
was collected from a random sample of 360 farming households in Ekiti and Osun States. The findings indicated that when savings are made to a bank via mobile money, it provides a further mechanism to borrow funds based on savings. Users can deposit funds in their mobile money accounts, save them for later use, and withdraw or transfer them via an agent or an ATM. Insurance on the other hand, Njuguna (2013) argues can help SMEs owners access various benefits previously unavailable to them like retirement benefits such as the National Social Security Fund (NSSF), health insurance like the National Health Insurance Fund (NHIF), business insurance and many others already seen in Kenya. Access to small loans could enable people to pursue activities that would not only sustain their livelihood but also bring their families out of poverty.

On their part, mobile operators may optimize their return on investment by connecting a maximum number of service providers, while service providers will be able to deploy their service quickly and easily, with just one intermediary giving them access to all customers (Beck & Demirguc-Kunt, 2006). Even though existing mobile money offers some encouraging benefits, such as increased transaction volume and customer retention, there must be a solid business case to launch the service. Payment revenues are declining rapidly because of increasing regulation. Achieving profit from the services may not ascertain profits for the mobile operators, as the small transaction charges will only prove their worth in high volume (Berger & Udell, 2006). The heavy costs arising from a large volume of transactions may overshadow revenue gains. Both service providers and retail outfits need justification for the infrastructure costs.

**Financial Inclusion**

Honohan (2008) defines financial inclusion as, ‘the process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy’. Broadly, it means access to finance & financial services for all in a fair, transparent and equitable manner at an affordable cost. Ndunge and Mutinda (2012) indicated that it as a, ‘delivery of financial services at an affordable cost to the vast sections of the disadvantaged and low-income groups including households, enterprises, SMEs, traders. The various financial services include credit, savings, insurance and payments & remittance facilities’. Fawzia (2009) defined it as a, ‘process of bringing the weaker and vulnerable sections of society within the ambit of the organized financial system. It creates conditions for access to timely & adequate credit and other financial services by vulnerable groups, such as weaker sections and low-income groups at affordable cost’.

Accessibility of financial services by those in remote areas, often rural areas, has been cited as a barrier to financial inclusion. Aker and Mbiti (2013) refer to this as a logistics barrier in that “financial services are not developed in many regions where it is not considered feasible by the service provider”. Mobile banking has been found in this research to be considered as easily accessible. The issue of accessibility of financial services providers has been a cause for concern for the RBZ which has been calling for banks and Microfinance institutions to open outlets in rural areas so that the ‘unbanked’ people could join the main stream economy. Access to mobile banking also brings positive change in income which leads to socio-economic empowerment through increasing saving habits, lessening family violence, raising capabilities to deal with social evils, day to day problems, enhanced asset ownership, creation of employment, improved purchasing power, buying of new clothes, boosting confidence of rural masses, declining income inequality, greater ability to meet unforeseen circumstances, improved standard of living and change in life style. Mobile banking plays a significant role in facilitating inclusion of excluded population.

The ability to use a product is key to its adoption and to this end the Cassar (2004) of the Centre for Financial Inclusion stated that “full financial inclusion is a state in which all people who can use them
have access to a suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity for the clients”. The issue of ability to use the system has a direct bearing on adoption of the facility. Mobile banking has the ability to reach the ‘unbanked’ sectors of the economy (Klein and Mayer, 2011), for as long as there is mobile connectivity and the capturing of this market increases the participants in the financial services sector. Financial inclusion refers to the access of affordable financial services by the previously excluded low income and vulnerable groups (Agarwal & Klapper, 2013). Through mobile banking, it provides greater financial intermediation of the economy as a whole or financial deepening which then drives demand. Technology then facilitates distribution of financial resources to previously excluded areas thereby stimulating economic growth. The adoption of m-banking by the ‘unbanked’, who are the majority, according to empirical evidence, will lead to improvement and growth of the financial market in the country. Therefore, it can be inferred that this will lead to economic growth based on the financial deepening hypothesis.

Cost is cited as a barrier to accessing financial services by low income people. Banks levy clients with a variety of charges that include transaction fees on cash withdrawals and deposits, statement and balance enquiry and monthly ledger fees. This has been termed price exclusion (Kimenyi & Ndung’u, 2014). Findings reveal that most people feel m-banking is cheaper than traditional banking systems. One of the reasons that have been cited is the zero-deposit required to maintain a non-bank led m-banking account which only charges transaction fees. The transaction cost is considered lower than any other alternative. As outlined by Ouma et al., (2017) the clearest direct benefits of mobile money are greater convenience, faster speed, and lower cost of transferring funds. This becomes apparent when a comparison is made with traditional methods of sending and receiving money such as; through public transport, through friends, or through Posta Pay Services. All these traditional methods outlined have far more risks compared to mobile money systems which are generally cheaper than these alternatives and both the sender and the receiver are given instant information regarding the transaction. The low-income people who traditionally have been relegated to the informal sector can now enjoy the same basket of financial services through mobile banking. The non-bank led mobile system is definitely ideal for the remote areas given that it is easily accessible, cheaper, convenient, a faster means of sending and receiving money. Financial activity is increased in the rural areas and therefore economic growth. According to Beck, Demirguc-Kunt and Maksimovic (2008), Financial Sector Development (FSD), representing financial activity, has direct impact on economic growth and development and ultimately poverty reduction Kendall, Mylenko and Ponce, (2010). also explained a similar relationship between financial development and economic growth.

Research Methodology

This research problem was studied through the use of a descriptive research design. The main focus of this study was quantitative. However, some qualitative approaches were used in order to gain a better understanding and possibly enable a better and more insightful interpretation of the results from the quantitative study. The target population was the 42 commercial banks in Kenya and the 6 mobile financial services providers (Safaricom’s M-Pesa, Airtel Money, YuCash, Orange Money, MobiKash and Tangaza Pesa) while the study population was the management staff who deal directly with the day to day operations of the organizations.

This study used stratified random sampling method and the population was stratified into administrative positions. Stratification aims to reduce standard error by providing some control over variance. The sample was developed using proportionate sampling strategy. With proportionate stratification, the sample size of each stratum is proportionated to the population size of the stratum. There were four levels of stratification comprising of Tier One Banks (Large), Tier Two Banks (Medium), Tier Three Banks (Small) and Mobile Service Providers.
According to Borg and Gall (2009), as sample should be in the range of 10% to 30% of the target population. For the purpose of this study an optimum proportion of 30% was selected from each category of the target population to satisfy the requirement of optimality and representativeness. Given the high homogeneity among the respondents in the different strata, the study randomly selected from the target population for inclusion in the study from the Tier One Banks (Large), Tier Two Banks (Medium), Tier Three Banks (Small) and Mobile Service Providers. Additionally, the researcher used random sampling to get the actual respondents in each stratum.

The sample size of the study was at 95% confidence level with a margin of error of 5%. Owing to the anticipated large number of employees, the study employed the Fisher et al. (1983) formula for determining sample sizes in large populations. This is as shown below:

\[
n = \frac{Z^2pq}{d^2}
\]

Where \( n \) = the required sample size, when the target population is more than 10,000

- \( Z \) = is standard normal deviate at the required confidence level, 0.05, which gives 1.96
- \( p \) = is the proportion of the target population estimated to have the characteristics being measured when one is not sure, so one takes middle ground (0.5)
- \( q = 1-p \) (1 - 0.5 = 0.5)
- \( d \) is the level of statistical significance, which is a standard set at 0.05

Therefore \( n = n = \frac{1.96^2*0.5*0.5}{0.05^2} \)

The study thus reached a sample population of 384 respondents distributed across the strata as elaborated in the sampling frame. To determine the sample size proportionately for each stratum, the study first calculated the percentage proportion for each stratum by dividing the target population for each respective stratum by the total target sample (48) and multiplied the result by 100. The study then multiplied the percentage proportion by the total sample size (384) to get the actual sample size.

**Table 1: Sampling Frame I**

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
<th>Percentage</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier one banks</td>
<td>6</td>
<td>(6/48*100)=12.5%</td>
<td>(12.5%*384)=48</td>
</tr>
<tr>
<td>Tier two banks</td>
<td>15</td>
<td>(15/48*100)=31.25%</td>
<td>(31.25%*384)=120</td>
</tr>
<tr>
<td>Tier three banks</td>
<td>21</td>
<td>(21/48*100)=43.75%</td>
<td>(43.75%*384)=168</td>
</tr>
<tr>
<td>Mobile service providers</td>
<td>6</td>
<td>(6/48*100)=12.5%</td>
<td>(12.75%*384)=48</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>100.0</strong></td>
<td><strong>384</strong></td>
</tr>
</tbody>
</table>

To arrive at a desirable sample size per institution, the study further broke down the sample size as elaborated in table 1.

**Table 2: Sampling Frame II**

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
<th>Sample</th>
<th>Sample per Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier one banks</td>
<td>6</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td>Tier two banks</td>
<td>15</td>
<td>120</td>
<td>8</td>
</tr>
<tr>
<td>Tier three banks</td>
<td>21</td>
<td>168</td>
<td>8</td>
</tr>
<tr>
<td>Mobile service providers</td>
<td>6</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>384</strong></td>
<td></td>
</tr>
</tbody>
</table>
The study purposively sampled top managers from the business development, finance and the research departments of each of the 42 commercial banks and the 6 mobile service providers.

Research methodology triangulation was applied because the study used both primary and secondary data methods of data collection so as to improve validity and reliability. The Primary data was collected by use of structured questionnaires that captured the various variables of the study. Face to face interviews were also conducted in order to fill the same questionnaires where respondents were unable to fill questionnaire. The Secondary data was collected through review of published literature such as journal, articles, scholarly materials, published theses and texts and textbooks related to subjects being studied. However, before data collection a pilot test was conducted to examine and improve the validity and reliability of the research instrument.

The study generated both qualitative and quantitative data. Qualitative data for this study was derived from questionnaire and face-to-face interviews. Fitness of purpose was to describe, explain and seek causality between competitiveness of mobile led financial services and its effect on financial inclusion in Kenya. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 24.0) and analyzed using descriptive statistics. This was attained through frequency distributions, means, modes, percentages, and standard deviations, simple and cross tabulations. The study also used inferential statistics to establish effect of the efficiency of mobile led financial services competitiveness and its effects on financial inclusion in Kenya. Specifically, the study used Karl Pearson’s coefficient of correlation and linear regression analysis to establish this relationship. For these tests, ANOVA, t-test, and F-test were used.

The linear regression analysis was formulated and performed in the following general regression equation:

\[ Y = \beta_0 + \beta_1 X_1 + \epsilon \]

Where; \( Y \) = The dependent variable (Financial inclusion); \( X_1 \) = Service Investment; While \( \beta_0 \) is a constant, which denotes financial inclusion, \( \beta_1 \) are slope coefficients and \( \epsilon \) is the standard error term.

**Research Finding and Discussion**

The sample size consisted of 384 purposively sampled top managers from the business development, finance and the research departments of each of the 42 commercial banks and the 6 mobile service providers. To this end, a response rate of 77.3% was achieved with 297 respondents reached out of the 384 targeted. This indicates a high response rate, which is acceptable as commended by Kothari (2009). According to Orodho (2007), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent.

**Demographic Information**

This section captures both the respondent organizations’ demographics including responses by gender of the respondent, managerial position, respondent age, number of years in service and highest education level attained.
Table 3: Response by Demographic Information

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>192</td>
<td>64.6</td>
</tr>
<tr>
<td>Female</td>
<td>105</td>
<td>35.4</td>
</tr>
<tr>
<td><strong>Age categories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30 Years</td>
<td>87</td>
<td>29.3</td>
</tr>
<tr>
<td>31-40 Years</td>
<td>142</td>
<td>47.8</td>
</tr>
<tr>
<td>41-50 years</td>
<td>48</td>
<td>16.2</td>
</tr>
<tr>
<td>More than 50 Years</td>
<td>20</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Length of service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 5 years</td>
<td>117</td>
<td>39.4</td>
</tr>
<tr>
<td>6-10 years</td>
<td>124</td>
<td>41.8</td>
</tr>
<tr>
<td>11-15 years</td>
<td>56</td>
<td>18.8</td>
</tr>
<tr>
<td><strong>Highest education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College level</td>
<td>31</td>
<td>10.4</td>
</tr>
<tr>
<td>University level</td>
<td>193</td>
<td>65.0</td>
</tr>
<tr>
<td>Post graduate level</td>
<td>73</td>
<td>24.6</td>
</tr>
</tbody>
</table>

In order to show the gender distribution and parity across the institutions included in the survey, the study sought to determine the respondents’ gender. Respondents were thus required to indicate by checking either male or female response categories provided. As presented in Table 3, male respondents (64.6%) registered the majority as compared to their female counterparts (35.4%). It follows then from the findings, that male respondents made the dominant gender. The female gender was however also adequately represented implying that the study findings are reflective of responses by both genders in the study area, hence balanced with regard to gender.

The study deemed age an important demographic characteristic in the present study with a view to establish any pertinent trends in the variables under study as well as to have an overview of the age distribution thereof. Results as illustrated in Table 3 reveal that a majority of respondents (47.8%) fall within the 31 - 40 years age category. This is quite distantly followed by 29.3% affirming to the less than 30 years of age category. Only 16.2% and 6.7% of respondents fell between 41-50 years of age and over 50 years respectively. As such, it can be deduced that age, across the firms surveyed is majorly youthful to middle age, distributed, between 30 and 50 years. A rich diversity in experience was thus established.

With some level of working experience necessary in establishing the study objectives, the study found it appropriate to establish the length of service of the respondents, in years, serving at their respective firms. This would ascertain that responses were already informed by diverse experience owing to respondents’ respective lengths of service. The study found that a majority of respondents (41.8%) have worked in the study area for between 6 and 10 years. This was closely followed by those having worked for below 5 years, as indicated by 39.4% of the respondents. While only 18.8% of the respondents have worked for 11 to 15 years. The results present a rather skewed distribution across the years representing the length of work experience. With a majority of respondents having worked for at least 6 years, responses can be deemed as informed by adequate experience in the study area.
Respondents were also asked to indicate their highest levels of education. This would serve to show the academic qualification among respondents in their respective positions, as well as a general overview of education levels among respondents in their respective study areas. From the findings, a majority of respondents (65.0%) of respondents indicated having attained University level, followed by 24.6% having attained either a Postgraduate, degree while only 10.4% had attained College level of education. Overall, the study area can be said to comprise of staff from relatively high levels of education. This was expected as the targeted sample, being in managerial position are expected to consist of professionals from relatively high levels of education.

**Descriptive Results**

The descriptive statistics are hereby presented in form of means and standard deviations. It covers the dependent variable (financial inclusion) and the independents variable (service investment).

**Influence of Service investment on Financial Inclusion in Kenya**

The study sought to determine the influence of service investment on financial inclusion in Kenya. To this end, respondents were asked to respond to pertinent statements posed by indicating the level at which they agreed with the same, as applied in their respective cases. Responses were given on a five-point Likert scale (where 1= Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Agree; 5 = Strongly Agree).

**Table 4: Service investment and Financial Inclusion in Kenya**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have heavily invested in the adoption and sustenance of mobile led financial services</td>
<td>3.94</td>
<td>.74</td>
</tr>
<tr>
<td>The organization has approached the mobile financial services with caution due to concerns about limited opportunities for revenue</td>
<td>3.41</td>
<td>.92</td>
</tr>
<tr>
<td>There is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment.</td>
<td>3.17</td>
<td>.68</td>
</tr>
<tr>
<td>The mobile channel can help us reduce transaction costs as well as increase customer engagement and retention</td>
<td>4.04</td>
<td>.64</td>
</tr>
<tr>
<td>We are adding value to customer depository services with the addition of mobile technology and realizing customer retention benefits as a result</td>
<td>4.20</td>
<td>.89</td>
</tr>
<tr>
<td>The institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty</td>
<td>4.34</td>
<td>.846</td>
</tr>
<tr>
<td>Mobile led financial services have improved customer retention and reduced cost per transaction</td>
<td>4.35</td>
<td>.46</td>
</tr>
</tbody>
</table>

As presented in Table 4, a majority of respondents highly agrees that Mobile led financial services have improved customer retention and reduced cost per transaction (4.35); the institution is addressing shrinking profits by engaging customers in new ways to stay relevant, increase revenue and brand loyalty (4.34); the firm is adding value to customer depository services with the addition of mobile technology and realizing customer retention benefits as a result (4.20); the mobile channel can help the firm reduce transaction costs as well as increase customer engagement and retention (4.04); the firm has heavily invested in the adoption and sustenance of mobile led financial services (3.94); the organization has approached the mobile financial services with caution due to concerns about limited opportunities for revenue (3.41) and that there is a belief that mobile payments could cannibalize existing electronic payment services, providing limited return on investment (3.17).
The finding is in tandem with Aker and Mbiti (2013), Mbiti and Weil (2013) and Mbogo (2014) who report that in recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce).

**Financial Inclusion of Mobile Led Financial Services in Kenya**

The study sought to establish the extent of financial inclusion attributable to the competitiveness of mobile led financial services in Kenya. The results were as presented in Table 5.

**Table 5: Financial Inclusion of Mobile Led Financial Services in Kenya**

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through competitiveness of mobile led financial services people in rural areas can now access mobile banking services</td>
<td>4.3771</td>
<td>.8337</td>
</tr>
<tr>
<td>Competitiveness of mobile led financial services has led to increase saving habits</td>
<td>4.0269</td>
<td>.3272</td>
</tr>
<tr>
<td>Competitiveness of mobile led financial services has led to enhanced asset ownership</td>
<td>4.0202</td>
<td>.8275</td>
</tr>
<tr>
<td>Competitiveness of mobile led financial services has led to improved purchasing power</td>
<td>4.0741</td>
<td>.6601</td>
</tr>
<tr>
<td>Competitiveness of mobile led financial services has led to declined income inequality</td>
<td>4.0067</td>
<td>.3302</td>
</tr>
<tr>
<td>Mobile banking has the ability to reach the ‘unbanked’ sectors of the economy</td>
<td>4.2088</td>
<td>.7548</td>
</tr>
<tr>
<td>Most people have taken up M-banking because it is cheaper than traditional banking systems</td>
<td>4.1650</td>
<td>.8731</td>
</tr>
<tr>
<td>Most people have taken up M-banking because of the zero-deposit required to maintain a non-bank led M-banking account which only charges transaction fees</td>
<td>4.4714</td>
<td>.7755</td>
</tr>
<tr>
<td>Most people have taken up M-banking because the transaction cost is considered lower than any other alternative</td>
<td>4.3569</td>
<td>.6725</td>
</tr>
<tr>
<td>The clearest direct benefits of mobile money are greater convenience, faster speed, and lower cost of transferring funds</td>
<td>4.4680</td>
<td>.6410</td>
</tr>
</tbody>
</table>

As presented in Table 5, a majority of respondents highly agrees that most people have taken up M-banking because of the zero deposit required to maintain a non-bank led M-banking account which only charges transaction fees (4.4714); the clearest direct benefits of mobile money is greater convenience, faster speed, and lower cost of transferring funds (4.4680); through competitiveness of mobile led financial services people in rural areas can now access mobile banking services (4.3771); most people have taken up M-banking because the transaction cost is considered lower than any other alternative (4.3569); mobile banking has the ability to reach the ‘unbanked’ sectors of the economy (4.2088); and that most people have taken up M-banking because it is cheaper than traditional banking systems (4.1650).

**Inferential Statistics**

The study also set out to test the null hypotheses “service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya (H_{01})”. To test
these hypotheses, the study performed inferential analysis, consisting of both Pearson Correlation and Regression Analyses.

**Pearson Correlation Results**

Maina et al. (2016) argued Karl Pearson Correlation Coefficient is the most widely used method of measuring the degree of relationship between variables. This ranges from -1 to +1, where -1 indicates a perfect negative correlation, 0 no correlation and +1 a perfect positive correlation. This assists a researcher in determining the magnitude and direction of the relationship between variables.

**Table 6: Pearson Correlation Matrix**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Financial Inclusion</th>
<th>Service investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Inclusion</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Service investment</td>
<td>.436** (.002)</td>
<td>1</td>
</tr>
</tbody>
</table>

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

There was a weak relationship between service investment and financial Inclusion \( (r = 0.436) \). These findings are in agreement with Aduda and Kalunda (2012) findings that insurance, credit, and savings services are now being developed atop mature mobile money systems.

**Regression Analysis**

The coefficient of multiple determinants denoted by \( R^2 \), is a measure of proportion of the variation of the regress and explained by the corresponding explanatory variables. The value of \( R^2 \) lies between zero and unity \( 0 \leq R^2 \leq 1 \). A value of unity implies that 100% of the variations of \( Y \) have been explained by the explanatory variables. The study also used univariate analysis to assess the influence of service investment on financial inclusion among commercial banks and mobile service providers in Kenya. The null hypothesis was;

\[ H_0: \text{Service investment has no significant influence on financial inclusion among commercial banks and mobile service providers in Kenya.} \]

According to the findings, the r-squared for the relationship between service investment and financial inclusion in Kenya was 0.115. This implies that service investment explains 11.5% of the financial inclusion in Kenya.

**Table 7: Model Summary for Service investment and Financial Inclusion**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.340a</td>
<td>.115</td>
<td>.112</td>
<td>.44490</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Service investment

As indicated in Table 8, the F-calculated (38.443) is greater than the F-critical (3.84) and the p-value (0.000) is less than the significance level (0.05). This shows that the univariate regression model is a good fit for the data and hence can be used in predicting the influence of service investment on financial inclusion among commercial banks and mobile service providers in Kenya.
Table 8: ANOVA for Service investment and Financial Inclusion

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>7.609</td>
<td>1</td>
<td>7.609</td>
<td>38.443</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>58.391</td>
<td>295</td>
<td>.198</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>66.001</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Financial inclusion  
b. Predictors: (Constant), Service investment

As indicated in table 9, the results show that holding service investment constant, the financial inclusion in Kenya will be 2.020. In addition, the beta coefficient for the association between service investment and financial inclusion in Kenya is 0.184. This implies that a unit increase in service investment would lead to 0.184 increase in financial inclusion among commercial banks and mobile service providers in Kenya. The p-value (0.000) was less than the significance level (0.05). In addition, the t-calculated (6.200) was more than the t-critical (2.626). Therefore, we can accept the alternative hypothesis that “service investment has a significant influence on financial inclusion among commercial banks and mobile service providers in Kenya”. The finding is in tandem with Aker and Mbiti (2014), Mbiti and Weil (2013) and Mbogo (2014) who report that in recent years, mobile money services have been extended to offer financial services for formal financial products (savings, credit, insurance), informal service providers (moneylenders), personal networks (on-demand, scheduled payments, sending and receiving money), in-store merchant payments (goods and services), and remote B2C/C2B payments (salaries, pensions, loan disbursements, bill payments, online/e-commerce).

Table 9: Coefficients for Service investment and Financial Inclusion

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.200</td>
<td>.122</td>
<td></td>
<td>16.590</td>
</tr>
<tr>
<td>Service investment</td>
<td>.184</td>
<td>.030</td>
<td>.340</td>
<td>6.200</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Financial inclusion

Conclusions

The study also concludes that service investment has a positive and significant effect on financial inclusion among commercial banks and mobile service providers in Kenya. The study established that mobile led financial services have improved customer retention which is to a significantly large extent attributable to the reduced cost per transaction in mobile money innovations. Most of the companies have heavily invested in the adoption and sustenance of mobile led financial services by engaging customers in reduced transaction costs and adding value to customer depository services.

Recommendations

In both commercial banks and mobile service providers, service investment influences financial inclusion positively. Therefore, the study recommends that these institutions should continue investing in the establishment and maintenance of infrastructure supporting mobile led financial services. This will help in increasing efficiency in service delivery and hence customer satisfaction.

There is a need by regulators to revise the current loose regulatory framework to formulate clear regulations to current and prospective mobile operators, for example on transaction volumes, business use of services, and security. Lack of clarity and uncertainty is not good for any business and nor for
the confidence in the financial systems. By setting the rules clearly, the playing field is more predictable and this will promote further investments and competition.

**Suggestion for Further Research**

This study was limited to the headquarters of commercial banks and mobile service providers in Kenya, which are located in the urban areas. The study therefore recommends that similar studies should be conducted at branch level of commercial banks and mobile service providers in Kenya and in the rural areas. In addition, the study looked at service investment in mobile money services and financial inclusion from the perspective of the institutions and not from the customers’ perspective. The study therefore suggests that similar studies should be conducted to involve in customers. In addition, service investment could only explain 11.5% of the financial inclusion in Kenya. Therefore, further studies should be conducted to identify other factors affecting financial inclusion among commercial banks and mobile service providers in Kenya.

**References**


Oluwataya, I. (2013). Banking the unbanked in rural Southwest Nigeria: Showcasing mobile phones as


