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## The Role of Financial Innovations in the Relationship between Open Market Operations and Access to Credit by Small and Medium Enterprises in Kisumu County, Kenya

**Osir Rosalyne Adhiambo**

Trainer, Department of Business and Entrepreneurship,  
The Kisumu National Polytechnic, Kenya

**Joshua Wafula Chesoli**

Lecturer, School of Business and Economics, Kisii University, Kenya

**Christopher Ngacho**

Lecturer, School of Business and Economics, Kisii University, Kenya

### **Abstract:**

*Purpose: This study investigated the role of financial innovations in the relationship between open market operations and access to credit by small and medium enterprises in Kisumu County. The specific objectives were to assess the effect of open market operations on access to credit by small and medium enterprises and to investigate the role of financial innovations in the relationship between open market operations and access to credit by small and medium enterprises in Kisumu County. The study was guided by Milton Friedman's Monetarism Theory.*

*Methodology: The study adopted a descriptive research design with a target population of 1,472 SME owners/finance officers in Kisumu County. A sample of 420 was obtained, and a closed-ended questionnaire was used to collect primary data. Data was analyzed using descriptive, correlation and regression analyses.*

*Results: Results showed that open market operations had a statistically significant effect on SMEs' access to credit in Kisumu County. Further, financial innovations statistically and significantly moderated the effect on the relationship between open market operations and access to credit by small and medium enterprises. The study concluded that SMEs' access to credit depended on the direct and indirect effects of open market operations and also that financial innovations moderated these effects.*

*Contribution to theory, practice and policy: The implication is that open market operations should be used to gradually and in a predictive manner increase the quantity of money until an equilibrium rate of interest is attained. SMEs will also be able to access credit if the supply is adequate and the interest rate is at the desired level for the clients. The results of the independent variable of this study showed that even though OMO had a significant effect on access to credit, its contribution was minimal. This may imply that the instruments used in the open market operations may not be accessible by small traders due to the minimum amount required for investment. The players of the financial markets could, therefore, think of innovative ways to customize products for the small traders in the open market operations to ensure optimum access to credit by SMEs. This study found that financial innovations increased the effect of open market operations on SMEs' access to credit by increasing the variation of access to credit. The use of financial innovations should, therefore, be encouraged as a bridge that would enhance SMEs' access to credit. This is a major contribution to knowledge, as no study has established this fact. Policies that would ensure implementation and control of the open market operations should be formulated. Mechanisms for firm checks should be crafted to ensure efficient and effective implementation of the same. These policies should be reviewed regularly to ensure they are current and offer proper guidance. Their implementation could ensure optimum utilization of the investment channels, hence ensuring the growth and stability of the economy.*

**Keywords:** Open market operations, financial innovations, access to credit, small and medium enterprises

### **1. Introduction**

The focus of this paper was on the role of financial innovations in the relationship between open market operations and access to credit by small and medium enterprises in Kisumu County. This is a significant research issue, given the important role of SMEs in the economy and the potential of access to credit to enhance this role (Ghulam & Mumbine, 2017). The SME sector has received great attention lately in the developed and the developing countries. This is because they contribute the largest share of the GDP and the employment opportunities in these nations as it is approximated that the SMEs form over 90% of the businesses and contribute to over 50% of the job opportunities and 33% of the gross domestic products of a majority of the developing nations (Tewari et al., 2013; Saleem, 2017).

### 1.1. Open Market Operations

Open Market Operations (OMOs) are the buying and selling of government bonds and bills in the open market by the Central Banks. The sale of government securities in the open market influences the supply of money in financial markets. As Gray (2011) explained, the supply of funds reduces when securities are sold and increases when they are bought. Central Banks buy and sell government securities in the money market through open market operations using repurchase agreements (REPOs), reverse repurchase agreements (Reverse REPOs) and treasury bills (Kamau, 2015). Empirical work on the effect of OMOs points to the success of this policy in influencing the supply of money in the economy. Open market operations of the Central Bank of Jordan through the issuance of deposits and the REPOs were effective in influencing the money supply in Jordan even though its effect was not large enough. However, open market operations had a negative impact on bank lending in Nepal (Jamel et al., 2017). The big question is, "Are the SMEs able to access the money supplied?"

In Nigeria, several monetary intervention tools, such as OMOs, have been used since 1993, even though their inflation rate has not dropped to the desired unit digit. Like other nations of the world, the Central Bank of Nigeria has the mandate of formulating and implementing its monetary policies with the objective of keeping up price stability. OMO was in wide use in Nigeria alongside other monetary policy tools to control price stability. The policy had a positive but insignificant impact on consumer price stability, as was proxied by the inflation rate in Nigeria. There was a positive correlation between OMO and consumer price stability of the CBN for the period 1993-2007. OMO remained a useful monetary intervention tool alongside other tools to maintain price stability in Nigeria (Onwumere et al., 2012).

Researchers have mixed reactions to the effect of open market operations on credit supply in Kenya. Some authors allude to the fact that open market operations have a significantly negative effect on credit supply (Njiru, 2016), while others posit that there exists a positive and significant effect of the 91 Treasury bill rate on banks' lending rates in Kenya (Mwangi, 2016; Kamau, 2015).

Financial innovations are the activities of creating and popularizing new financial instruments, new technologies, institutions and financial markets. They are the activities that involve making changes to products and processes, new organizations, gathering new knowledge, and developing and distributing new products or services (Tufano, 2003). These technological advances either facilitate information access, trading and payment or new financial instruments, services, and forms of organizations (Gbadebo & Oladapo, 2009; Lerner & Tufano, 2011). Financial advancements have greatly changed worldwide in recent years due to changes in technology resulting from improved telecommunications, information technology and financial practices (Lerner & Tufano, 2011).

Some of the new product innovations include subprime lending, where creditors with low credit histories are given loans at reasonable rates. Innovations have also focused on product and service innovations such as debit cards and online banking, process innovations entailing Automated Clearing Houses (ACHs), distributed ledgers, Machine Learning, Artificial Intelligence, and Small Business Credit Scoring (SBCS), and new organizational innovations such as Internet-only banks and marketplace lenders, which connect small firms with lenders online (Frame et al., 2018).

Financial innovations may affect the efficacy of monetary policy transmission mechanisms, and they differ in their effectiveness. On the one hand, they could lead to a reduction in demand for money when financial innovations cause clients to prefer less liquid assets over more liquid ones and on the other hand, they could lead to increased money demand if payment systems were enhanced, causing demand for more liquid assets (Ajide, 2016; Dabrowski, 2017; Lerskullawat, 2014).

The existence of ATMs, electronic money, and credit and debit cards are alternative and more convenient ways of payment that influence the speed of money supply. Insofar as central banks continue to retain control over interest rates, the effect of digital money on monetary transmission might be irrelevant. Moreover, since credit cards give some kind of financing, interest rate variations due to monetary policy may have a reduced effect on households as credit cards can cushion the effect (Putunoi, 2015). Financial innovations can improve SME access to credit by solving the problems of inadequate information and lack of security, among others (OECD, 2018).

There is little empirical attention given to the mechanism by which financial innovations link open market operations and SMEs' credit access. Thus, there exists a need for research to open the "black box" between open market operations and access to credit by small and medium enterprises. The current study endeavored to fill this empirical gap by examining the moderating role of financial innovations in the relationship between open market operations and access to credit by these enterprises.

The global problems of SMEs relate to their inability to access the credit they require to enable them to contribute to economic development, employment creation and poverty reduction (Etemesi, 2017; Ghulam & Mumbine, 2017). SMEs need to obtain the right financing to enable them to start up, develop, and sustain themselves. Despite the fact that SMEs were able to access credit from financial institutions after the financial crisis of 2008, they still endure several challenges, such as lack of information, high costs of servicing loans or inadequate financial knowledge (OECD, 2018). In the developed world, SMEs contribute a large share of the GDP and employ over 50% of the total workforce. In the Netherlands, for instance, SMEs comprise about 90% of the private sector, contribute 32% of the GDP, and employ 55% of the labour force. The role of SMEs can be enhanced if they are given better access to credit and develop policies that promote their ability to expand and develop (Ghulam & Mumbine, 2017). The need for specific interventions is evident from the fact that lenders often see SMEs as high-risk and less economically viable.

However, governments across the world are refocusing on SMEs as endeavors to improve economic growth via large industries have failed. Many developed countries have heightened the credit guarantee schemes for their SMEs. For instance, in 2014, France eased the lending rules for SMEs such that the loan guarantee schemes covered up to 90% of the

risks pertaining to loans, the UK guaranteed up to 75%, Japan 80% and South Korea 100% of the SMEs. Other countries such as Belgium and Sweden lend directly to SMEs through their public institutions or state-owned banks (Etemesi, 2017). The success stories of many industrially advanced nations that recognize the place of SMEs in their economic development have persuaded African Nations to acknowledge and support the emergence and sustenance of SMEs in their national development plans, albeit with slow success. For instance, in South Africa, SMEs hardly operate beyond their fifth years due to a lack of financial acumen among others (Ndede, 2015), while in Uganda, collateral is up to 150% of loan advanced, and the repayment period is only up to 24 months and interest rates are between 23% and 30% per month (Etemesi, 2017).

Deressa (2014) notes that the inability of the SME sector to access adequate credit in Zambia is a major hindrance to doing business, which impacts their growth extensively. This view finds support in Ethiopia, where Alemu (2017) found that inaccessibility to finance interfered with the growth and efficacy of SMEs. Avevor (2016) reports that financial institutions in Ghana consider SMEs to be a risky industry and, hence, offer them credit at high interest rates. These studies may, however, not fully explain the extent of access to credit following monetary interventions.

Related literature, however, points to the sector's importance in employment creation and economic growth. The SMEs should obtain the right financing to enable them to start up, develop and sustain themselves. To enable SMEs to enhance their economic well-being, a variety of financial instruments should be opened to them (OECD, 2018; Ndede, 2015). Arora (2010) notes that some dimensions of access to finance include easy physical access, flexibility, reliability, ease of undertaking transactions, cost dimension, and access by the less privileged and financially illiterate. The current study, guided by some of these dimensions of the dependent variable-SMEs access to credit, tests the hypothesized role of financial innovations. The current study focused on SMEs operating in Kisumu County, Kenya.

Kisumu County is one of the devolved counties in Kenya and is divided into seven sub-counties: Kisumu East, Kisumu West, Kisumu Central, Seme, Nyando, Muhoroni and Nyakach. It has a population of 968,909 on a land area of 2085.9 sq. km. Kisumu City, as the administrative hub of the County, was considered a suitable study location since it is a leading commercial, trading, fishing and industrial hub in the Lake Victoria basin (CIDP Kisumu, 2018). It has a rich mix of SMEs involved in trade, transport, service, agriculture, hotel, health, education and industry. Surprisingly, while it may be expected that the involvement of SMEs can alleviate poverty and reduce unemployment, the reverse appears to be the case.

According to its recent County integrated development plan (2019/2020), lack of access to credit remains a major impediment faced by SMEs in the County. It is not surprising to note that the intervention by the County Government of Kisumu has yet to translate into an enhanced contribution by SMEs to poverty reduction and economic growth (Indimuli, Mukami, Lambart and Mwangi, 2015). These initiatives include central and county governments' intervention schemes such as Youth and Women Enterprise Funds, Poverty Eradication Funds and the Kisumu County Traders' Fund. Despite these efforts, recent studies have observed that financial shortages are a major challenge faced by SMEs in Kisumu (Orinda, 2014).

This study extended the literature on the effects of open market operations on SMEs' access to credit and focused on the role played by financial innovations in the open market operations — access to credit by SMEs link in Kenya. It focused on financial innovations by examining the moderating role of financial innovations in the relationship between open market operations and access to credit by SMEs in Kenya.

### 1.2. Statement of the Problem

Open Market Operations, as a tool of monetary interventions, aims to make credit available to SMEs and other sectors through financial institutions (Dhungana, 2016). The government of Kenya at national and county levels has set up funds to be provided to the SME sector. These include the Fund for the Inclusion of Informal Sector (FIIS), which will allow SMEs to access credit facilities, expand their businesses, and increase their savings. Moreover, at County Government levels, SMEs have benefited from funds such as the Youth Enterprise Fund, Women Enterprise Fund, Uwezo Fund and Kisumu Traders' Fund, among others (KCIDP, 2018). Besides, SMEs can also access cheaper mobile money such as *fuliza*, *m-shwari* and the *hustler fund*. Also, there are several banks within Kisumu County, such as Post Bank, KCB, COOP Bank and Family Bank, among others, that are now offering credit facilities to SMEs.

Be that as it may, SMEs still seem to be having problems accessing adequate credit. They have difficulties in accessing long-term loans from commercial banks due to increased costs of credit, low cash flow, high-risk premiums, low credit scores and unavailability of business plans and collaterals by SMEs (Pinar et al., 2011; Aduda et al., 2012; Etemesi, 2017; Ndede, 2015; Mutuku et al., 2019). As per the World Bank Enterprise Survey, vis a vis the larger firms, the SME sector has slimmer chances of accessing bank loans and other forms of credit finances as it was approximated that the credit gap to SMEs varied from \$900 to \$1100 billion which accounted for only 26%-32% of total loans to the SME sector (Facundo & Sergio, 2017).

Also, to minimize the risks associated with moral hazards and adverse selection, financial institutions tend to fix small amounts of loans given to risky sectors such as SMEs (Kimutai & Ambrose, 2013). In a conference in Mexico, it was reiterated that there was inadequate access to funding among SMEs in low and middle-income nations as they were loaned credit on a short-term basis and with high costs of servicing. They also lacked the right information and adequate financial knowledge, which in turn hindered their ability to access credit, be innovative and grow (OECD, 2018). Furthermore, the products offered in the open market operations are not favorable to the SMEs to enable them engage in the buying and selling of the securities for purposes of raising funds (Facundo & Sergio, 2017).

It is important to rethink the moderating role of financial innovations in the efforts by the monetary authorities to address the problem of credit access by SMEs in Kenya. These innovations may provide an answer if they entail the

creation of more SME-friendly products and services, processes and organizations such as m-pesa, online banking, online loaning, and credit cards, among others (Putunoi, 2015). The current study hypothesized that financial innovations play a moderating role in the relationship between open market operations and SMEs' access to credit. No study was found touching on the concepts and context of this study. It is against this backdrop that this study sought to assess the moderating role of financial innovations in the relationship between open market operations and SMEs' access to credit in Kisumu County. The study sought to answer the question: Do financial innovations moderate the effect of open market operations on SMEs' access to credit in Kisumu County?

## 2. Literature Review

The theory underpinning this study is the Monetarism Theory, which has a close relationship with the quantity theory of money and is associated with Milton Friedman from 1912 to 2006. It states that the goal of monetary policy would best be achieved by considering the rate of growth of the supply of money in the economy. It asserted that central banks should endeavor to ensure that the money supply increases steadily and predictively. It cautioned against the rapid increase in money supply, positing that it would hinder productivity and eventually cause inflation. He recommended a steady increase in the money supply, which would cushion against massive unemployment (Whelan, 2020).

Monetarism theory, which borrows heavily from the quantity theory of money, assumes that price correlates directly with the quantity of money in the economy. The velocity of money is also assumed to be fixed and is taken to be uniform. They also assume that when the level of stock of money rises, the level of prices rises too while not interfering with the output and consumption (Herbener, 2017). In a nutshell, it was concluded that the monetarists reiterated that monetary policy is an effective channel that can be used to manage the economy by increasing the money supply steadily, hence controlling inflation and unemployment.

Open market operations are a monetary intervention utilized by many central banks worldwide. Dhungana (2016) carried out a study on the effects of monetary policy on bank lending in Nepal. Secondary data containing panel data of 24 banks for the period 1996-2015 was gathered. Descriptive statistics were employed to analyze the data using both correlation and regression methods. It was established that open market operations had a negative impact on bank lending in Nepal.

Jamel et al. (2017) conducted a study on the influence of indirect monetary tools on price and output in Jordan. It used time series data for the period 1993-2013. The study was pegged on the monetarism theory. Data was analyzed using a two-step regression analysis, and it was found that the open market operation of the Central Bank of Jordan through the issuance of deposits and the REPOs was effective in influencing the money supply in Jordan even though its effect was not large enough. This current study also utilized deposits and REPOs as constructs under open market operations.

Peydro and Andrea (2017) did a study on monetary policy at work focused on security and credit application in Italy. A time series of prices and yields was conducted, and it was found that in times of crises, less capitalized banks tended to buy securities rather than increase credit supply, which affected firm-level real outcomes. It was also found that more capitalized banks reached for yield, which is consistent with the risk-shifting hypothesis.

An assessment of open market operations as a main tool for monetary policy by Grogolashvili (2019) did an assessment of open market operations as a main tool of monetary policy in Georgia, USA. Panel data for the years 2015-2019 for sales and purchases of forex was obtained. Data was analyzed using panel data regression analysis. The findings revealed that an increase in repo operations provides the banking sector with funds and that OMO is useful in managing short-term money sources and stimulates liquidity in the banking sector.

Garba et al. (2018) carried out an assessment of the effects of monetary policy instruments on the lending behaviour of quoted deposit money banks in Nigeria. The study was an ex-post facto research with a causal research design. Secondary data was collected from the banks' annual reports from the years 2007-2016. Data was analyzed using panel regression analysis. The findings posit that open market operations were negatively and statistically insignificantly related to the lending behavior of banks in Nigeria and that the banks' ability to give out more credit was not influenced by open market operations.

Banda (2022) conducted an investigation on the impact of open market operations on financial market growth in Zambia. The target population was the commercial banks of Lusaka and the Lusaka stock exchange staff. Both primary and secondary data were collected. Primary data was collected using questionnaires, interviews and focus group discussions, while secondary data was obtained from research articles for the Lusaka Stock Exchange. The results indicate that open market operations increase the reserves of financial markets and help them increase their loans.

Njiru (2016) studied the effects of monetary policy on credit supply in Kenya. It adopted a descriptive research design using panel data for 2005-2015. Data was analyzed using regression analysis, and it was established that open market operations had a negative effect on credit supply.

Mwangi (2016) conducted a study on the effects of monetary policy instruments on the efficiency of commercial banks in Kenya. The study specifically interrogated the effect of REPO rates and the 91-day treasury bills on bank efficiency. The study was anchored on the Keynesian theory, quantity theory of money, modern monetary theory and the loanable funds theory. The study was descriptive in nature, with a population of 42 commercial banks. It utilized secondary data from annual reports and financial statements for the year 2011-2015, which were obtained from the Central Bank of Kenya and the Kenya National Bureau of Statistics, to establish the findings. It was found that both the 91-day T-bill rate and the REPO rate had positive effects on banks' efficiency. It was also established that the Central Bank's monetary policy had a positive and significant impact on the efficiency of commercial banks in Kenya for the period under study.

Mutwiri (2017) studied the monetary policy tools and inflation in Kenya. Secondary time series empirical data for 2008-2012 was collected for analysis. Data was analyzed using correlation analysis and regression analysis, and an inverse relationship between the 91-day Treasury bill rate and the level of prices was established. It was noted that when the government increased the 91-day Treasury bill rates, the commercial banks' short-term interest rates increased, which reduced access to funds by the public. This study also used the 91-day Treasury bill rate as one of the sub-constructs under open market operations.

Kiplangat (2017) investigated monetary policies and the performance of commercial banks in Kenya. The study precisely sought to establish the effect of open market operations on the performance of commercial banks in Kenya. A census of all commercial banks from 2011-2015 was conducted. Both primary and secondary data were collected using a questionnaire, the central bank's annual reports, and specific banks' audited financial statements. Correlation and multiple regression analyses were done, and the results are presented in tables and graphs. The study found that a unit change in open market operations caused a rise in banks' performance by 0.05.

Dabora (2019) carried out an assessment of the relationship between monetary policy and the financial performance of the banking institutions in Nairobi City, Kenya. The investigation took a descriptive research design. Secondary data was collected from 42 banks and analyzed using descriptive and inferential statistics using correlation and regression analysis models. The findings reveal that open market operations had a positive and significant influence on the financial performance of commercial banks in Kenya.

Mutai (2019) investigated the monetary policy and performance of selected commercial banks in Kenya. The study utilized both primary and secondary data. The primary data was collected using a questionnaire, while the secondary data was gathered from the annual reports of the Central Bank of Kenya and the annual reports and audited financial statements of commercial banks. Data was analyzed using multiple regression analysis and correlation analysis. The findings found that a unit change in open market operations led to a 0.057 increase in commercial banks' performance.

Kithandi (2022) conducted an analysis of the monetary policy and financial performance of commercial banks in Kenya for the years 2016-2020. The study was a descriptive longitudinal research design with a population of 42 licensed commercial banks in Kenya. The findings found a positive relationship between the repo rate and the financial performance of commercial banks in Kenya.

### 3. Methodology

This study adopted a descriptive research design, which is concerned with describing the characteristics of a particular individual or group, determining the frequency with which something occurs or its association with something else (Micheal, 2000; Saunders et al., 2003). Hence, the design in this study focused on the formulation of the objectives, designing methods of data collection, selecting the sample, collecting the data, processing and analyzing the data and reporting the findings (Kothari, 2004; Micheal, 2000).

This study was conducted in Kisumu County, which is a leading commercial, trading, fishing, industrial and administrative County in the Lake Victoria basin (KCIDP, 2018). This county was chosen as a study area owing to the potential of monetary interventions to improve access to credit by SMEs, which employ over 90% of the population in this region. Access to credit can enhance the role of SMEs in poverty alleviation and redistribution of incomes and address other social and economic challenges facing the inhabitants of the Lake Victoria basin. Kisumu County was also chosen for the study, as it is a county where high indices of poverty, income inequalities, and social ills have stunted its growth and development, which, in turn, hinders access to opportunities. Economic interventions, among others, are therefore necessary to address the effects of the social and economic issues (KCIDP, 2018).

This study targeted the owners of the small and medium enterprises within Kisumu County for the businesses run by the owners or the finance officers of the SMEs where the owners have employed people to be in charge of running and maintaining the books of their businesses. The population of SMEs is large and scattered, which could be termed infinite. Therefore, the owners or finance officers of registered SMEs within Kisumu County, in particular Kisumu Central and Kisumu East sub-counties, were purposively selected as the population.

The owners or finance officers of the sampled SMEs, who were the units of analysis, filled in the questionnaires. This is because these officers were perceived to have some knowledge of monetary interventions, financial innovations, and SMEs' access to credit. This population comprised owners or finance officers of SMEs from various sectors of business, such as communication, transport, hospitality, medical, education, trade and industry.

The sampling frame consisted of 1472 owners or finance officers of registered SMEs obtained from the Department of Social Services in Kisumu County. The owners or finance officers of the SMEs were chosen as the key informants as they were deemed knowledgeable in the issues under investigation in this study. In particular, they were considered knowledgeable on the likely role of financial innovations in the relationship between monetary interventions and SMEs' access to credit.

To obtain the sample of the SMEs' owners or finance officers, a purposive sampling method was employed to obtain the sub-counties under study. The population of the two counties was then subdivided into homogeneous strata with respect to specific business sectors. The units were then sampled at random from each of these strata using a simple random sampling technique. The samples per strata were obtained proportionately with respect to the number of businesses per sector (Singh & Masuku, 2014).

The appropriateness of using Taro Yamane's formula for obtaining a sample size in similar studies is acknowledged (Singh & Masuku, 2014; Gathi et al., 2019). According to Taro Yamane, the sample size is obtained at a

confidence level of 95% using the formula  $n = \frac{N}{1+N(e)^2}$ , where  $n$  is the sample size,  $N$  is the population size, and  $e$  is the precision level.

Therefore, from a population of 1472,  $n = \frac{1472}{1+1472(0.05)^2} = 315$ . Hence, the minimum required sample size was 315 owners or finance officers of SMEs (Singh & Masuku, 2014; Gathi et al., 2019). Based on the non-response rates in similar studies, this figure was adjusted appropriately. For instance, Maina (2015) obtained a non-response rate of 17% in a similar study. Be that as it may, a 25% non-response rate was found to be sufficient by the researcher as was proposed by (Wayne, 1975), who stated that researchers have the discretion of choosing a non-response rate they deem fit. Hence, the sample size ( $n$ ) was adjusted to be  $n = \frac{100}{75} \times 315 = 420$ . In the current study, a sample size of 420 was obtained; therefore, it is considered adequate to cater to the non-response in this study.

Data collection involves gathering information the researcher requires to answer the study objectives. Methods of data collection and types of data to be collected vary according to the type of research (Abawi, 2014). This study utilized primary data, which was collected by using a questionnaire that was administered to 420 finance officers/owners of the sampled SMEs.

A questionnaire consisting of a five-point Likert rating scale —ranging from 1: Not at All to 5: To A Very Large Extent — was used to measure the respondents' opinions relating to open market operations, financial innovations, and access to credit by SME owners or finance officers operating within Kisumu County.

Both descriptive and inferential statistics were employed for analysis. The descriptive statistics included averages, frequencies, and percentages, which were presented in frequency distribution tables. The analysis was quantitative in nature, and the unit of analysis consisted of the owners/finance officers of the sampled SMEs who were actively involved in the business.

Data collected was coded and fed into the Statistical Package for Social Sciences (SPSS) for analysis. Correlation analysis and regression analysis were conducted to find relationships and correlations. F-test (ANOVA) was conducted to assess the overall robustness and significance of the regression model. T-test, on the other hand, was conducted to determine the individual significance of the relationships. The regression analyses provided equations which were used to estimate the magnitude of the dependent variable and the predictor variables. Pearson's product-moment correlation coefficient ( $r$ ) was used to show the strength and nature of relationships among the variables, and the coefficient of determination ( $R^2$ ) was used to measure the amount of variations between the variables. The general models for predicting credit access are shown below. The direct general multiple linear regression model was:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ .

Where:

$Y$  is the composite index of credit access by SMEs in Kisumu County,

$X_1$  is the composite index of open market operations,

$\beta_1$  is the regression coefficient for open market operations,

$\beta_0$  is the y-intercept, and

$\epsilon$  is the random error term accounting for variability in credit access.

To test the moderating effect of financial innovations (FI) on the relationship between open market operations (OMO) and credit access (CA), a hierarchical multiple regression analysis was conducted. The first step involved the independent variable (OMO) being entered into the model as the predictor of the outcome variable, which is credit access. The second step involved computing the interaction terms  $S$ , which is the product of the independent variables OMO and FI, respectively. The interactions assess whether the relationships account for additional variance in the dependent variable beyond that explained by the independent variable only. The moderator effect is present if the interaction term explains a statistically significant amount of variance in the dependent variable. The single regression equation is presented as  $y = \beta_0 + \beta_2 x_1 S + \epsilon$

The variable relating to the independent variable is:  $x_1$  (OMO).  $S$  is the interaction of the independent variable with the moderator variable FI,  $\beta_0$  is the y-intercept,  $\beta_2$  is the coefficient with respect to the interaction of the independent variable and the moderator. It provides an estimate of the moderation effect. If it is statistically different from zero, then there is a significant moderation (Fairchild & MacKinnon, 2009).

## 4. Data Analysis, Discussion and Summary of Findings

### 4.1. Response Rate

Questionnaires were administered to 420 respondents drawn from a population of 1472 respondents. The researcher and trained assistants delivered the questionnaires to the owners/finance officers of the 420 registered SMEs. The response rate is presented in table 1.

Sample Size	Number	Percent
Distributed Questionnaires	420	100
Returned questionnaires	381	90.7
Not returned questionnaires	39	9.3
Usable questionnaires	371	88.3
Non-usable questionnaires	10	2.4

Table 1: Questionnaire Return Rate

Source: Field Data (2021)

In table 1, out of the four hundred and twenty (420) total questionnaires administered, 381 were filled out and returned, representing 90.7% of the total questionnaires administered. This implies that 39 questionnaires were not returned, which represented 9.3% of the sample. However, a response rate of 90.7% was achieved. The overall response rate of 90.7% is above the minimum recommended for analysis and reporting (Mugenda & Mugenda, 2003). A return rate of 50% is adequate for analysis (Babbie, 2003).

#### 4.2. Descriptive Statistics

Respondents were presented with statements on open market operations, financial innovations and access to credit. They were asked to indicate their level of agreement with statements on a five-point Likert scale, where:

1 = Not at all (NA);

2= To a small extent (SE);

3 = To a moderate extent (ME);

4= To a large extent (LE) and

5 = To a very large extent (VLE).

The mean and standard deviation for the opinion of respondents to each statement are presented in table 2.

	N	Minimum	Maximum	Mean	Std. Deviation
Government bond yields are affected by activities of the open market operations	371	1	5	3.504	1.246
Credit supply by financial institutions is influenced by the 91-day treasury bill rates in the open market operations	371	1	5	3.173	1.138
The cost of credit is affected by the repos rates in the open market operations	371	1	5	3.299	1.188
Credit supply by financial institutions is affected by the reverse repos rates in the open market operations	371	1	5	3.275	1.192
Lending behaviors of banks are influenced by the sale and purchase of financial instruments in the open market operations	371	1	5	3.299	1.201
Credit supply to SMEs is affected by the sale and purchase of financial instruments in the open market operations	371	1	5	3.350	1.172
GRAND MEAN SCORE				3.317	1.1895

Table 2: Open Market Operations

Source: Field Data (2021)

From the results, it was established that government bond yields were affected by activities of the open market operations to a large extent. (Mean = 3.504, SD = 1.246). The respondents agreed that credit supply by financial institutions is moderately influenced by the 91-day treasury bill rates in the open market operations (Mean = 3.173, SD = 1.138). Other than that, the cost of credit is also affected moderately by the repos rate in the open market operations (Mean = 3.299, SD = 1.188). Further findings revealed that credit supply by financial institutions is moderately affected by reverse repos rates in open market operations (Mean = 3.275, SD = 1.192). It was also established that the lending behaviors of banks are moderately influenced by the sale and purchase of financial instruments in open market operations (Mean = 3.299, SD = 1.201). The respondents agreed that credit supply to SMEs is moderately affected by the sale and purchase of financial instruments in open market operations (Mean = 3.350, SD = 1.172). The results in table 3 reveal a grand mean score of 3.317. The mean of 3.317 means respondents agreed to a moderate extent that open market operations affect access to credit. The findings are in tandem with the findings by Jamel et al. (2017), which revealed that the open market operations of the Central Bank of Jordan, through deposits and REPOs, were effective in influencing the money supply.

#### 4.3. Financial Innovations

The study analyzed the descriptive statistics for financial innovations using mean and standard deviation. The respondents were asked to agree to statements with regard to financial innovations. The results are presented in table 3.

	N	Minimum	Maximum	Mean	Std. Deviation
The invention of ATMs was influenced by financial service innovations	371	1	5	4.218	1.124
The invention of mobile phones was a result of financial organization innovations	371	1	5	2.728	1.464
The invention of credit cards was due to financial process innovations	371	1	5	4.057	1.005
The creation of mobile money came as a result of financial product innovations	371	1	5	4.272	.9205
The introduction of Internet banking came as a result of financial organization innovations The introduction of mobile banking was due to financial organization innovations	371	1	5	4.181	1.015
The ability to process loans through mobile phones has been made easy by financial process innovations.	371	1	5	4.305	.9103
The ability to deposit money through mobile phones has been enhanced by financial service innovations	371	1	5	4.377	.8206
GRAND MEAN SCORE				4.402	.9141
				4.067	1.0212

*Table 3: Financial Innovations*

*Source: Field Data (2021)*

The findings presented in table 3 established that most respondents did agree to a large extent that the invention of ATM was influenced by financial service innovation (Mean = 4.218, SD = 1.124). However, most respondents did agree to a small extent that the invention of mobile phones was a result of financial organization innovation (Mean = 2.728, SD = 1.464). Most of the respondents, however, to a large extent, agreed that the invention of credit cards was due to financial process innovation (Mean = 4.057, SD = 1.005). Most respondents concurred to a large extent that the creation of mobile money came as a result of financial product innovation (Mean = 4.272, SD = .9205). Also, most of the respondents largely agreed that the introduction of Internet banking resulted from financial organization innovation (Mean = 4.181, SD = 1.015). The data also reveal that the introduction of mobile banking was, to a large extent, a result of financial organization innovation (Mean = 4.305, SD = .9103). The respondents largely agreed that the ability to process loans through mobile phones has been made easy by financial process innovation (Mean = 4.377, SD = .8206). The results reveal that a majority of the respondents also largely agreed that the ability to deposit money through mobile phones has been enhanced by financial service innovation (Mean = 4.402, SD = .9141).

The results in table 3 reveal a grand mean score of 4.067. The mean of 4.067 indicates that respondents agreed with the statements that financial innovations influenced access to credit to a large extent. The findings are echoed by Dabrowski (2017), who found that the rapid expansion of digital banking, money transactions and payments seemed to have eliminated the demand for cash.

#### 4.4. Access to Credit

The study also analyzed the descriptive statistics for access to credit, including the mean and standard deviation. Table 4 highlights the findings on access to credit.

	N	Minimum	Maximum	Mean	Std. Deviation
Many SMEs are accessing loan facilities due to improved access to credit	371	1	5	3.968	1.122
The amount of loans to SMEs has increased due to enhanced access to credit	371	1	5	3.811	1.128
The cost of credit borrowed by SMEs is favorable as a result of enhanced access to credit	371	1	5	3.571	1.166
The repayment period of loans to SMEs is reasonable due to improved access to credit	371	1	5	3.499	1.306
GRAND MEAN SCORE				<b>3.712</b>	<b>1.1805</b>

*Table 4: Access to Credit*

*Source: Field Data (2021)*

Based on the findings, the respondents agreed to a large extent that many SMEs are accessing loan facilities due to improved access to credit (Mean = 3.968, SD = 1.122). Also, the findings allude to the fact that the amount of loans to SMEs has largely increased due to enhanced access to credit (Mean = 3.811, SD = 1.128). Further, the results indicate that the cost of credit borrowed by SMEs is largely favorable due to enhanced access to credit (Mean = 3.571, SD = 1.166). In addition, the respondents moderately agreed that the repayment period of loans to SMEs is reasonable due to improved



access to credit (Mean = 3.499, SD = 1.306). Overall, the items on access to credit summed up to a mean of 3.712, implying that the aforementioned factors, on average, would improve access to credit largely.

4.5. Correlation Analysis

Correlation provided a basis for further analysis using regression models. Correlation analysis was used to explore the associative relationship between the study variables. The correlation coefficient is the measure to quantify the degree of relationship between the variables. Pearson's Product Moment Correlation Coefficient (r) is a scale to measure the strength of linear association between variables.

The coefficient of correlation R ranges between -1 and +1, i.e.,  $-1 \leq R \leq +1$ . The correlation coefficient explores the type (positive, negative or none) and degree of association (magnitude of closeness) between two variables. The current study sought to establish the effect of open market operations measures that have been adopted by monetary authorities on access to credit. Correlation analysis provided useful information on the degree of association between the primary independent and the dependent variables. The correlations among the variables are shown in table 5.

		Open Market Operations	Access to Credit
Open market operations	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	371	
Access to credit	Pearson Correlation	.105**	1
	Sig. (2-tailed)	.000	
	N	371	371

Table 5: Correlations Matrix  
Source Data: Field Data (2021)

The findings in table 5 show that the relationship between open market operations and access to credit was very weak, positive and statistically significant ( $r=.105^{**}$ ,  $p<.05$ ) (Gathi et al., 2019). The results in table 5 imply that open market operations play a positive role in SMEs' access to credit in Kisumu County. The data in table 5 shows that the variables considered in the study were correlated hence it was possible to carry out regression analysis.

4.6. Regression Analysis

This study was based on the premise that there is a relationship between monetary interventions and access to credit, and this relationship is moderated by financial innovations. To test the hypotheses, linear regressions were carried out. First, access to credit was regressed for each of the four types of monetary interventions. Next, credit access was then regressed on each interaction of each monetary intervention and financial innovation as a necessary step in testing for the moderating role of financial innovations in the relationship between monetary innovations and access to credit. The results of the tests, performed at the 95% confidence level, are presented in the sections below.

4.7. Open Market Operations and Access to Credit

The first objective was to examine the effect of open market operations on access to credit by small and medium enterprises. This was examined by testing the hypothesis that open market operations have no statistically significant effect on access to credit by small and medium enterprises. The results of the influence of open market operation on access to credit are shown in tables 6, 7 and 8.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.105 <sup>a</sup>	.011	.008	.82685

Table 6: Model Summary for Regression of Access to Credit on OMO  
Source: Field Data (2021)

The results in table 6 explained an insignificant proportion of the variation in access to credit predicted by open market operations,  $R^2=1.1\%$  ( $R^2=.011$ ). A possible explanation for this could probably be due to the fact that this sector does not really engage in open market operations because of the amount of cash required to buy securities in the open market. To determine the robustness and the overall significance of the regression model, an analysis of variance was carried out, and the results are presented in table 7.

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	2.820	1	2.820	4.125	.043
	Residual	252.276	369	.684		
	Total	255.097	370			

Table 7: ANOVA for Regression of Access to Credit on OMO  
Source: Field Data (2021)

The results in table 7 reveal that the relationship between open market operation and access to credit by SMEs is statistically significant ( $F=4.125, p<0.05$ ). Thus, the model was fit to predict access to credit using open market operations. The t-statistic was then determined to establish the individual significance of the relationship between open market operations and access to credit. Table 8 presents the findings.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.366	.176		19.148	.000
	open market operations	.104	.051	.105	2.031	.043

a. Dependent Variable: access to credit  
 Table 8: Coefficients for Regression of Access to Credit on OMO  
 Source: Field Data (2021)

According to hypothesis ( $H_{01}$ ), Open market operations have no statistically significant effect on access to credit by small and medium enterprises. The results indicate a linear dependence of access to credit on open market operations and that a unit change in open market operations would cause a change of 0.105 in access to credit. This is in line with the findings of (Banda, 2022), which found that open market operations increase the reserve of financial markets, which helps them increase their loans. It was concluded that there is a statistically significant relationship between open market operations and SMEs' access to credit. Thus, we reject the null hypothesis and conclude that open market operations have a statistically significant influence on access to credit by SMEs operating in Kisumu County. The regression equation of the relationship in table 9 is stated as:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ ;  $Y = 3.366 + 0.104 X_1$ .

#### 4.8. The Moderating Role of Financial Innovation

The moderating role of financial innovations on the relationship between open market operations and access to credit was examined by testing the following hypothesis:  $H_{02}$ : Financial innovations have no statistically significant moderating effect on the relationship between open market operations and access to credit by small and medium enterprises.

The study undertook a hierarchical regression to examine whether or not financial innovation moderated the effect of open market operations on access to credit by SMEs. The hierarchical regression enabled the examination of the influence of open market operations on the access to credit by regressing credit access on the interaction between open market operations and financial innovations. The hierarchical regression analysis is presented in tables 9, 10 and 11.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square	F Change	df1	df2	Sig Change
1	.105	0.011	0.008	0.82685	0.011	4.125	1	369	0.043
2	.321	0.103	0.098	0.78843	0.092	37.832	1	368	.000

Table 9: Model Summary of Moderation of OMO on Credit Access  
 a. Predictors: (Constant), OMO  
 b. Predictors: (Constant), OMO, S  
 Source: Field Data (2021)

The study found that open market operations contributed to 1.1% of variance attributable to access to credit due to an achieved coefficient of determination of .011. These results were presented in model 1, in which access to credit was regressed on open market operations. The results in model 2, which was a regression of access to credit on the interaction between open market operations and financial innovation, had a coefficient of determination at 0.103, which implied that 10.3% of the variance in the access to credit was attributable to these two variables. The findings indicated that the  $R^2$  change was 0.092; this means that financial innovation moderates the relationship between open market operations and access to credit by 9.2 percent. The study further noted that this increase in the influence of financial innovation on the variance in access to credit is statistically significant at a 5% level of significance. This was attributable to an F change = 37.832 with  $p < 0.05$ .

ANOVA was used to determine whether the two models, model 1 (with open market operations as the only predictor) and model 2 (with open market operations and financial innovation as predictors), were a good fit for the data. The f-test at the 5% (0.05) level of significance was used to examine this, and the results are presented in table 10.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.820	1	2.820	4.125	.043
	Residual	252.276	369	.684		
	Total	225.097	370			
2	Regression	26.338	2	13.169	21.185	.000
	Residual	228.759	368	.622		
	Total	255.097	370			

a. Dependent Variable: CA  
 b. Predictors: (Constant), OMO  
 c. Predictors: (Constant), OMO, S  
 Table 10: ANOVA for Moderation of OMO on Credit Access  
 Author: Field Data (2021)

Model 1 achieved the f ratio results of  $F(1, 369 = 4.125)$  with a p-value of  $< 0.05$ , concluding that the model was a good fit for data at a 5% significance level since p is less than 0.05. The results further revealed that the F ratio results stood at  $F(2, 368 = 21.185)$  with  $p < 0.000$ , concluding that model 2 was a good fit for data at a 5% significance level since  $p < 0.05$ . Having concluded that the two models are a good fit for data then, the two-tailed t-tests at a 5% level of significance were undertaken in order to determine whether open market operations were a statistically significant predictor of access to credit by regressing access to credit on the interaction of open market operations and financial innovations. The results are presented in table 11.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.366	.176		19.148	.000
	OMO	.104	.051	.105	2.031	.043
2	(Constant)	3.754	.179		20.961	.000
	OMO	-.535	.115	-.539	-4.655	.000
	S	.127	.021	.712	6.151	.000

Table 11: Coefficients for Moderation of OMO on Credit Access  
Dependent Variable: CA  
Author: Field Data (2021)

The results for the open market operations influence on access to credit stood at  $\beta = 0.105$ ,  $t_{0.025}(1,369) = 2.031$ ,  $p = 0.043$ ). These results indicated that the open market operations had a statistically significant effect on the access to credit at a 5% level of significance since p was less than 0.05. The results further revealed that open market operations had a positive association with access to credit, with a magnitude of 0.105, implying that a unit change to the open market operations will be associated with 0.105 increases in access to credit.

The second model shows that an increase in open market operations moderated by financial innovation increased credit access to 0.712 units since  $\beta = 0.712$ ,  $t_{0.025}(2,368) = 6.151$ ,  $p = 0.000$ . These results revealed that financial innovations effectively moderated the relationship between open market operations and access to credit by stepping up the effect of open market operations on access to credit. It is thus critical to note, however, that open market operations still had a statistically significant influence on the access to credit ( $\beta = -0.539$ ,  $t = -4.655$ ,  $p = 0.000$ ) with the interaction of financial innovation and open market operations even though the effect reduced significantly. Thus, the null hypothesis, Financial innovations have no statistically significant moderating effect on the relationship between open market operations and access to credit by Kenyan small and medium enterprises in Kisumu County, was rejected, and the alternative was accepted, leading to a conclusion that financial innovations have a statistically significant moderating effect on the relationship of open market operations and access to credit by SMEs in Kisumu County.

#### 4.9. Summary of Research Objectives, Hypotheses and Conclusions

The summary of research objectives, hypotheses and conclusions is presented in table 12.

Objective	$\rho$	Conclusion
H <sub>03</sub> : Open market operations have no statistically significant effect on access to credit by micro, small and medium enterprises	.043	H <sub>03</sub> is not supported
H <sub>05c</sub> : Financial innovations have no statistically significant moderating effect on the relationship between open market operations and access to credit.	.000	H <sub>05c</sub> is not supported

Table 12: Summary of Research Hypotheses and Conclusions  
Source: Field Data (2021)

Table 12 provides a summary of the direct and indirect effects of monetary interventions on SMEs' access to credit. The results of the hypothesis test in table 12 suggest that there is a statistically significant relationship between open market operations and access to credit. Further, financial innovations moderated the relationship between open market operations and access to credit. Thus, the results in table 12 suggest that the direct relationship between open market operations and access to credit is moderated by financial innovation.

### 5. Summary of Findings, Conclusion and Recommendations

The overall objective of this study was to assess the moderating role of financial innovations on open market operations and access to credit by small and medium enterprises in Kisumu County, Kenya. Simple and multiple linear regression analyses were conducted to establish the findings of the hypotheses.

The first objective sought the effect of open market operations on access to credit by small and medium enterprises. A simple regression analysis was conducted to determine the outcome. The outcome revealed that open market operation had a positive statistically significant effect on SME access to credit at a 5% significant level ( $\beta = 0.105$ ;  $\rho = 0.043$ ). The coefficient of determination was ( $R^2 = 0.011$ ), implying that open market operations contributed to only 1.1% of the variation in SMEs' access to credit. This is possible because most SMEs may not be in a position to take part in the open market operations to raise funds for business.

The second objective investigated the role of financial innovations in the effect of open market operations on access to credit by testing the hypothesis that financial innovations have no statistically significant moderating role on the effect of open market operations on access to credit by small and medium enterprises. The significance of the direct relationship was initially tested by regressing access to credit on open market operations. The results of regressing access to credit on open market operations showed that there was a positive and significant relationship as  $p < 0.05$ . Next, hierarchical regression was performed by regressing access to credit to the interaction between open market operations and financial innovations. The results of the significance test showed that the interaction between open market operations and financial innovation was positive and statistically significant, as the  $\rho = 0.000$ , which was less than 0.05. Since the  $\beta$  in model 2 is greater than the  $\beta$  in model 1 and  $R^2$  changed by 9.8%, it was established that financial innovations moderated the effect of open market operations on access to credit by increasing the effect of open market operations on access to credit as the variation increased. Further, the variance explained by financial innovations is significant. Since both the moderating variable and independent variable are significant predictors of access to credit, it was established that financial innovations moderate the relationship between open market operations and access to credit.

### 5.1. Conclusion

The study sought to examine the effect of open market operations on access to credit by Kenyan small and medium enterprises in Kisumu County. The study further sought to examine whether financial innovations had a moderating influence on the effect of open market operations on access to credit.

The study concluded that there was a positive and statistically significant effect of open market operations on access to credit. The study also concluded that an increase in open market operations was associated with an increase in access to credit amongst the SMEs in Kisumu County. However, open market operations contributed minimally to the variation in credit access. This is in agreement with the studies in Jordan and Kenya, which concluded that open market operations influenced money supply and lending behavior. The study conclusions are, however, inconsistent with the conclusions in other studies, which concluded that open market operations negatively affected credit supply.

The second objective of the study involved examining whether financial innovation had a moderating role in the relationship between open market operations and access to credit by SMEs in Kisumu County. The study concluded that the interaction between financial innovations and open market operations had a positive and statistically significant influence on SMEs' access to credit. The study further concluded that the interaction between financial innovations and open market operations was positively associated with access to credit amongst SMEs in Kisumu County and that an increase in their interaction would lead to an increase in access to credit. The study further concluded that financial innovation statistically and significantly moderated the effect of open market operations on SMEs' access to credit in Kisumu County, and financial innovations contributed to an extra variation in access to credit.

### 5.2. Theoretical Implications

This study endeavored to determine the effect of open market operations on access to credit among small and medium enterprises in Kisumu County. It further delved into the moderating role of financial innovations in the influence of open market operations on SMEs' access to credit. The study was anchored on Friedman's Monetarism Theory. The results of the study supported the theory, making it applicable in similar studies.

The monetarists' theory argues that the supply of money in the economy should be increased gradually and predictively. They posit that price correlates directly with the quantity of money in the economy. The implication is that open market operations should be used to gradually and predictively increase the quantity of money until an equilibrium rate of interest is attained. SMEs will also be able to access credit if the supply is adequate and the interest rate is at the desired level for the clients.

### 5.3. Implication for Policy

Striking a balance in the monetary intervention tools to be employed by the Central Bank, by and large, depends on the existence of a monetary policy. This policy would offer guidance on the best mix of monetary tools to be used to optimize the well-being of any economy by controlling the quantity of money and its accessibility. The study findings reveal that open market operations can enhance access to credit by SMEs. They also show that financial innovations moderate the effect of open market operations on access to credit. Policies that would ensure implementation and control of the open market operations should be formulated. Mechanisms for firm checks should be crafted to ensure efficient and effective implementation of the same. These policies should be reviewed regularly to ensure they are current and offer proper guidance. Their implementation could ensure optimum utilization of the investment channels, hence ensuring the growth and stability of the economy.

### 5.4. Implication for Practice

The purpose of this study was to determine the effect of open market operations on SMEs' access to credit in Kisumu County. The moderating role of financial innovations on the relationship between open market operations and SMEs' access to credit was also examined. Empirical literature shows mixed reactions to the effect of open market operations constructs on access to credit by SMEs

The results of the independent variable of this study showed that even though OMO had a significant effect on access to credit, its contribution was minimal. This may imply that the instruments used in the open market operations may not be accessible by small traders due to the minimum amount required for investment. The players of the financial

markets could, therefore, think of innovative ways to customize products for the small traders in the open market operations to ensure optimum access to credit by SMEs.

This study found that financial innovations increased the effect of open market operations on SMEs' access to credit by increasing the variation of access to credit. The study affirmed that open market operations had a significant effect on SMEs' access to credit and that financial innovations moderated the relationship. The use of financial innovations should, therefore, be encouraged as a bridge that would enhance SMEs' access to credit. This is a major contribution to knowledge, as no study has established this fact.

##### *5.5. Recommendations for Policy and Practice*

The findings have several practical applications in the management of finances in the small business sector. First, open market operation is a prudent option for central banks in their bid to influence the demand and supply of money in the small business sector. Central bank monetary policy managers can enhance credit access for small and medium businesses by controlling interest rates and cash available for credit. The current study makes several recommendations from the investigation of the role of financial innovations on the effect of open market operations on access to credit. To begin with, policies geared towards improving the financial access of small and medium enterprises should embrace open market operations. Such interventions should focus on selective open market operations that can influence the level of credit granted to a potent sector like the small and medium enterprise sector. The focus of regulations should be on improving the effect of open market operations on access to credit. The aim of these open market operations ought to be to improve their direct effect on the financial inclusion of small and medium enterprises. Further, policies ought to aim to improve the process and role of financial innovations in the relationship between the sale and purchase of government securities and selective credit control on access to credit by small and medium enterprises.

Thus, from the study findings, policy-makers ought to enhance access by deploying sector-specific interventions in favor of blanket interventions. In addition to policy implications, findings suggest that access to finance in the small and medium sectors can be improved through sector-specific monetary interventions. In particular, any policies targeting the sector ought to leverage the significance of open market operations and the ability of banks to create credit from the cash they hold. Further, sector-specific interventions should focus on enhancing the role of financial innovations in credit access. In particular, policies can target innovations that will encourage sector-specific products, processes, services, and organizational innovations in access to credit. Thus, by enhancing the moderating role of financial innovations, the problem of exclusion from credit can be addressed effectively. Further, by developing monetary policies that are specific to the small and medium enterprise sector, their contribution to the solution of unemployment problems can be enhanced.

While findings from the current study improve our knowledge of how open market operations influence access to credit by small and medium enterprises, in particular, financial innovations have a statistically significant moderating effect on the open market operations and access to credit by SMEs.

##### *5.6. Recommendation for Further Studies*

The study made various suggestions for further studies with respect to the various monetary interventions, as follows: The financial innovation was found to have a moderating influence on the individual relationships between open market operations and access to credit among SMEs in Kisumu. However, financial innovation was composed of financial services innovation, financial product innovation, financial processes innovation, and financial organization innovations. The study recommends an examination of these levels of financial innovation and the relationship between open market operations and access to credit among SMEs.

The empirical nature of the study has led to a number of practical applications and implications for monetary policy authorities and banks whose products target finance officers/owners in small and medium enterprises. However, further research may provide answers to some of the questions that are not answered in this study. In particular, the use of qualitative analysis can shed more light on the nature of interventions that moderate the open market operations to credit links.

Also, methods of data analysis can be refined to include path analysis in order to have a closer view of the moderating effect of each of the financial innovations on the relationships between each of the monetary interventions on access to credit. In addition to recommendations on improvement on the methodology for investigating the problem of financial inclusion in small business finance, unanswered questions require further research. For instance, more studies are required to investigate the most important moderator of the four financial innovations considered in the current study in the relationship between monetary interventions and access to credit. Such studies can incorporate the contextual variables that may influence sectorial demand for credit as moderators. The use of mediation analysis can lead to research that improves our understanding of the effect of interventions and innovations targeting access to credit in the microfinance sector. Thus, by refining the conceptual and analytic models used in the study, it is possible to improve research targeting sectorial access to credit by small and medium enterprises in Kisumu County, Kenya and beyond. The current chapter summarizes the study findings and provides an analysis of which findings agreed upon or disagreed with previous studies. The conclusions were based on empirical evidence to introduce a broader perspective in this stream of research on the effectiveness of open market operations in enhancing the financial inclusion of unbanked small businesses in emerging economies, such as in Kenya and beyond. Practical applications and implications of findings in the real world were explored in the current chapter. The study further suggested recommendations that were derived from the managerial and policy implications of the research findings. In particular, suggestions have been made for practical and achievable recommendations to fill the conceptual, methodological, empirical and contextual gaps revealed by the current study.

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