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# Effect of Financial Inclusion on the Relationship between Innovation and Financial Performance of Commercial Banks in Kenya

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***Abstract***

*This study's main goal was to investigate the aspects that contribute to the success of Kenya's commercial banking industry with respect to innovation, financial inclusion, and overall financial performance. Three theories served as the basis for the research: the theory of transaction costs, the theory of finance and growth, and the Agency theory. The study combined quantitative and qualitative approaches, using a cross-sectional survey methodology. A total of 42 commercial banks in Kenya that were operational between 2009 and 2019 were analyzed for this report. These banks had all been licensed and registered under the Banking Act. The percentage of those that answered the survey was 83.3%. The financial inclusion composite variable has been found to have a substantial effect on the financial performance of commercial banks in Kenya. The study concluded that the age and ownership of banks is a significant factor in determining the financial performance of all banks. The adoption of mobile banking and agency banking influenced the financial performance of most commercial banks in Kenya. To increase financial inclusion and bank profitability, the research advises implementing regulatory reforms that foster financially viable innovations throughout the banking sector. Theoretically, the contribution of this study is that bank innovation in Kenya has a beneficial influence on profitability and that institutions should continuously seek and execute durable business links to accelerate the diffusion of innovations and achieve the desired economic consequences.*

***Keywords: Financial Inclusion, Performance, Commercial Banks***

## Introduction

The fundamental function of financial institutions is to improve the efficiency of financial markets by mediating the flow of money from savers to borrowers. Assuming that the participants could find each other quickly and at no cost, banking institutions would have little to do in facilitating the transactions. In reality, commercial banks are sought after by market participants because of the expertise, convenience, and protection offered by these institutions (Oldfield & Santomero, 1995). The connection between bank innovations and financial performance has gradually created interest in the banking industry (Francesca &

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Claeys, 2010). Aduda and King'oo (2012) state that banks' survival, competitiveness, and ideal financial performance are guaranteed by the speedier, more efficient, and more accessible services provided to customers by technological advancements. In other cases, the diversity in bank performance may be difficult to pinpoint factors other than individual banks' innovativeness. It is possible for other factors to act as mediators, either slowing down the interaction or speeding it up, or acting as a moderator overall.

Concepts from Adam Smith's theory of financial development from the 1870s, Hicks and Niehans' theory of transaction cost innovation from 1983, and Stephen Ross and Barry Mitnick's theory of agencies from 1973 form the basis of this research. Financial institution managers, according to Agency theory, act as shareholders' agents and seek to maximise shareholder value. Expenses are incurred by businesses as a result of managers' need to act responsibly and avoid improperly serving their personal interests while handling company funds (Jensen & Smith, 2000). In order to reduce cost, banks innovate thereby boosting efficiency and growing the institutions financial performance (Anthony & Harry, 2015). Finance-growth theory (Serrao et al., 2012) proposes that supply and access of money in the economy results to economic growth. In addition, the theory proposes that slow development and difference in earnings depend on access to money in the economy (Serrao et al., 2012). However, the focus of transaction cost innovation theory is on how transaction costs affect whether or not an organisation would embrace new technology. The theory advances that bank innovations are a result of change of technology globally. By extension, there is a reduced transaction cost which leads to better financial performance (Hicks & Niehans, 1983).

The banking industry in Kenya is regulated by the Central Bank of Kenya (CBK), which implements the Banking Act (Chapter 488), the Companies Act (Chapter 486), and its prudential criteria (Cap 491). The sector has 43 commercial banks and deals with banking activities (CBK, 2017). Weru (2010) suggests that the Kenyan banking system bears equivalence with the inventions and innovations as evidenced by continued advancement in the use of credit and debit cards as a form of bank innovations from the late 1990s. As an additional component of financial inclusion and a boost to bank financial performance, Kimenyi and Ndung'u (2009) highlight commercial banks' internet and cell banking.

The term "financial performance" used in this research refers to the potential of banks to profit over time from their investment in new resources (Abata, 2014). Activities like increasing shareholder wealth and increasing earnings fall under this category. Simply said, a bank's financial performance demonstrates how

the institution turns its assets into profits after deducting expenses, which also an indicator of a bank's long-term financial stability. To evaluate monetary efficiency, academics employ a wide variety of indices. Example: Olatunji et al. (2014) use commercial banks' net profits as a performance metric. Key performance indicators such as return on assets (ROA) and return on equity (ROE) were used in Muigai's (2016) investigation of the relationships among ownership structures and the efficiency of non-financial listed enterprises (KPIs). The modern business climate seems both tough and dynamic, necessitating banks to endure various restructuring to comply with the updated industry operations that finally affect beneficial financial performance (CBK, 2017).

In a study by KPMG (2016), over two billion people are limited in accessing financial resources. This prevents them from using mobile banking, savings, insurance, and credit services. Accessing credit enables micro credit players to expand their businesses and boost their profitability. When households save, they are able to manage their spending and earnings. In addition, they stand a better chance to borrow from financial institutions, survive in hard economic times, and invest for the future. Also, access to insurance secures households from risks while the availability and use of electronic payment channels grows. The research indicates that increasing people's financial services access improves economic growth, generates new employment opportunities, and makes it easier to implement projects with positive societal effects. Therefore, drive to undertake the study include the importance of innovations to banks, recent technological developments, bank innovations contribution to banks performance, and the global financial exclusion crisis.

According to Tufano (2003), bank innovations refers to creation and promotion of fresh financial tools, technologies, markets and establishments. Schrieder and Heidhues (1995) identify three categories of banking innovations that work together to improve the banking infrastructure. They include innovations in the financial system, products, and processes. Process innovation refers to introducing new business processes, whereas financial system innovation refers to introducing new corporate structures. For instance, a product innovation might be the launch of a new kind of banking service like Agency banking or a mobile banking network. Laeven and Levin (2010) outline the benefits of bank innovations. These include a reduced propensity to take risks and improved risk management, the potential to outperform the competition, and a quicker and more accurate reaction to consumer and market demands.

Artz, Norman, Hatfield, and Cardinal (2010) investigated the link between Innovation and financial success. The research looked at 272 enterprises from 35 different industries over the course of 19 years to determine the companies' ability to profit from their discoveries and innovations and the impact of innovation on corporate financial performance. Results show that patents have a detrimental impact on performance indicators, including return on investment and revenue growth. De Young et al. (2015) examined the influence of the web on productivity and performance at community banks in Oslo, Norway. From 2006 through 2010, a descriptive research approach was utilised to study 29 banks. Utilization of online accounts, and debit and credit services were among the factors. The study employed online questionnaires to collect data. The yearly financial reports of banks were used to acquire secondary data.

Walker (2004) argues that innovation boosts corporate performance, allowing businesses to obtain an edge in the market. According to Metcalfe (1998), once new ideas and innovations flow slow, organizations' financial building settles into relative stagnation. Thus, innovation is a significant factor in shaping the competitive dynamics between businesses, regions, and nations. Since there has been a rise in the public's interest in banking innovations, there has been a corresponding rise in scholarly curiosity about the impact of banking innovations on fiscal outcomes for banks. Commercial banks in Kenya have operational issues such as cybercrime and other internet-related crimes, including identity theft, due to the present global market's competitiveness in the banking sector. The opportunity costs and financial losses incurred by commercial institutions and individuals due to these crimes are described in depth. The costs required to manage these risks affect the company's financial performance.

Karmakar (2007) asserts that individuals who are financially included have easier, more affordable, and more transparent access to the kinds of financial services and products they need. This includes vulnerable groups such as low-income groups and weaker sectors. Mainstream institutional players offer financial services. The growth of the monetary sector is facilitated by financial inclusion as an economic agent. Financial inclusion fosters access to suitable, desired financial services and products. This enables efficient financial management. Financial inclusion refers to the concerted efforts of organisations to give low-income and disadvantaged communities with affordable access to basic financial services. This is carried out with a view and purpose to link the excluded with the formal banking system by availing the necessary statistics to enable them to make knowledgeable financial decisions (Hill, 2009).

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Two metrics to assess financial inclusion include use and accessibility indicators. Access indicators reflect the spread of financial services, like point-of-sale (POS) devices and rural bank branches. Usage pointers measure how consumers use financial services, for instance, consistency and extent of use to financial products/services. They include savings balances, transactions per account, and electronic payments made (World Bank, 2015). Access to financial services, financial service utilisation, and service delivery quality are the three main indicators of financial inclusion. Financial inclusion will be examined in this study using access and usage variables such as the number of accounts, deposit value, customer base, outlets, agents, and ATMs. Cooperman, Gardener, and Mills (2000) and Rose (2000) were used to developing these metrics (1994). This research aimed to answer the following question: "what is the effect of financial inclusion on the relationship between bank innovations and the financial performance of commercial banks in Kenya?" To answer the above research question, the following null hypothesis was formulated:

***$H_{03}$:*** *Financial inclusion does not significantly affect the relationship between bank innovations and the financial performance of commercial banks in Kenya.*

The hypothetical association was presented as indicated in Figure 1 below.

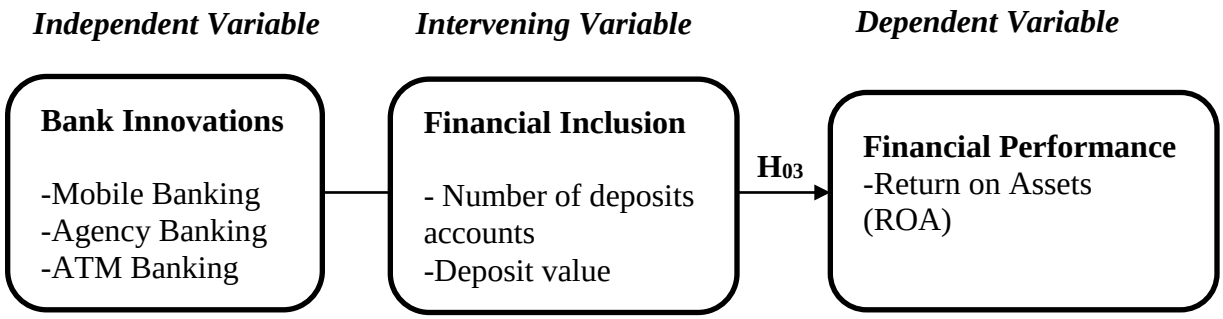


**Figure 1: Conceptual Framework**

## Research Problem

The banking system in general and in Kenya has seen growth in recent years, increasing the number and complexity of financial institutions like banks (CBK, 2016). There has been a significant shift in the financial sector. The million-dollar issue, however, is whether factors—innovations in banking, broadening access to banking services, or institutional strengths—most strongly affect economic growth. Commercial banks in Kenya may significantly impact the financial system by introducing new products and services, expanding access to credit, improving the efficiency of financial markets, and boosting the performance of

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businesses. Long-term investment, corporate assets, and financial soundness are yardsticks for commercial banks' financial success (Muigai, 2016).

The banking industry in Kenya demonstrates dismal financial performance and zero expansion (World Bank, 2016). For instance, studies on industry estimates suggest underperformance in Kenya's banking sector. The dismal showing is a result of the year-to-date financial performance of banks generally. There is a wealth of data on the effect of asset values on bank financial performance in developed markets like the United States and Europe, but much less for developing nations like Kenya. The opinion on degradation in the quality of bank assets influences the overall operation and financial performance and the overall monetary stability within the banking sector (IMF, 2015).

While Osei-assibey and Asenso (2015) favored the ratio difference between expense on interest income and interest income to total earnings, Sangmi and Nazir (2010) utilized the CAMEL model to evaluate bank performance in Northern India. One possible reason for the contrasting findings is that factors other than financial inclusion and institutional features influence the connection between bank innovations and business financial success. It is vital to investigate the link between innovation and commercial bank financial performance in Kenya and whether institutional variables and financial inclusion impact this relationship. As a result, this inquiry aims to answer the initial research question: How much do technology advances in banking, the development of banking services, and other institutional elements influence bank financial performance?

Despite commercial banking's best efforts to restore the banks' health through an asset purchase, this resulted. Existing data shows that commercial banks' income from investments in value of investments and innovations has been declining. According to Central Bank of Kenya (2017) figures, the Return on Equity ratio decreased from 22.3% in June 2016 to 20.6% in September 2017. Return on Investment (ROI), like ROA, declined by 0.2% between June 2016 and July 2017.

There are significant inconsistencies in the available research since some studies do not show an influence of financial inclusion on the relationship between financial innovation and financial performance, especially when applied to emerging economies. Notably, most of the research was done in developed nations, and their results might not generalize to the Kenyan setting due to economic and financial development

differences. Comparing results from different regions is complicated because each has its own unique set of laws and performance measures. It's because some research utilized ROA while others used ROE. This research aimed to answer the following question: "what is the effect of financial inclusion on the relationship between financial innovations and financial performance of commercial banks in Kenya?"

**Study Objective**

The study's main purpose was to assess financial inclusion, financial innovation on the financial performance among Kenya's commercial banks. The specific objective was to:

i) Establish the effect of financial inclusion on the relationship between bank innovations and the financial performance of commercial banks in Kenya.

**Review of Literature**

Using information from 193 organisations with banking activities in 58 countries, Beck, Demirguc-Kunt and Peria (2007) conducted research into the difficulties associated with gaining access to the financial services offered by banks. Primary data were used for analysis, and financial inclusion indicators were accounted for by tracking deposit volumes, credit availability, and transaction volumes. A bank's size and its physical infrastructure were found to be significant predictors of difficulties. Internet banking, agency banking, an automated teller machine (ATM) network, a subsidiary network, an enlarged branch network, and the use of information and communications technology (ICT) in transaction processing are all critical facets of a modern banking system facilities that expedite the delivery of financial services to banking customers.

Aduda and Kalunda researched to evaluate financial inclusion and financial sector stability (2012). According to them, the theoretical and empirical literature show that a considerable section of the world population is economically excluded. The research emphasizes the importance of tackling financial inclusion to avoid a financial stability catastrophe. Institutional characteristics were not found to moderate the relationship between commercial bank performance in Kenya and study variables. The research examines the overall financial industry, not individual institutions.

Shihadeh et al. (2018) conducted studies centered on financial inclusion to advance the efficacy of Jordanian banks. The effects of financial inclusion on financial institutions were analyzed, including small and medium enterprise (SME) loans, SME deposits, automated teller machine (ATM) locations, credit card usage, and product innovation. The investigation concludes that there is a positive relationship between all components and total revenue, with some coefficients having a particularly vital link with the variable.

European banking IT performance as reported by Elena (2017). Her research shows that while total IT investment is associated with greater bank profitability and efficiency, there is no correlation between them. However, Elena (2017) claims that investments in hardware, software, and services have varying impacts on financial institutions' productivity. Raymond et al. (2016) investigated how technological development affected the prosperity of banks in the Kenyan city of Meru. The study found commercial bank branches in Meru towns benefited financially when they introduced innovations. Insights from the research show that commercial banks may significantly boost their bottom lines and return on investment by being more open to new ideas. The research, however, does not offer enough information or discussion to determine whether or not financial innovation can handle a higher transaction volume than conventional approaches.

**Methodology**

The study employed a cross-sectional survey design that applied quantitative and qualitative methods. In the cross-sectional survey design, there is a provision of a virtuous picture, which reveals the trends and expedient for documenting conditions within the study population and various characteristics, including their perspective at specific times (Maninder, 2016). The design is judged appropriate for this study since it employs questionnaires as data gathering instruments. In addition, the researcher gathered data that would be subjected to statistical analysis for testing hypotheses and drawing objective findings (Saunders et al., 2007).

This study's data analysis was appropriate to the regression analysis model. The dependent variable was Firm financial performance, the independent variable was bank innovations, and the intervening factor was financial inclusion. Financial inclusion as an intervening variable between financial institution performance and bank innovation had the following resulting regression equations.

$ROA_{it} = \acute{\alpha}_{oe} + \beta_{bm} MB_{it} + \beta_{bta} ATB_{it} + \beta_{ba} AB_{it} + \varepsilon_{oe}$

$ROA_{it} = \alpha_{r33} + \beta_{bm3} MB_{rit} + \beta_{bta3} ATB_{rit} + \beta_{ba3} AB_{rit} + \beta_{eo3} FIN_{rit} + \varepsilon_{r33}$

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Where ROA is the return on assets, MB is Mobile Banking, AB is Agency Banking, ATB is ATM Banking, $\alpha_{r11}$, is the constant term, $\beta_{bm1}$, $\beta_{bta1}$, and $\beta_{ba1}$ are the regression coefficients, *i* is the investment (Kes) for bank i and t is the year when the bank invests in Kes while $\varepsilon_{r11}$ is the error term.

**Diagnostic Tests for Statistical Assumptions**

The predictor variables (independent variables) in the multiple regression model were tested for multicollinearity to see if they are strongly interrelated. Tolerance and variance inflation factor (VIF) values of predictor variables were used to screen for multicollinearity. Tolerance reflects the extent to which one independent variable may be explained by reference to other independent variables (VIF). Multicollinearity does not occur if the Tolerance factor is larger than 0.1 and the VIF is smaller. As a result, the results of the multicollinearity test may be shown in Table 1 below.

**Table 1: Multicollinearity Statistics for Financial Innovation**

| | Multicollinearity Statistics | |
|---|---|---|
| **Variables** | **Tolerance** | **VIF** |
| Value of Mobile Banking Transactions | .155 | 6.459 |
| Value of ATM Banking Transactions | .374 | 2.672 |
| Value of Agency Banking Transactions | .263 | 3.799 |

Independent Variable: Bank Innovations

It may be stated that the independent variables under consideration are not vulnerable to multicollinearity because all Tolerance factor values in Table 1 are more than 0.1. There was no evidence of multicollinearity because all of the VIF values for the variables in the study were under 10. That is why we do not have to worry too much about collinearity among the study's independent variables. Multiple regression provides the greatest analysis and evaluation of the hypothesized associations in this investigation. Using the values of more than two independent variables, multiple regression analysis can provide predictions about the target variable (Cox, 2015). Using the statistical regression model, one may determine how much certain factors affect the outcome (the dependent variable) (Sekaran, 2006; Bougie, 2016).

Results from a multiple linear regression analysis testing for heteroscedasticity and normality of residuals found no indication that the error terms tended to cluster consistently around the horizontal axis (as shown in Figures 2, 3, and 4); hence no heteroscedasticity data output was produced.

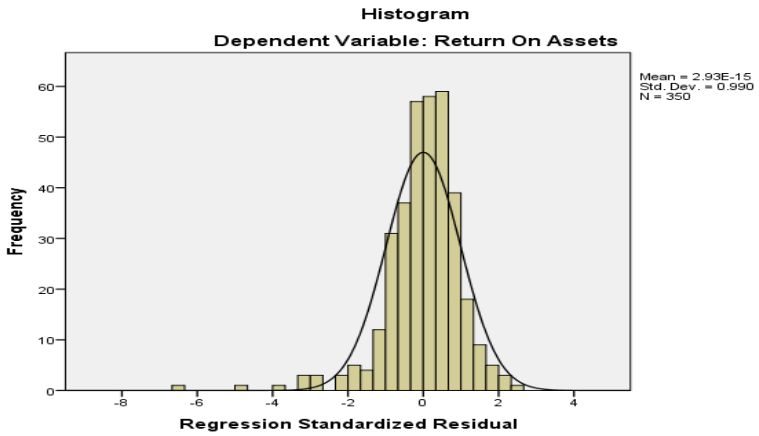


**Figure 2: Residuals of Financial Performance Data (ROA)**

Biased standard errors are a more serious problem associated with heteroscedasticity. To account for this bias, several statistical packages include robust standard errors. A further strategy for dealing with heteroscedasticity is to use a transformation of the dependent variable that employs one of the variances stabilizing techniques. Histograms, scatterplots, and the conventional P-P plot were used to test homoscedasticity.

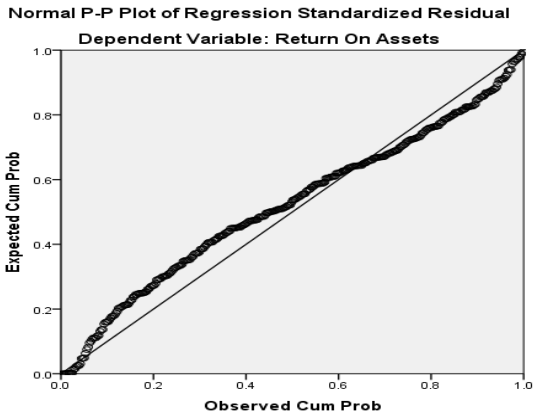


**Figure 3: Normal P-P Plot of Regression Standardized residual of ROA Data**

As seen in the histogram of Figure 2 above, the data do not exhibit any signs of heteroscedasticity. Figure 3 above demonstrates that the data may be linearly fitted by a function, lending credence to the linearity assumption. The estimated line of best fit can be helpful when acquiring a rough notion of a linear function, such as one that has been fitted with a regression equation.

According to the Normal P-P Pot in Figure 3 above, the financial performance panel data did not exhibit heteroscedasticity. Residual scatter plots may be constructed to visually inspect the homoscedasticity assumption between projected scores on the dependent variable and prediction errors. On the other hand, heteroscedasticity has an effect that scales with its magnitude. With this, the assumption can be quickly analyzed and assessed, and any discrepancies may be easily spotted. Based on the work of Tabachnick and Fidell (2007), a residual scatter plot will have two axes: one for projected scores and one for prediction errors. As a result, grades will be scattered randomly over a horizontal line depicting time, with any discernible pattern or clustering being an infraction.

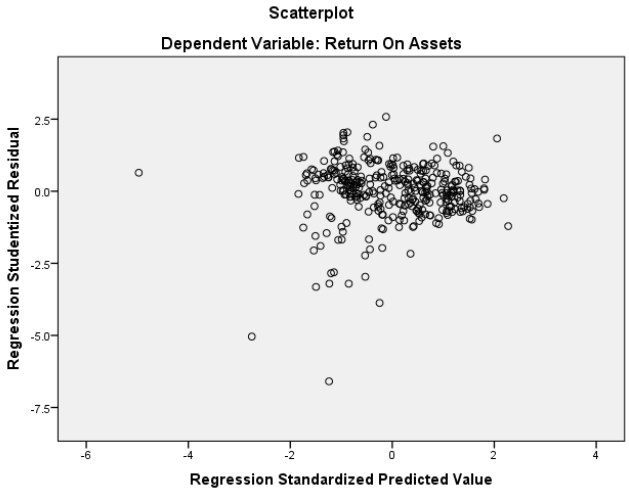


**Figure 4: Scatter Plot of the residuals of ROA variable**

As can be seen in Figure 4 above, the error terms do not tend to be horizontally clustered, suggesting that the data is not heteroscedastic

## Analysis and Discussion of Findings

As shown in Table 2 below, the mean and standard deviation values for total deposit and customer deposit accounts stood at 3.36037 and 11.0939, respectively. The mean values indicate that the data analyzed reflects the characteristics of financial inclusion in the selected banking institutions. The standard deviation values for total deposit and customer deposit accounts stood at .088 skewness, -1.108 kurtosis, and 0.467 skewness, -0.378 kurtosis, respectively. The total deposit was positively skewed and Platykurtic. Customer deposit accounts were positively skewed and mesokurtic.

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**Table 2: Descriptive Statistics for Financial Inclusion and Financial Performance**

| | Minimum | Maximum | Mean | Std. Deviation | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|
| Total Deposits | .5946 | 6.1793 | 3.36037 | 1.3534761 | .088 | .130 | -1.108 | .260 |
| Deposit Accounts | 7.0851 | 17.2722 | 11.0939 | 2.3567781 | .467 | .130 | -.378 | .260 |
| Return On Assets | -.1360 | .1040 | .02402 | .0015 | .029212 | -1.518 | .130 | 5.221 | .260 |
| Return on Equity | -.7670 | .4940 | .15087 | .0093 | .174952 | -1.442 | .130 | 3.780 | .260 |

These values indicate that the mean values reflect the attributes of financial inclusion, and the data collected are not far from a normal distribution. The minimum and the maximum values for the total account showed that the mean value of 3.36037 is within the range of .5946 and 6.1793, indicating that the mean value is a measure of the total deposit account. In addition, the minimum and maximum values for customer deposit accounts also showed that the mean value of 11.0939 is within the range of 7.0851 and 17.2722, which indicates that the mean value is a measure of customer deposit accounts. According to the findings of the descriptive analysis, the collected data reflect the composite construct measure of financial inclusion that was the focus of this investigation.

According to Table 2, the mean and standard deviation scores for ROA were 0.02402 and 0.029212, respectively, while the mean and standard deviation scores for ROE were.15087 and 0.174952. The mean score of 0.02402 was between the minimum and highest values of -0.1360 and 0.1040, respectively. Therefore, this indicates that the statistics represent ROA as a financial performance indicator. Additionally, the standard deviation score of 0.029212 indicates a modest degree of data variability as a measure of ROA. The aggregate mean ROE value was 0.15087, which fell between the greatest value of .4940 and the lowest value of -0.7670. Therefore, the mean value indicates that the data exposed to analysis were measurements of ROE and measures of the overall financial performance construct.

The skewness and kurtosis values for ROA were -1,518 and 5,221 while for ROE they were -1,442 and 3,780. Consequently, for the ROA, the skewness value is extremely near the mean value at the 95% confidence level, indicating that the data analyzed had a normal distribution. Moreover, the skewness and

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kurtosis values for ROE imply, with a 95% confidence that the analyzed data were not too far from a normal distribution. ROA and ROE were negatively skewed and Leptokurtic.

**Effect of Financial Inclusion on the Relationship between Bank Innovation and Financial Performance of Commercial Banks in Kenya**

This study aimed to determine how financial inclusion affected the correlation between bank innovation and financial success among Kenya's commercial banks, which brought us to our third objective. The corresponding hypothesis was to determine if financial inclusion influences the link among bank innovation and financial performance in Kenyan commercial banks. The second objective of this study was to assess the effect of bank innovation on the financial performance of commercial banks in Kenya. The hypothesis tested was:

> ***$H_{01}$:*** *Financial inclusion does not significantly affect the relationship between bank innovations and the financial performance of commercial banks in Kenya.*

Tables 3, 4, and 5 below display the outcomes of a regression analysis showing that the composite construct of financial inclusion significantly influenced bank innovation across Kenya's Commercial Banks (Mobile banking transaction: $\beta = 0.543$, $t = 9.909$, and $p = 0.000$, ATM banking Transaction : $\beta = 0.444$, $t = 16.465$, & $p = 0.000$, Agency banking transaction: $\beta = 0.251$, $t = 8.265$, and $p = .000$).

**Table 3: Regression Model Summary**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .653[a] | .427 | .420 | .1332249 | .427 | 64.214 | 4 | 345 | .000 |

**Table 4: Analysis of Variance Results**

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.559 | 4 | 1.140 | 64.214 | .000[b] |
| | Residual | 6.123 | 345 | .018 | | |
| | Total | 10.682 | 349 | | | |

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**Table 5: Regression Coefficients**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | 3.723 | .267 | | 13.964 | .000 | -4.248 | 3.199 |
| | Value of Mobile Banking Transactions | .543 | .055 | .587 | 9.909 | .000 | .435 | .650 |
| | Value of ATM Banking Transactions | .444 | .027 | .627 | 16.465 | .000 | .391 | .497 |
| | Value of Agency Banking Transactions | .251 | .030 | .376 | 8.265 | .000 | .311 | .192 |

a. Dependent Variable: Financial Inclusion

*$H_{01A}$: Deposit accounts do not significantly affect the relationship between bank innovations and the Kenya's commercial banks' financial performance*

**Table 6: Regression Model Summary**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .901[a] | .812 | .810 | .5894239 | .812 | 498.075 | 3 | 346 | .000 |

The results in table 6 above revealed that the coefficient of correlation (R) for Total deposits significantly correlated to financial performance. Thus, Total Deposits (R= .901, p = .000). The relationship is considered to be good. Therefore, the conclusion that a strong association exists among Total Deposits and Financial performance. The coefficient of determination ($R^2$) has a value of 0.812 as indicated in Table 6 above. It is significant at 95% level of confidence ($R^2$ = .812, p = .000).

The summary of the ANOVA as shown in Table 7 below displays the coefficient of F-value (498.075) is significant at p = 0.000. Therefore with these values, there is a fit between the study model and data collected in this study.

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**Table 7: Analysis of Variance**

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 519.125 | 3 | 173.042 | 498.075 | .000[b] |
| | Residual | 120.208 | 346 | .347 | | |
| | Total | 639.332 | 349 | | | |

a. Dependent Variable: Total Deposits

**Table 8: Regression Coefficients**

**Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | 3.723 | .267 | | 13.964 | .000 | -4.248 | -3.199 |
| | Value of Mobile Banking Transactions | .543 | .055 | .587 | 9.909 | .000 | .435 | .650 |
| | Value of Atm Banking Transactions | .444 | .027 | .627 | 16.465 | .000 | .391 | .497 |
| | Value of Agency Banking Transactions | -.251 | .030 | -.376 | -8.265 | .000 | -.311 | -.192 |

a. Dependent Variable: Total Deposits

Table 8 above shows the beta coefficient value of $\beta=3.723$, $p<0.05$, thus, Total Deposits was associated with financial performance in a statistically meaningful way.

*$H_{01B}$: Deposit value do not significantly affect the relationship between bank innovations and the Kenya's commercial banks' financial performance.*

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**Table 9: Regression Model Summary**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .656[a] | .430 | .425 | 1.7873403 | .430 | 86.935 | 3 | 346 | .000 |

a. Predictors: (Constant), Value of Agency Banking Transactions, Value of ATM Banking Transactions, Value of Mobile Banking Transactions

The association is seen to be good in Table 9 above, concluding that there is a strong link between deposit accounts and financial success. At a 0.05 level of confidence, the coefficient of determination $R^2 = 0.430$, $p = 0.000$.

**Table 10: Analysis of Variance**

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 833.160 | 3 | 277.720 | 86.935 | .000[b] |
| | Residual | 1105.326 | 346 | 3.195 | | |
| | Total | 1938.487 | 349 | | | |

a. Dependent Variable: Deposit Accounts

From the ANOVA summary in Table 10 above, the F-value coefficient (86.935) is significant at $p = 0.000$, suggesting that the data from this study is consistent with the hypotheses being tested. Table 11 below indicates that there was a statistically significant link between deposit accounts and financial success, as indicated by the beta coefficient value of $\beta = 1.823$, $p<0.05$.

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**Table 11: Regression Coefficients**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | 1.823 | .809 | | 2.255 | .025 | .233 | 3.413 |
| | Value of Mobile Banking Transactions | .549 | .166 | .341 | 3.307 | .001 | .222 | .876 |
| | Value of Atm Banking Transactions | .306 | .082 | .249 | 3.750 | .000 | .146 | .467 |
| | Value of Agency Banking Transactions | .144 | .092 | .123 | 1.560 | .120 | -.038 | .325 |

a. Dependent Variable: Deposit Accounts

**Findings and Discussions**

The study's third goal was to evaluate how financial inclusion affected the correlation between bank creativity and financial success among Kenya's commercial banks. Two dimensions of financial inclusion were used in this investigation: deposit accounts and client deposits. This is due to banks pursuing bank innovation to mobilize additional deposits.

Three stages were followed to determine the mediation effect, as recommended by MacKinnon et al. (2002), and the study demonstrated that the requirements satisfying the mediation effect were fulfilled. In the first stage, the intervening variable (financial inclusion) was regressed against the independent variable (bank innovation). It was discovered that bank innovation had a substantial influence on financial inclusion. Financial inclusion was added as an intervening variable with bank innovation in the second stage. It was discovered that financial inclusion, in conjunction with bank innovation, has a considerable impact on financial performance. The requirement for meeting the mediation effect was reached in the third phase when bank innovation was determined to influence financial performance substantially. Overall, given the significant influence of the intervening variable in step two and the other requirements satisfied in stages one and three, it is possible to conclude that financial inclusion mediated the association among bank

innovation and the financial performance of Kenyan commercial banks. The results imply that banks' financial performance via innovation is a byproduct of financial inclusion.

The results of Beck, Demirguc-Kunt, and Peria's study are supported by the current investigation (2007). Researchers concluded that faster delivery of financial services could be achieved through the use of improved infrastructure such as more branches and ATMs, new subsidiaries, internet banking, agency banking, and the use of information and communication technology (ICT) to process financial transactions within and across banking institutions. The results of this research corroborate their claim that financial services had an effect on the profitability of reorganized banks. The authors state that there is a possibility of decreased earnings and increased expenditures if financial inclusion is ensured.

**Conclusions and Recommendations**

The third goal was to look into how financial inclusion affected the relationship between bank innovation and Kenyan commercial banks' financial performance. When financial inclusion was regressed on bank innovation, it was discovered that the association was substantial, indicating that bank innovation improves financial inclusiveness in Kenyan commercial banks. Financial inclusion was significant in the second phase of the regression analysis on mediation impact, indicating that it acted as a mediating variable. The composite variable of bank innovation was significant in the third phase of the regression analysis on mediation impact, confirming the considerable influence of financial inclusion. As a result, financial inclusion explained the indirect association among bank innovation and commercial bank financial performance in Kenya.

The study also found that financial inclusion mediated the connection between bank innovation and the financial performance of Commercial Banks in Kenya. Therefore, it is reasonable to assume that commercial banks in Kenya will fare better financially due to improvements in financial inclusion brought about by innovation-related bank operations. In terms of financial inclusion, the relationship between bank innovation and financial performance may make sense.

Finding no statistically significant association among financial inclusion and financial success, the study concluded that it contributed to different outcomes than the other factors. It would be interesting to examine

if the relationship between financial inclusion and financial performance holds in a different situation, which might be accomplished by conducting a new study.

This research shows that banks may facilitate financial inclusion by performing services like account opening and deposit collection. Extending the reach of branches and ATMs, launching agency banking, increasing the number of point-of-sale terminals, bolstering the reliability of bank assurance offerings, introducing KEPSS and forex bureaus, enhancing the quality of information and communication technology (ICT) services in the banking industry, and forging institutional ties were all cited as potential ways to increase financial inclusion. These can stand in for genuine innovations, and a survey can be used to determine how the inclusion of innovations not accounted for in this study's analytic model impacts bank financial performance and other banking activities.

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