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Financial Innovations And Financial Inclusion Among Commercial Banks in Uganda

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ABSTRACT

This study was carried out to ascertain the impact of financial innovations by commercial banks on financial inclusion in the Kabale district. The specific goals were to ascertain the relationship between institutional innovations and financial inclusion, examine the relationship between process innovation and financial inclusion among rural households, and examine the relationship between product innovation and financial inclusion among rural households. The studies descriptive and cross-sectional research designs combined qualitative and quantitative methods for data collecting and analysis. Using questionnaires and interviews, data was gathered from a sample of 396 respondents as well as additional important informants. Microsoft EXCEL and SPSS Version 21.0 were used to analyze the data and produce both descriptive and inferential statistic .

The study's findings support the statistically significant link between commercial banks' financial innovations and rural families' access to credit. As more clients choose mobile banking, the report advises banking institutions to develop measures to improve security in the platform. The report also advises making these platforms straightforward and simple to use in order to attract more users to the business. Additionally, because mobile banking has an impact on financial inclusion, banks should make sure to support mobile banking services by incorporating mobile phone usage as one of their innovations

INTRODUCTION

Financial innovation refers to a variety of innovative activities by commercial banks, including the adoption of new technologies, the use of novel approaches, the development of new markets, the emergence of fresh organizations and management paradigms, business streams, and finance. According to the idea of financial inclusion, everyone and every business, regardless of personal wealth or business size, should be able to access and buy financial products and services.

Commercial banks under the direction of the Bank of Uganda started experimenting with new technologies and innovations to help promote financial inclusion in the area. The Bank of Uganda signed the Agency Banking Regulations at the beginning of 2017 to officially launch agency banking (Uganda Bankers Association, 2018). This study was necessary because, despite commercial banks having implemented a number of financial innovations (including mobile banking, online banking, agency banking, etc.), it was still unknown how these innovations had benefited financial inclusion in the Kigezi subregion.

Even though the western region of the country has better financial access than other regions, some areas, especially the Kabale district, still have work to do to increase access to financial services. This is because about 45% of the population is still completely excluded and because the touch points for financial services are typically found outside of areas with high levels of poverty. For instance, 69% of all financial access touch points are found in areas with the lowest levels of poverty. Similar to this, cybercrime poses a genuine and serious threat to people, banks, and other online financial service providers and users, resulting in losses for both banking customers and the banks themselves.

Performance of commercial banks is and remains a growing national concern by different Scholars especially in aspects of financial innovations and financial inclusion (Uganda Bankers Association, 2017). Although there have been efforts to financially include a bigger part of the population in the commercial banking sector, the major premise of the success rests on the financial innovations implemented by a particular bank (Wieser et al., 2019). Financial innovations like mobile banking, electronic bill payments, differentiated products and agency banking promote financial inclusion by encouraging community participation, hence increasing savings, investment as well as capital/asset accumulation. In Kabale, different commercial banks have promoted financial inclusion by coming up with different innovations as per the guidelines of bank of Uganda that is mandated to supervise and regulate all the operations of commercial banks (Mugume et al., 2019). Much as there has been a number of innovations introduced and implemented by institutions, overall financial inclusion and performance is observed to be wanting for example the reports show that a large percentage of the rural population (68%) remain financially excluded from formal banking compared to 23% in urban areas . Only 32% of rural districts have access to formal banking services compared to 77% in urban areas The proportion of rural financial exclusion in Kabale is high (68%) compared to 15% of the total population of Uganda who are economically excluded from formal banking (Intermedia Uganda, 2016; Fin Scope Survey Uganda 2018). The state of operations has resulted in a lack of confidence in the financial innovations implemented by commercial banks. Existing literature indicates that financial innovation is associated with financial inclusion. If financial inclusion remains low in the Kabale District rural areas, people may continue to practice risky savings practices such as keeping money in pots that can increase poverty in the region. This study examines the impact of commercial banking financial innovation on the financial inclusion of rural households in Kabale district, Kigezi region, southwestern Uganda.

The objectives of the study were:

1) To determine the relationship between product innovation and financial inclusion among rural households in the study area.
2) To examine the relationship between process innovation and financial inclusion among rural households.
3) To determine the relationship between institutional innovations and financial inclusion among rural households in Uganda,

Financial innovation was evaluated in terms of product innovation, process innovation, and institutional innovation. Financial inclusion, on the other hand, was measured by access to and use of financial services. Financial innovation simplifies access and consumption of financial services from commercial banks and encourages community member participation. Continued participation of commercial banks in financial services leads to financial inclusion. However, the impact of financial innovation in commercial banks on financial inclusion depends on other mitigating factors such as household characteristics, access to innovation, geography, regulatory policy and traditional culture (Adeola, *et al*, 2017)

LITERATURE REVIEW

Commercial banks product innovation and financial inclusion

Qamruzzaman and Jianguo (2018) sought to determine the potential impact of product innovation on the financial performance of SMEs in the Czech Republic. The results of a pilot study on a statistical sample of 100 companies showed the need for continuous innovation. During his six years from 2002 to 2007, using his exploratory research design on a sample of 43 commercial banks in Kenya, his the study.

Innovative financial services, products, and financial institutions encourage society to become accustomed to using financial services provided by financial institutions, such as opening accounts, raising funds, and using ATMs (Kim et al., 2018). Financial inclusion is nevertheless the end result of the adoption and diffusion of financial innovations. Ndwiga and Maina (2018) assessed the impact of product and process innovations on the financial performance of a listed commercial bank in Kenya. Data were collected using Qualtrics survey software, which was used to administer the online survey to respondents. Collected data were analyzed using multiple linear regression to determine relationships between variables. The results show that process innovation can have a significant positive impact on the financial performance of listed commercial banks. However, product innovation did not show a significant association with financial performance. In addition, Qamruzzaman and Jianguo (2018) conducted a study on financial characteristics and innovation in microfinance institutions in Ghana. We find that product innovation or new savings products in institutions are strongly influenced by interest rates and loan repayment rates. In addition, we found that owner equity and bank loans, which are funding sources, promote product innovation. His MFIs in the country were encouraged to diversify their funding sources to promote product innovation and innovation in general. However, the study was unable to connect product innovation and performance.

A study was carried out on the effect of microfinance innovations on access to finance by small and medium enterprises was examined (Ajide and Folorunsho 2015). The study purposed to establish the innovative products available for Small and Medium Enterprises (SMEs) in Kenya. The study established that microfinance innovative products were positively correlated to access to finance by SMEs. It was noted that innovative loan products and saving products improved access to finance by SMEs.

Dunne and Elizabeth (2018) investigated the effects of financial innovation on financial performance of deposit taking SACCOs in Kajiado County. In particular, the study evaluated the effect of product, process, and organizational innovations on financial performance of deposit taking SACCOs. It was established that product, process, and organizational innovations had statistically significant effect on financial performance of deposit taking SACCOs. The study concluded that financial innovation significantly influences the performance of the financial status of deposit taking SACCOs in Kajiado County.

Chipeta et al., (2018) carried out a study on Dynamics of Financial Innovation and Performance of Banking Firms: Context of an Emerging Banking Industry. This study analyzed the impact of the introduction of two types of financial innovations. product innovation (e.g., telephone banking and SMS banking) and process innovation (performance of magnetic stripe cards (debit, ATM, credit cards), ATMs, automated ATMs, e-money banks). Two recruitment behaviors were included: first mover and first mover imitator. Initiatives have a positive impact on profitability and efficiency.

2.2. Commercial banks process innovation and financial inclusion

It has been noted in the finance literature that the contribution of financial innovation to the economy may be summed up in three main ways. First, financial innovation boosts financial efficiency while encouraging financial inclusion, facilitating international trade financial transactions, enabling remittance, and expanding economic activity. Second, according to the innovation-growth hypothesis, financial innovation boosts the quality of financial products and services (Banerjee et al., 2018; Ajide and Folorunsho, 2015; Evans and Olaniyi, 2015); accelerates the financial development process; enhances the capital accumulation and allocation processes; and raises the level of efficiency in financial institutions (Chipeta et al., 2018).

Thirdly, institutional development in the financial system, which includes internet and mobile banking, microfinance institutions, nongovernmental organizations, and hybrid organizational forms, speeds up the financial process and increases accessibility to formal financial services (Babajide et al., 2015). By engaging more individuals in the main stream of economic development, the institutional availability of providing financial services enhances the economy (Ajide and Folorunsho, 2015).

The effect of mobile money on underprivileged rural households was researched by Wieser et al. in Uganda in 2019. The work's main objective was to evaluate the utilization of mobile financial services and banking on mobile devices. The findings showed that mobile phones were widely adopted and mostly used for conversation, with little or no use for tasks requiring a high level of organization, such as mobile banking or mobile financial transfers. The results also showed that the introduction of mobile banking and mobile money has enhanced financial inclusion. The previous analysis only included mobile banking as a variable; the present study plans to include more variables.

(2016) Kasekende and Elizabeth looked into how Tanzania's mobile banking system affected financial inclusion. The research design used in the study was descriptive. A positive correlation between mobile banking and financial inclusion was established based on the results of the study, which revealed that 79 percent of the population was using the technological system of mobile banking, of which nearly 100 percent had aided in gaining access to financial services without difficulty. The study was not conducted in Kenya, resulting in a lack of research from that angle and a context vacuum that the researcher in the current study hopes to fill.

In his study of the effects of information technology on the banking sector, Bach (2011) examined theoretically and empirically how the rivalry in the financial services that banks provide can affect bank earnings. To evaluate the influence of IT on bank profitability over a 20-year period, researchers used a panel of 68 US institutions. They discovered that while IT may result in cost savings, increased IT spending might have network effects that reduce bank earnings. They further assert that the strength of the network effect will determine the relationship between IT spending and a bank's financial performance.

According to them, if network effect is too low, IT investments are likely to increase market share, boost revenue, and boost profits all while lowering payroll costs. Mobile banking services were the turning point in financial innovation in Kenya, resulting in a competitive financial service that eventually included 12 million people in established financial markets. In their research on whether internet banking influences the performance of community banks, Afande & Mbugua (2015) discovered that banks that offer a wide range of online banking services typically perform better. Additionally, they discovered that online banking aids community banks in raising their return on equity and improving asset quality by lowering the percentage of past-due and underperforming assets.

Dzombo et al. (2017) examined the Saudi Arabian Commercial Banks' profitability from 1998 to 2007. According to the findings of his research, Saudi banks' ability to generate profits was positively impacted by the availability of phone banking, the number of ATMs, and the number of branches. He discovered that the quantity of point-of-sale (POS) terminals, the availability of PC banking, and the accessibility of mobile banking did not, on the other hand, boost profit efficiency.

According to a review of Kenyan mobile financial services (Turihamwe et al., 2014), innovation in the financial industry is essential for financial inclusion. Mobile banking services have set the bar for financial innovation in Kenya. A £1 million grant from the Department for International Development (DFID) was given to Vodafone.With the help of this funding, Safaricom (the Vodafone-affiliated network in Kenya) was able to develop a competitive banking service that ultimately helped 12 million individuals gain access to formal financial markets.

According to Kim et al. (2018), the terms "M-banking," "M-payments," "M-transfer," and "M-finance" collectively refer to a group of applications that allow users to access credit and insurance products as well as manage their bank accounts using their mobile phones. These have improved both developed and developing countries' access to financial services. Consumers in the developed world were these applications' initial target audience. The mobile platform provides a practical extra way to manage money without handling currency by enhancing banking system services such checkbooks, ATMs, voice mail/landline interfaces, smart cards, point of sale networks, and internet resources.

Inequality in income and poverty can be significantly reduced by improving access to financial services. Researchers Kasekende and Elizabeth (2016) and Mugume and Doreen (2019) proposed in their respective studies that a lack of access to financial services can exacerbate income inequality and poverty in the economy. Similar to this, Wieser et al. (2019) made the case that financial inclusion through bank-

based financial institutions speeds up access to finance for the poor and has a favorable impact on the decrease of income.

In a panel of 97 nations, Qamruzzaman and Jianguo (2018) used system-GMM estimate to examine the impact of financial inclusion on financial development from 2004 to 2012.

They showed that financial inclusion and financial development have a beneficial relationship. Similar to this, Sekhar and Satya (2018) argued that financial service innovation in Africa, such as mobile banking, helps the continent's population access financial services by overcoming infrastructure barriers. The financial system's mainstreaming of the geographically and economically disadvantaged population both accelerates financial activity and decreases market share. The Bara & Mudzigiri (2016) study provides additional supporting data.

By using the fully modified OLS, they looked into the connections between financial inclusion, financial development, and economic diversification in Nigeria. The study's findings showed that, in terms of financial access and financial usages, respectively, financial inclusion has a considerable impact on financial development.

Commercial banks institutional innovation and financial inclusion

In this study, we reviewed relevant studies on institutional innovation, product innovation, process innovation and performance in the microfinance sector in that order. Bara, & Mudzigiri, (2016) explored financial innovation and economic growth in Zimbabwe. The study found that institutional innovation improves business performance by significantly reducing administrative and transaction costs, reducing service costs, and improving labor productivity. The study found institutional innovations in MFIS firms to be organizational partnerships, strategic alliances with commercial banks, and new branch networks. Institutional innovation has been found to have a positive impact on firm performance. However, the study was limited to the insurance sector rather than focused on performance.
Lumsden (2018) conducted a study on the future of mobile and Financial inclusion and innovation in emerging markets. The results concluded that investor protection law was the most important factor influencing financial innovation. He also found that the lack of automated trading systems as a technical factor affected innovation. Furthermore, he hypothesized that financial competition and consolidation would influence financial innovation, and that increased financial competition among financial institutions would have the greatest impact on innovation. Borsa Istanbul Review, an empirical study on the impact of digital finance on financial inclusion and stability, was conducted (Ozili, 2018) and this is also supported by Mbabazi and Agaba (2021**)** The focus was the Savings and Credit Cooperative (SACCO) in Mombasa, Kenya. The primary objective of this study was to determine the impact of organizational innovation, process innovation, and product innovation on his SACCO performance. Institutional innovation was found to have a small but positive impact on performance.

The impact of financial innovation on operational performance is also discussed in terms of the efficiency of financial institutions, preferably bank-based financial institutions such as Tuesta. (2015) investigated financial inclusion and its determinants. Data envelope analysis was applied to obtain conclusive evidence. The findings reveal that foreign banks operating in Romania are more efficient than domestic banks. They hypothesized that the efficiency of foreign banks depends on diversifying their financial products and services, creating a customer-centric business. Further evidence relates to financial performance driven by financial innovations observed in a study by Ozili (2018). This study found a positive association between financial innovation and operational performance in Kenyan bank-based financial institutions. Similar results on the performance of Kenyan banks with financial innovation were found in (Jaabi, 2015). A key goal of financial inclusion should be to benefit the poor and worthless without formal financial services. This means drawing the unbanked into the formal financial system and giving them access to financial services such as savings, deposits, lines of credit and insurance. An inclusive financial system promotes the development of propensity to save, capital accumulation, productive investment, and entrepreneurship that contribute to raising the living standards of society (Jaabi, 2015). In addition, an inclusive financial system also reduces the likelihood that informal sources of credit will emerge in the economy. Thus, an inclusive financial system ensures institutional efficiency,

safe savings and investment by enabling a full range of efficient financial services. Implementing financial inclusion effectively and efficiently can therefore observe sustainable financial development in the economy.

METHODS

The design of this study was cross-sectional. A cross-sectional study is a style of research design in which you gather information from a large number of individuals all at once and this is in accordance with Agaba *et, al.*(2023) . The study's intention was to choose participants from various banks in order to collect their opinions and compare them, so this design was chosen to reflect that. The study was able to be flexible as a result, and the researcher learned more about the respondents' perspectives on the world. For the collection and analysis of data, the design used both quantitative and qualitative research approaches. Key informant interviews were used in the qualitative approach to record views and opinions on the topic, while questionnaires were used in the quantitative approach to ask respondents for quantifiable information.

Sample Size and determination

In order to determine how many units of sampling should be surveyed and interviewed, one must determine the sample size, which is the number of items to be chosen from the universe to make up the sample. Turyasingura *et al* (2022) and (Irons, 2006). The target commercial banks (Centenary Rural Development Bank, Stanbic Bank, Equity Bank, and Post Bank) provided services to over 80,000 clients in the area, according to preliminary results from August 2021. Using Slovenes' sample determination formula from 1965, the researcher selected a target sample from this group, with a tolerable error of 5% and a level of confidence of 95%.

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

Where n= sample size, N= Estimated convenient number of respondents, e=marginal error or level of significance and it ranged from 1%-5% which is 0.01-0.05.

Substituting the values into the formula: n

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

$$= \frac{80{,}000}{1+ 80{,}000\ (0.05^2)} \qquad = \frac{80{,}000}{1+ (80{,}000*0.0025)}$$

$$= \frac{80{,}000}{1+ 200} \qquad = \frac{80{,}000}{201}$$

= 396 respondents

Table 1: Target sample and procedure

Category	Population	Target sample	Sampling procedure
Managers	8	4	Purposive selection
Product and marketing managers	40	16	Purposive selection
ICT officers	24	8	Purposive selection
Customers	5500	368	Simple random
Total	5725	396	

3.2. Sampling strategy

Respondents were chosen for the study using stratified random sampling. A sampling technique called stratified sampling divides the population into strata or groups. In this instance, respondent groups were created based on a shared branch and attributes. The population was divided into groups (branch managers, product and marketing managers, ICT officers, and customers), and the target sample was selected using simple random sampling methods with a purpose. Branch managers, product and marketing managers, and officers in charge of ICT were chosen using a purposeful sampling process, whereas bank

customers were chosen using a simple random sampling method. In this instance, a random sample of 89 respondents from each of the four (4) chosen commercial banks—including one manager, four product and marketing managers, two ICT officers, and 92 customers—was chosen, for a total of 396 respondents. To more broadly apply the research findings on the phenomenon being studied, this method was chosen for this study.

Data Collection instruments

Questionnaire

A questionnaire is a collection of questions based on the subject of interest to the researcher and completed by respondents. A standardized structured questionnaire with closed ended questions was used to generate data from the respondents. Given the nature of the study, the study questions covered a wide range of information including respondent characteristics such as (age, sex, education status, class of education, position in the institution). A 5-point Likert scale with closed questions was used to establish the relationship between financial innovations (product innovations, process innovations and institutional innovations) with financial inclusion as well as to determine the relationship between financial innovations and performance of commercial banks.

Data quality control

Content Validity

When the data measures what it should measure, it is valid. According to Agaba and Turyasingura (2022), validity demonstrates that the study tool is evaluating what it should. The degree to which conclusions drawn from the analysis of facts and figures accurately represent the situation under investigation is referred to as validity. By talking with five random respondents who were not part of the target sample, the questionnaire was pre-tested to ensure that it was error-free and that the respondents understood it. To improve the content validity of the instrument, the observations from the discussions were evaluated and improved

Reliability of the instruments

According to Agaba and Emenike (2019), reliability is the degree to which a study tool consistently measures in a similar way when used in the same situation with the same components. The Cronbach's Alpha () reliability test was used by the researcher. The Alpha level was checked by using SPSS version 21 after ten questionnaires were distributed to randomly selected participants. It was decided to use the commonly used reliability cutoff value of 0.7. The instruments' Cronbach's Alpha value was 0.811, higher than the reliability cutoff value's customary value of 0.7. This result showed that the questionnaires were trustworthy and thus effectively used in the study because they met the minimal necessary conventional value.

Data Analysis

The appropriate data cleansing, processing, and analysis were applied to the collected data, in that order. Statistical Package for Social Sciences (SPSS) Version 21 software was used to simplify data processing and analysis. Descriptive and inferential statistics were both a part of data analysis. There were used descriptive statistical tools such as frequencies, means, modes, standard deviations, and variance. The Pearson correlation coefficient and multiple regression analysis, on the other hand, were examples of inferential statistics. In the form of tables, charts, and graphs, the analysis' findings were displayed.

RESULTS

Response Rate

Three hundred ninety-six (396) respondents received questionnaires, with instructions to complete and return them by January 31st 2023. There was a 100% response rate for all 396 questionnaires that were completed and returned**.**

Socio-economic characteristics of Respondents

This sub-section presents the demographic features of 392 sampled respondents. The key demographic characteristics captured for the study included gender, age, marital status, education level and experience in farming. These features were found to be of great help in terms of clearly depicting the diverse background of farmers.

Table 2: Bio-demographic characteristics of the households

Household Characteristics	**Total (*n*=396)**
Gender of respondents ***(%)***	
Female	206 (52%)
Male	190 (48%)
Age bracket ***(%)***	
20 - 25	84 (21.2%)
26 - 31	101 (25.5%)
32 – 37	118 (29.8%)
38 +	93 (23.5%)
Marital status ***(%)***	
Single	103 (26.1%)
Married	260 (65.6%)
Others	33 (8.3%)
Education level ***(%)***	
None	43 (10.8%)
Primary	69 (17.4%)
Secondary	189 (46.9%)
University	95 (23.9%)
Position in the bank ***(%)***	
Managers	4 (1%)
Product and marketing managers	16 (4%)
ICT officers	8 (2%)
Customers	368 (92.9%)
Years of being a customer *(mean ± Std. D)*	3.23 ± 2.129

Table 1's findings show that male and female respondents made up, respectively, 52 and 48 percent of the sample. The agricultural sector, which has attracted more women than men in part, reflects the participation of more men than men. 29.8% of respondents were between the ages of 32 and 37, 25.5% were between the ages of 26 and 31, 23.5% were between the ages of 38 and over, and 21.2% were between the ages of 20 and 25. The sample respondents' marital status was also broken down as follows: 65.6% were married, 26.1% were single, and 8.3% were either widowed or separated. The majority (46.9%) of respondents had completed their secondary education, followed by 23.9% who had completed their undergraduate degrees, 17.4% who had finished their primary education, and 10.8% who had not completed any formal education. Ninety-two percent (92%) of respondents were study bank customers, 4% were product and marketing managers, and 2% and 1%, respectively, were ICT officers and managers. With a minimum of 1 and a maximum of 14, the average number of customers at a particular bank was 3.232point129.

Relationship between product innovation and financial inclusion among rural households

This section of the study addresses research objective one which sought to determine the relationship between product innovation and financial inclusion among rural households in the study area. The association between product innovation and financial inclusion was analyzed on Univariate (using average mean and standard deviation) and bivariate (using spearman's rho) as presented in tables 2 - 3, respectively.

Table 3: Variable statements for the relationship between product innovation and financial inclusion among rural households

Variable statement	Mean ± Std. Dev.
Commercial banks develop new products quite regularly	4.04 ± .942
Commercial banks offer improved products to their customers.	3.78 ± .975
Commercial banks offer high quality products that persuade people to join them	4.02 ± .850
The product performance in commercial banks is relatively high compared to other financial institutions.	3.80 ± 1.193
Commercial banks have differentiated products that attract members of the community	4.09 ± 1.005
Commercial banks have technology that allow payment of bills electronically	3.84 ± 1.151
Commercial banks introduce new deposit accounts for other members of the community to join	3.93 ± .997

A mean and standard deviation are shown in table 2 above. According to Dev (4.04 .942), the majority of respondents agreed that commercial banks should regularly create new products to encourage financial inclusion among rural households. In a similar vein, a score of 3.78 .975 on a scale of 1 to 100 indicated that respondents agreed that commercial banks provide their clients with better products. Furthermore, respondents agreed with the statement that commercial banks offer high-quality products that entice people to join them and thereby promote inclusion, as indicated by an average score of 4.02 on a scale of 850, while a mean score of Std. When compared to other financial institutions, commercial banks' product performance is relatively high, which helps to promote financial inclusion, according to Dev (3.80 1.193), which showed that respondents generally agreed with this statement. Most respondents (4.09 to 1.005) concurred that commercial banks offer distinctive products that draw in customers from the community. Additionally, an average score of 3 points 84 to 1 points 151 showed that respondents' attitudes toward commercial banks' technology-enabled bill payment options were neutral, which may have helped them draw in rural households. Participants' responses to the statement that commercial banks should open new deposit accounts for community members to join were neutral, as indicated by an average score of 3.93 .997**.**

Table 4: Correlation matrix between product innovation and financial inclusion among rural households

	Financial inclusion	
Product innovation	Spearman's rho ($r_{s)}$	p-value
Regular development of new products	0.605	0.003
Offering improved products to the customers	0.087	0.514
Offering high quality products	0.248	0.005
Comparison of product performance	0.480	0.065
Product differentiation	0.985	0.000
Electronic payment of bills	0.729	0.002
Introduction of new deposit accounts for other members	0.911	0.001

The correlation matrix between product innovation and financial inclusion among rural households, as determined at the 5% level of probability, is displayed in table 3's results. At the bivariate level, product differentiation had a very strong relationship with financial inclusion (rs = 0.985, p= 0.000), regular

development of new products had a very strong relationship with financial inclusion (rs = 0.605, p=0.003), and R2 Adj providing high-quality products to customers had a weak relationship with financial inclusion (rs = 0.248, p=0.005). The comparison of product performance and the provision of improved products to customers, on the other hand, were not significantly associated with financial inclusion.

Relationship between process innovation and financial inclusion

This section addresses research objective two which sought to examine the relationship between process innovation and financial inclusion among rural households. The connotation between process innovation and financial inclusion was analyzed on Univariate (using average mean and standard deviation) and bivariate correlation (using spearman's rho) as presented in tables 4 - 5, respectively.

Table 5: Variable statements for the relationship between process innovation and financial inclusion

Variable statements	Mean ± Std. Dev.
Security in mobile banking platform has been well reflected and this has seen customers embrace mobile banking more and hence inclusion	3.18 ± 1.249
The mobile banking platform is simple and easy to use which has drawn more customers in to the service increasing financial inclusion	3.65 ± 1.336
Accessibility of mobile banking services has been facilitated by increase of mobile phone usage and this has led to increased financial inclusion	3.84 ± 1.135
Internet banking has led to more people adopting the service hence financial inclusion	3.69 ± 1.318
Electronic banking services save on time and cost encouraging more customers to adopt the service hence increase on financial inclusion	3.89 ± 1.048
Electronic banking outlet services are perceived as reliable by customers hence more customers thus increased financial inclusion	3.85 ± 1.026

As shown in table 4 above, a mean ± Std. Dev of (3.18 ± 1.249) implies that most respondents were neutral about the statement that security in mobile banking platform has been well reflected and this has seen customers embrace mobile banking more and hence inclusion. A mean ± Std. Dev (3.65 ± 1.336) indicated that participants were in agreement that mobile banking platforms for commercial banks are simple and easy to use which has drawn more customers in to the service increasing financial inclusion. Moreover, a mean of 3.84 ± 1.135 showed that respondents were in agreement that accessibility of mobile banking services has been facilitated by increase of mobile phone usage and this has led to increased financial inclusion. More an average score of (3.69 ± 1.318) disclosed that majority of participants were in agreement that internet banking has led to more people adopting the service hence financial inclusion. A mean ± Std. Dev. (3.89 ± 1.048) showed that respondents were in agreement that electronic banking services saved time and cost encouraging more customers to adopt the service hence increase on financial inclusion. The majority of the respondents were in agreement that electronic banking outlet services are reliable to customer's thus increasing financial inclusion (3.85 ± 1.026).

Table 6: Correlation matrix between process innovation and financial inclusion

	Financial inclusion	
Process innovation	Spearman's rho ($r_{s)}$	p-value
Securing mobile banking platforms	0.290	0.004
Simplicity and easiness of mobile banking platforms	0.968	0.000
Accessibility of mobile banking services	0.019	0.890
Internet banking	0.788	0.001
Electronic banking outlets and services	0.490	0.023

Results of the correlation matrix between process innovation and financial inclusion were presented in table 5 above. At 95% confidence interval and at 5% level of probability financial inclusion had a weak relationship with securing mobile banking platforms (r_s = 0.290, p=0.004), a very strong correlation with simplicity and easiness of mobile banking platforms (r_s =0.968, p=0.000), a strong correlation with internet banking (r_s = 0.788, p= 0.001), and a moderate relationship with access to electronic banking

outlets and services (r_s = 0.490, p= 0.023). However financial inclusion showed no association with the accessibility of mobile banking services.

Relationship between institutional innovations and financial inclusion

This section addresses research objective two which sought to determine the relationship between institutional innovations and financial inclusion among rural households in Kabale district. The connotation between institutional innovations and financial inclusion was analyzed on Univariate (using average mean and standard deviation) and bivariate correlation (using spearman's rho) as presented in tables 6 – 7 below.

Table 7: Variable statements for the relationship between institutional innovations and financial inclusion

Variable statement	Mean ± Std. Dev.
The banks have ensured security of agency banking services hence more confidence and subsequently higher inclusion	4.53 ± .836
Commercial banks have adopted advanced technologies like biometric access system which gives security of customer accounts	4.65 ± .517
Commercial banks have partnered with various financial intermediaries which allows them to extent services to customers in hard-to-reach places	4.67 ± .668
Commercial banks are guided by a clear legal framework that protects customer interests hence promoting inclusion	4.59 ± .687
The interbank funds transfer systems allow customers to make transactions at any point of any bank	4.58 ± .738
Agency banking has enabled the bank to outreach the remotest areas increasing geographical coverage hence financial inclusion	4.69 ± .466
Agency banking eases transaction time which has seen more customers embrace the service leading to increased financial inclusion	4.05 ± 1.224
Agency banking enables availability of liquidity for more customers and hence increased financial inclusion	3.78 ± 1.287

Results for the variable statements for the relationship between institutional innovations and financial inclusion were presented in table 6. From the analysis, an average score of 4.53 ± .836 revealed that respondents were in agreement that banks ensure security of agency banking services hence more confidence and subsequently higher inclusion. An average score of 4.65 ± .517 also showed that respondents were in agreement that commercial banks have adopted advanced technologies like biometric access systems which gives security of customer accounts. More so, a Mean ± Std. Dev (4.67 ± .668) reveal that respondents were in a strong agreement with the statement that commercial banks have partnered with various financial intermediaries which allows them to extent services to customers in hard-to-reach places. Furthermore, a mean of 4.59 ± .687 indicated that respondents were in agreement that commercial banks are guided by a clear legal framework that protects customer interests, hence promoting inclusion. An average score of 4.58 ± .738 implied that respondents were in a strong support that interbank funds transfer systems allow customers to make transactions at any point of any bank. A Mean ± Std. Dev postulate that respondents strongly supported the fact that agency banking enables the bank to outreach the remotest areas increasing geographical coverage hence financial inclusion. Likewise, an average mean of (4.05 ± 1.224) revealed that respondents were in agreement that agency banking eases transaction time which has seen more customers embrace the service leading to increased financial inclusion. Respondents were further in agreement that agency banking enables availability of liquidity for more customers and hence increased financial inclusion (3.78 ± 1.287).

Table 8: Correlation matrix between institutional innovations and financial inclusion

	Financial inclusion	
Institutional innovations	Spearman's rho (r_s)	p-value

Interbank funds transfer systems	0.683	0.002
Partnership with various financial intermediaries	0.288	0.004
Adoption of advanced technologies	0.861	0.353
Agency banking services	0.389	0.239
Legal framework	0.878	0.001
Availability of liquidity	0.956	0.000

Results of bivariate analysis in table 7 show the relationship between institutional innovations and financial inclusion. From the analysis, interbank funds transfer systems presented a strong correlation with financial inclusion (r_s = 0.683, p= 0.002), partnership with various financial intermediaries had a weak relationship with financial inclusion (r_s = 0.288, p= 0.004), Legal framework (r_s = 0.878, p= 0.001) and availability of liquidity (r_s = 0.956, p= 0.000) had strong correlations with financial inclusion respectively. However, adoption of advanced technologies and agency banking services presented no significant associations with financial inclusion.

Regression results on the overall relationship between commercial banks financial innovations and financial inclusion

Regression analysis was conducted to test whether financial innovations significantly influenced financial inclusion among rural households. The results were summarized in Tables 8 and 9, respectively.

Table 9: Model Summary for the perceived influence of financial innovations on financial inclusion among rural households

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503[a]	.253	.251	.70238

a. Predictors: (Constant), Financial innovations

As shown in table 7 above, commercial banks' financial innovations (product, process and institutional) presented a statistically significant association with financial inclusion among rural households (R = 0.503, p= 0.000). The R-square of .253 revealed that financial innovations (product, process and institutional) explained for 25.3% variation in financial inclusion among rural households. To ascertain the relative strength of the predictor variables on financial inclusion among rural households, multiple regression analysis was conducted. The results are presented in Table 9 below.

Table 10: Multiple regression coefficients for financial inclusion with associated predictor variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.379	.401		15.912	.000
	Product innovation	.500	.063	.320	7.993	.000
	Process innovation	.305	.026	.421	11.869	.000
	Institutional innovations	.274	.038	.284	7.138	.000

a. Dependent Variable: Financial inclusion

*sig at 10%, ** sig. at 5%, *** sig at 1%.

As shown in table 9 above, the constant represented other innovations other than the three predictor variables (product, process and institutional) studied. The coefficients explain the changes in the probabilities of the outcome as a result of a unit change in the explanatory variables. Product innovation was the strongest predictor of financial inclusion (β= 0.500), followed by process innovation (β= 0.305) and finally institutional innovations (β=0.274). For instance, a unit change in the products innovated by commercial banks was found to influence financial inclusion among rural households by 0.500. A unit change in commercial banks' process innovations was also found to influence financial inclusion by 0.305. This further applied to institutional innovations where a unit change influenced financial inclusion by 0.274.

DISCUSSION

Relationship between product innovation and financial inclusion among rural households

The study found a statistically significant relationship between product innovation and financial inclusion in rural households. The relationship between product innovation and financial inclusion was analyzed and determined using Spearman's rho correlation. The results of the analysis were: regularly developing new products (rs = 0.605, p = 0.003), providing high quality products to customers (rs = 0.248, p = 0.005), product differentiation (rs = 0.985 , p = 0.000).).), electronic payment of bills (rs = 0.729, p = 0.002) and the introduction of new deposit accounts for other members (rs = 0.911, p = 0.001) are significant increases in access to and use of financial services by rural households. Impacted financial inclusion through improvements. Product innovation is essential for banks to protect them from market threats and competitors. Product innovation improves performance by strategically positioning banks in the market. As a result, innovation leads to competitive advantage and superior performance, attracting more customers. Indeed, Qamruzzaman and Jianguo (2018) investigated new product launches and found that product innovation in commercial banks had a significant positive impact on bank performance. The above has been reported by Kim et al. (2018) confirmed when examining the performance of product innovation in banks. Aspects of product innovation, effectiveness and efficiency with respect to new, improved, and high-quality products, were found to have a strong and positive impact on performance.

Relationship between process innovation and financial inclusion

The aim is to explore the relationship between process innovation and financial inclusion in rural households. The implications between process innovation and financial inclusion were analyzed using Spearman's rho correlation. Confidence interval 95%, probability 5%, protection of mobile banking platform (rs=0.290, p=0.004), simplicity and simplicity of mobile banking platform (rs=0.968, p=0.000), internet banking (rs = 0.788, p = 0.001) and e-banking and services (rs = 0.490, p = 0.023) were associated with access to and use of financial services by rural households. Process innovation includes delivering quality functions and transforming processes in banks. For example, we know that the adoption of mobile banking and mobile money has increased financial inclusion. The findings are consistent with those of Kasekende and Elizabeth (2016), who examined the coverage of mobile banking systems for financial inclusion in Tanzania. A descriptive study design was employed in this study. As a result, 79% of the population uses mobile banking technical systems and nearly 100% of them have easy access to financial facilities, establishing a positive association between mobile banking and financial inclusion. Błach (2011) adds that process innovation has a positive impact on an organization's overall quality control. The study adds that process innovation leads to speed and quality improvements, as well as flexibility and cost efficiency. However, a survey of German companies found that not all process innovations lead to cost savings. The study also found that companies can sell their products at competitive prices if process innovation leads to cost savings.

5.3 Relationship between institutional innovations and financial inclusion

In this section, we examined the connection between institutional innovations and financial inclusion among rural households in Uganda's Kabale district for the case study. We used spearman's rho to examine the relationship between institutional innovations and financial inclusion. Financial inclusion (access to and use of bank financial services) was statistically related to interbank funds transfer systems (rs = 0.683, p= 0.002), partnership with different financial intermediaries (rs = 0.288, p= 0.004), legal framework (rs = 0.878, p= 0.001), and liquidity availability (rs = 0.956, p= 0.000). For instance, interbank funds transfer systems, joint ventures with different financial intermediaries, and simplified legal frameworks were found to promote inclusivity in the financial systems, which over time attracted a propensity for saving, capital accumulation, profitable investment, and entrepreneurial growth that helped to raise living standards in rural communities. Comparable results have been found by Dzombo et al. (2017). who claimed that enhancing financial inclusion and development requires institutional reforms in areas like rule of law, regulatory quality, political stability, and legal origin. Financial inclusion, however, is not always a byproduct of financial development. These studies have a significant flaw in that they use

country-level proxies like stock market capitalization, credit to the private sector, and bank liquid liabilities to measure different aspects of financial deepening.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

One of the research objectives was to identify the relationship between product innovation and financial inclusion in rural households in the Kabale district. The study identified a statistically significant association between productive innovation and financial inclusion in rural households. Innovations such as new product development, high-quality products, product differentiation, electronic payment of bills and the opening of new deposit accounts have improved access and use of banking financial services.

Research objective 2 was to examine the relationship between process innovation and financial inclusion in rural households in the Kabale district. Process innovation was also found to statistically improve the financial inclusion of rural households. Processes such as secure mobile banking platforms, simplicity and ease of use of mobile banking platforms, internet and e-banking, and services have promoted financial inclusion through improved access and use of financial services.

Research objective 3 was to clarify the relationship between institutional innovation and financial inclusion in rural households. The study confirmed a statistically significant association between institutional innovation and financial inclusion. Innovations such as interbank transfer systems, partnerships with various financial intermediaries, legal frameworks and the availability of liquidity have improved access and use of financial services and improved financial inclusion.

Recommendations

For Kabale district's commercial banks to compete with other banks and increase their profits, they should adopt process innovations.

As more customers adopt mobile banking, the study advises banking institutions to develop measures to strengthen security in the platform. In order to attract more customers to the service, the study also suggests that these platforms be made straightforward and simple to use. Additionally, because mobile banking affects financial inclusion, banks should make sure that they make mobile phone usage one of their innovations and thereby facilitate mobile banking services.

The research's findings suggest that commercial banks adopt the three types of innovations (process innovation, product innovation, and organizational innovation) to improve their financial performance if they want to increase their profits.

According to a study on agency banking, financial institutions should devise policies to improve outreach to the most rural regions and broaden their geographic reach. The study also advises banking institutions to implement measures to improve platform security, giving customers greater assurance. Additionally, since agency banking has an impact on financial inclusion, bank management should promote and market the platforms to raise public awareness of them.

Bank management should implement promotion strategies to let customers know how reliable electronic banking outlet services are as technological advancements. The convenience of the outlets should also be improved by the banks, as this increases customer adoption of the service and increases usage. It also increases interest in banking, reduces time and costs. The banks should also make sure that these locations are accessible to customers, as this directly affects how many people use the service.

When customers interact with the platform, the banks should have procedures in place to guarantee internet banking is easy to use. Additionally, they should make sure that information security is well in place so that users can feel secure using the system and providing personal information.

To promote higher savings rates, the central government and bank of Uganda should assist commercial banks in providing their customers with a range of products and services in addition to straightforward deposits and credit. Additionally, it ought to improve the sector's prudential regulation and the laws protecting members' savings.

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