THE EFFECT OF FINANCIAL INNOVATION ON CREDIT ACCESS BY SMALL AND MEDIUM ENTERPRISES IN NAIROBI COUNTY, KENYA

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree in any other university.

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This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

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LIST OF ABBREVIATION AND ACRONYMS

DOI	Diffusion of Innovation Theory
EDI	Electronic Data Interchange
FinTech	Financial Technology
MFI	Microfinance Institutions
MSEA	Micro and Small Enterprises Authority
MSEs	Micro and Small Enterprises
MSMEs	Micro, Small and Medium Enterprises
SMEs	Small and Medium Enterprises
STDEV	Standard Deviation

ABSTRACT

Financial innovations provide various objectives and therefore include issues like credit generation and availability, transaction cost reductions, risk sharing and transfers, risk pricing and liquidity management. Financial innovation occurs in the emergence of lending platforms that mediate information flows from traditional banking systems to unbanked borrowers and also assist in credit risk-sharing analyses. The study goal was to assess the impact of financial innovation on SMEs' access to loans in Nairobi County, Kenya. The research was influenced by the Theory of Innovation Diffusion (DOI), the cost theory of transactions and the theory of exchange. The study used a descriptive design for research. The research population comprised of 21,100 Small and Medium-sized Enterprises (SMEs) situated primarily in the core business area in Nairobi County, Kenya. The research used a probability sampling method, basic random sampling and a scientific derivative formulation of the Yamane (1967). The outcome comprised of 393 SMEs operating in Nairobi County, Kenya's major business center. A combination of primary and secondary data sources was used. The main data gathering was the use of a closed-end questionnaire as a data collecting method. A cross-sectional study was the present study. The research used both descriptive and inferential statistics including correlation and multiple linear regression analyses. The results of the research showed that product innovation in Kenya's financial service providers is highly shown. Further results have shown that process innovation is also highly shown by financial service providers in Kenya. Further studies have shown that SMEs in Nairobi County always have access to loans from their various financial services providers. Further studies showed that none of the characteristics of financial innovation or of company age and size were substantially linked with access to credit. Further research results showed that the model of financial innovation, company age and company size explains at least to some degree access to credit and that the model doesn't predict access to credit substantially. The final results of the research showed that product innovation, process innovation, small and medium-sized enterprises and small and medium enterprises had no significant links with access to finance. Policy suggestions are made to government officials and policy-makers, in particular regulators, the Central Bank of Kenya (CBK) and the Sacco Corporations Regulatory Authority (SASRA) and to the Treasury, not to concentrate largely on financial innovation while seeking to enhance access to loans. The results of the current research also suggest that financial sector professionals and consultants should not concentrate exclusively on financial innovation when developing strategies to grow their loan books.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Park and Mercado (2015) states that financial innovation allows the building, marketing and acceptance of new commodities, platforms and processes or technology enabling to launch fresh methods or modifications to the way a financial activity is performed. Financial innovations have many objectives and therefore covering aspects like; boosting credit creation and availability, reducing transaction costs, risk sharing and transfer, risk pricing, and liquidity management. Financial innovation occurs when credit platforms are developed that mediate data flows from traditional banking to unbanked creditors and also help in credit risk analysis as well as in risk-sharing (Beck et al., 2016). Furthermore, since financial innovation fulfills the role of intermediation, this reduces capital costs (Salampasis & Mention, 2018).

Diffusion of Innovation (DOI) theory by Rogers's (1962) is the foundation for this study. The theory was developed in communication to discuss how an idea or products gains traction and then dissipates over time, or spreads, in a certain population or social system. The theory is critical in this study because over time, innovation by the financial institutions will penetrate through the social system and SMEs adopt the innovation as part of the society. Additionally, innovations by the financial institutions that are tailor-made for the SMEs can diffuse and be adopted by the SMEs. These innovations can be geared to facilitating the SMEs to attain easier access to credit. Similarly, the study was based on transaction cost theory proposed by Coase (1937). The theory describes the way an organization continues to incur costs as it carries out its activities. The theory remains applicable to this study is that entrepreneurs who own SMEs in Nairobi County lack financial literacy which cause them to inappropriately manage their transactions. This result in financial performance being negatively affected thus

making it hard to access financial assistance. Finally, the study also borrows from the exchange theory proposed by Homans (1958). This theory entails that there exists a linkage between procedural, interactional, interpersonal, and information factors to abilities in financial literacy. Thus, the SMEs can perceive and utilize the various innovative credit products to access credit.

The changing business climate in Kenya's financial system has resulted in more products, new processes and market innovation. In the finance industry, Information Technology has allowed developments in designs and delivery. The main focus is on customer services and satisfaction (Misati et al., 2010). In Kenya, as in the rest of Africa and the world at large, SMEs capitalization and costs of financing appears to be one of the most significant barriers to realizing growth and operational efficiency in surveys and analyses, despite the fact that capital needs of the business can be met through internally generated funds and debt, (Mwongera, 2014; Ndonga, 2014). In Kenya, financial services companies are exploring new methods of expanding digital money services so that they may provide all essential banking services on digital application. The mobile banking financial innovations have offered immense possibilities including sustainable development, poverty reduction and economic growth (Bill and Melinda Gates Foundation, 2017). Kenyans in remote areas can now access financial services. Mobile lending has led to augmented access to credit by various Kenyan individuals and organizations including SMEs (Mutua, 2016). The study seeks to examine ways in which financial innovation can be significant to the SMEs in accessing credit, with particular focus on SMEs in Nairobi County, Kenya.

1.1.1 Financial Innovation

Boz and Mendoza (2014) describe the development of novel financial instruments as

financial innovation and other new financial markets, organization as well as technology. Similarly, Laeven, Levine, and Michalopoulos (2015) regard innovations to include conducting research as well as the implementation of development functions along with the adoption and the diffusion of new commodities and services. The Laeven, Levine, and Michalopoulos (2015) further identify the three types of financial innovations as Financial System innovations, Process innovations as well as Product Innovations. Moreover, Beck et al. (2016) defines financial innovation as the adaption of new products but also as the improvisation of the exiting services and concepts that will encourage investors to pool more funds; consequently, increasing a company's liquidity to finance its activities as well as to manage the vulnerability in the industry.

It is apparent that financial innovation entails development and implementation of new commodities and services that might include new forms of bank deposits, high-yield securities, warrants, as well as venture capital among others; New operations and procedures like asset pricing, net present value as well as the Black-Scholes estimation; and new reform that might include exchanges, private equity, limited liability corporation mergers, or banks as well as leveraged buyouts among others. The fundamental role of financial innovation is to enhance the process by with funds are moved from areas where they are in surplus, to other areas where they are needed the most. Laeven, Levine, and Michalopoulos (2015) hold better financial innovation as an appropriate way of increasing investments and savings as well as increasing firms' productivity. According to Beck et al. (2016), factors such as a firm's accessibility to new technologies, macroeconomic conditions, customer's capacity to utilize the innovations, the market demand for financial services, as well as the need for cost reduction and the level financial risk determined a company's level of financial innovation. Moreover, Boz and Mendoza (2014) identify factors such as the success of the current product and

services, lack of diversity and collaboration, as well as lack of a strategic plan for innovation as those limiting the level of firms' financial innovation.

Ekpu (2015) stipulated that there are two ways of measuring financial innovations. The first approach of measuring financial innovation is by measuring inputs such as; research and development costs incurred, Information Technology investment made, and human capital employed. The second approach of measuring financial innovation is by measuring the output of innovations such as; retail banking, ATM, online payments methods, agent banking, among others. The study will utilize the financial innovation aspects of product and process innovation.

1.1.2 Access to Credit

Individuals and businesses' ability to seek external funding to alleviate cash flow issues is referred to as access to credit (Osoro & Muturi, 2013). Based on the lenders' evaluation, credit could be long-term or short term basis, depending on the borrower's ability to repay (Demirguc-Kunt, Klapper & Singer, 2013). Financial services such as insurance, payment, deposit, credits and credit, deposits, payments, insurance, and other risk management options are available to individuals and companies in need. The unbanked or underbanked, according to Beck and Honohan, are those whose financial inclusion is either non-existent or restricted by choice (2008). Global access to credit is defined by the lack of both price and time constraints and barriers not related to process using financial services according to the World Bank (2008).

The key driver in creation, survival, and growth of companies, especially SMEs, is dependent on access to finance (Cassar, 2004; Popov & Roosenboom, 2013; Kim, Lin & Chen., 2016; Beck & Demirguc-Kunt, 2006; Lee et al., 2015). Access to credit for small businesses has

long been regarded as a requirement for employment opportunities and growth in the economy. Access to businesses credit is crucial for the private sector, especially for the medium enterprises, which often lack the capital for growth. Credit availability also has an effect on the agriculture industry, where input costs surpass the proceeds from the sales (Martina & McCann, 2011).

Private credit-to-GDP ratio is one of the measures of access to credit (Lin & Chen., 2016). Another measurement of access to credit is collecting borrower segment credit information and a subsequent econometric analysis allows quantification of the borrowers' segment access to credit (Oloo, 2007). Savings, payments, insurance, and credit products are among the many products covered by the financial services label (Oloo, 2007). The study would focus on credit services. This is because credit access has piqued the interest of academics and policymakers alike. Furthermore, credit provision requires numerous complexities that cause providers to exclude a wide range of borrowers. Credit access would be indicated in the study by; availability of loan facilities, quick processing of loan application, low interest rate/cost of borrowing, convenient repayment period, and availability of unsecured loans.

1.1.3 Financial Innovation and Access to Credit

According to Carballo-Huerta and González-Ibarra (2008) due to macroeconomic stability and financial innovation, housing finance in Mexico has undergone significant structural changes. Both mortgage and credit products and financial intermediaries' financing methods have been broadening as a result of this advancement. Financial innovations, in particular, have made it easier for households to obtain mortgage financing.

The rapid growth of business-related crowd funding, which started as a way of collecting

donations for non-commercial purposes is an excellent method of new financing opportunity from SMEs that are unable to obtain credit from capital markets and banks (Wilson & Testoni, 2014a; Wilson & Testoni, 2014b). In year 2015, crowd-funding venture was anticipated to generate more than 30 billion dollars in revenue, that is, above the funding for venture capital (Barnett, 2015). Nevertheless, future endeavors for growth, as with other new institutions and products, are heavily reliant on financial regulation (Wilson & Testoni, 2014b).

Currently lenders are shifting from the traditional way of analyzing customer data through use of human judgment towards automated methods. This has led to opening up of what used to be mainly the local banking markets to a national competition from other banks as well as to non-banking financial institutions. For instance, credit-scoring tools based on extensive historical credit database are now widely used in retail loan applications. Through having this automated approach, it eradicated the need of being physically at the bank to make application, reduced the compliance and lenders will incur fees, and the information gathered may be utilized to improve lending practices and can be used to enhance management and measurement of risk even better (Gennaioli, Shleifer & Vishny, 2012).

Because of the increasing need for technology in financial services, there is increased number of technology-based companies that offer critical services, a trend that called “Fintech”. Most technological firms integrate automatic retail customer carefully thought out within various interfaces to provide consumers with convenient services and, in some cases, less costly. For instance, marketplace-lending platforms have come up as new forms that organizations attract borrowers through easy application process, analyze the applications using credit scoring and then connect creditworthy borrowers with investors directly. Furthermore, machine learning

and Artificial Intelligence (AI) are also being used in some jurisdictions to increase retail loan risk measurement (Gross, Hogarth & Schmeiser, 2012). Thus, financial innovations are expected to augment access to credit. The study seeks to examine ways in which financial innovation can be significant to the SMEs in accessing credit, with particular focus on SMEs in Nairobi County, Kenya.

1.1.4 SMEs in Nairobi County

Janet and Ngugi (2014) define Small and Medium Enterprises as including informal and formal business organizations containing less than 50 employees. In accordance with the 2005 Organization for Economic Co-operation and Development (OECD) study, SMEs are regarded as non-subsidiary, self-employed enterprises with fewer workforce numbers, with lower than a certain annual turnover or fewer assets than a predetermined threshold. The measurements vary in different nations. When defining SMEs in terms of employee numbers, the upper limit designating is that by the United States (US) which sets it at five hundred employees. The European Union (EU) sets it at two hundred and fifty employees, however most countries set the limit at two hundred employees. It is generally accepted that small firms have less than fifty workers, while micro-enterprises employ a maximum of ten labourers.

Guidelines on the classification of SMEs is given by the Micro and Small Enterprises Act of 2012 in Kenya SMEs. Micro-enterprises are enterprises with a labour force of less than 10 employees or a turnover of less than KES 0.5 million annually. Small enterprises, on the other hand, are enterprises whose labour force consists of 10 to 49 employees or turnover ranging from KES 0.5 million to KES 5 million annually. Medium enterprises were not covered by the Micro and Small Enterprises Act of 2012. However a Kenya National Bureau

of Statistics (KNBS) survey in 2017 outlines that they should have a turnover of range KES 5,000,000 to KES 800,000,000, and should employ fifty-ninety nine individuals. Micro and Small Enterprise (MSEs) dominate Kenya's SME sector; they are found in all corners of the country including city estates and along major highways. The KNBS study showed that at the time the survey was carried out approximately 1.56 million authorized MSMEs and 5.85 million unregistered companies existed. The registered MSMEs are part of the formal sector while the unlicensed firms constitute the informal sector. The informal sector, often referred to as "*jua kali*", accounts for the majority of SMEs.

Janet and Ngugi (2014) not only observes SMEs as present in every employment sector but also as holding the most employments, the highest income generator, as well as the largest contributor to poverty alleviation. Similarly, in Kenya, SMEs stand out as the largest contributor to the economy by providing jobs to more than 80% of the entire working population. Its share in GDP has increased and has risen from 13 percent in the early 1990s to 40 percent in 2008 (Janet & Ngugi, 2014). Central Bank of Kenya (2018) National Economic Survey report found SMEs to make up 98% of all enterprises in the country. According to the report, the sector not only creates about 30 percent of new jobs each year but also contributed a 3 percent growth of the total 6.4% growth of the GDP in 2017.

SMEs in Nairobi County refers to small businesses that fall under the informal sector commonly referred to as "Jua Kali" which term refers to operating under the fierce sun. According to the Public Procurement Oversight Authority (2018), there are 98,600 businesses in Nairobi that has a trading license with at least 21,100 located in the Central Business District. SMEs are considered to provide a critical responsibility in the progress of the nation and could include salons, barbershops, bakery shops, restaurants, photographers and many

more. Small number of employees in the organization and low sales volume characterizes them (Mugure, 2017).

In Nairobi County SMEs access to finance and costs of financing appears to be one of the most significant barriers to realizing growth and operational efficiency in surveys and analyses, despite the fact that capital needs of the business can be met through internally generated funds and debt, (Mwongera, 2014; Ndonga, 2014). Financial companies in Kenya are exploring new methods to extend mobile financial services and therefore provide all financial services on a digital platform. The mobile banking financial innovations have offered immense possibilities including sustainable development, poverty reduction and economic growth (Bill and Melinda Gates Foundation, 2017). Kenyans in remote areas can now access financial services. Mobile lending has led to augmented access to credit by various Kenyan individuals and organizations including SMEs (Mutua, 2016).

1.2 Research Problem

Financial innovation has been at the center of most advanced economies. The impact of the significance of financial innovation to improved productivity as well as to economic expansion and development to both financial service and manufacturing sectors cannot be overlooked. Financial innovation has made it possible for initially, marginalized population to access less expensive financial services; consequently, opening up a large pool of savings that provides funds for lending and investments, and subsequently promoting the country's economic development (Salampasis & Mention, 2018). Financial innovation creates opportunities to develop loan platforms that manage information flow from traditional banking to unbanked borrowers, while also contributing to the analysis of credit risk, besides risk sharing (Beck et al., 2016). Furthermore, because financial innovation fulfills the

intermediation role, it reduces capital costs (Salampasis & Mention, 2018).

Despite the significant role of the SMEs to the economy of Kenya, the sector continues to experience numerous challenges such as insufficient infrastructure, inadequate manpower skills, high business mortality, poor working environment, difficult regulatory procedures, and restriction to market access as well as financial exclusion. Ngugi, McOrege, and Muiru (2013) noted that most of the SMEs begin as an implementation of an idea of one or a few individuals. Such people use their savings to open small enterprises. According to the author, it is the simple success of their small enterprises that trigger them to try out new investment. However, Janet and Ngugi (2014) note that such a quest for investment is hindered by inadequate funding as well as height costs of finance accessible through the traditional sources of funds. Janet and her colleague further emphases on the importance of opening financial access to the SMEs to finance their developmental needs.

Beck, Senbet, and Simbanegavi (2014) study on financial innovation and inclusion done in various parts of Africa and study findings indicated that financial innovation augments financial inclusion. Mehrotra and Yetman (2015) study on issues of financial inclusion for the central banks done in the United States noted a significant positive implication of digital finance to financial inclusion in developing countries. Similarly, Yawe and Prabhu (2015) study on financial innovation and inclusion that reviewed literature from different parts of the world observed the use of mobile financial systems to largely improve financial inclusion as well as the economic growth of developing countries. These findings are also supported by the observation made by Laeven, Levine, and Michalopoulos (2015) study on the impact of financial innovation to endogenous expansion of firms done in United Kingdom.

In Kenya, Wambua and Datche (2013) did a study on how innovative factors influence financial inclusion within the banking sector and discovered a significant impact of financial innovation on financial inclusion. Similarly, Omwansa and Waema (2014) did a study on increasing financial inclusion through team work and came up with relevant financial products the economically marginalized observed an important role of financial innovation to financial deepening in the country. Moreover, Cherotich, et al. (2015) conducted a study investigating the impacts of financial innovations on the financial performance of commercial banks and noted that mobile banking influenced positively on financial inclusion in the country. However, despite the consistently positive results on the link between financial innovation and access to credit, there are limited studies to determine the application of financial innovation in medium-sized enterprises in Kenya. Similarly, there is no research to determine the application and impact of financial innovation in marginalized areas with high inequality like Nairobi (Wafula & Theuri, 2017). This study sought to fill in the gaps by answering the research question; what is the effect of financial innovation on credit access by SMEs in Nairobi County?

1.3 Research Objective

The objective of the study was to determine the effect of financial innovation on access to credit by SMEs in Nairobi County, Kenya.

1.4 Value of Study

The study will bring about curiosity among scholars and challenge them into carrying out further studies on the effect on access to financing for SMEs from financial innovation. Similarly, the work will provide resourceful material for future scholars and researcher interested in the subject of financial innovation and inclusion for SMEs, especially in highly

marginalized areas.

The study hopes to educate the general managers, shareholders as well as the general public on the benefits of financial innovation in ensuring credit access. As such, financial entrepreneurs will get to understand the relationship, ways of implementing financial innovations as well as the challenges and opportunities surrounding the subject.

Similarly, the study provided empirical findings relevant agency and government corporations to help guide the formulation and implementation of relevant policies and regulation. Additionally, these findings will not only help highlight financial inclusion gaps in marginalize area with high inequality but also suggest ways of incorporating financial innovation to curb the needs for inclusion.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The relationship between financial innovation and credit availability is examined empirically in this chapter. Theoretical foundations for the concepts of financial innovation and credit access are also investigated. After that, the chapter looks at the factors that influence credit availability before wrapping up.

2.2 Theoretical Review

The study will be informed by three theories, namely; Diffusion of Innovation (DOI) Theory, Transaction cost theory, and the exchange theory.

2.2.1 Diffusion of Innovation Theory

Rogers (1962) proposed the Diffusion of Innovation (DOI) Theory which states that individuals adopt a new thought, behavior, or product as part of a social system as a result of diffusion, which was created in speaking to highlight any ideology or a product acquires momentum and takes it through any system over a time. Adoption is defined as a person doing something different than they did previously' for example, to buy or use a new product, to learn and to execute new behavior, etc. Adaptation hinges on the person's perception of the innovative or creative concept, behavior or product. As a result, diffusion is conceivable (Rogers 1962, 1962).

The DOI models, according to Wolfe (1994), Prescott and Conger (1995) and Monteiro and Hanseth (1995), opine that DOI models are not very precise in relation to any regarded items of diffusion and if they make any difference. The value of complex technical systems varies from one context to the next and from one location to the next, a phenomenon known as

"interpretive flexibility" that implies that their worth changes from one ideology to the next and from one moment to the next (Pinch & Bijker, 1987). As a result, the meaning of technology evolves in various communities, institutions, and companies. Different sites had very different interpretations of what EDI was and meant, as well as its connotations, which influenced adoption decisions (Damsgaard, 1996).

The theory is critical to the study since over time, innovation by the financial institutions will percolate through the social system and SMEs adopt the innovation as part of the society. Additionally, innovations by the financial institutions that are tailor-made for the SMEs can diffuse and be adopted by the SMEs. These innovations can be geared to facilitating the SMEs to attain easier access to credit.

2.2.2 Transaction Cost Theory

Coase (1937) proposed the transaction cost theory. It describes the way an organization continues to incur costs as it carries out its activities. These costs are mainly associated with acquiring and utilization of resources. The organization considers such costs as economic and they may come from the external or internal environment. Additionally, these costs can be used when trying to determine the efficiency and effectiveness of the various organizational models implemented with an aim to achieve the economic outcomes in particular environments. To manage transactions effectively it is in order that an individual uses the best financial management skills and also applies the best financial innovations to make work easier and save on costs. The transaction theory framework informs that lack of effective financial skills comes with lots of disadvantages such as cases where transaction costs becomes higher and therefore have a negative impact on the financial performance.

From the findings, assets were established to have a positive specificity, which was in concordance with the empirical literature review of transaction cost theory((David and Han, 2004).Even though for the conciseness that only a few studies focused on transaction frequency, those that did were mostly positive. According to David and Han (2004), predictions about hierarchies versus markets had a lot of empirical support, while predictions about hybrids versus markets or hierarchies had less empirical support.

Through the best financial literacy skills, a company can be able to select transaction that have both the value and impact to improve the financial performance of the entity. Additionally, the firm's management will set strategies that will enable it manage debts effectively so that they are able not to default on loans credited to them. This is because of keeping the appropriate records of all financial transactions that takes place. The theory aligns to the study in that, entrepreneurs who own SMEs in Nairobi County lack financial literacy which cause them to inappropriately manage their transactions. This is caused by the simple assumption that they can remember all transactions they have done and ignorance of transactions with lower value. This turns out to be untrue because financial performance is negatively affected making it hard to access financial assistance.

2.2.3 The Exchange Theory

Homans (1958) proposed the exchange theory. This theory entails that there exists a linkage between interactions and information factors to the literacy factors. Findings from the study by Lusardi & Mitchell (2013) are in support of this theory by stating that literacy skills associated with financial knowledge are higher in population involved in work, they take the case of entrepreneurs where they compare their financial literacy skills to the population not involved in economic activities and find that the entrepreneurs were more advanced in

financial literacy. This theory explains why the literacy levels of the working and non-working population varies in levels by stating that there exists exchange of information amongst the literate and illiterate population and also the working population may be offered financial training at their places of work and skills they require to perform their duties effectively. These calls for an individual to interact with other people, which are meant to eventually increase their level of financial literacy.

Blau (1964) drew attention to the relevance of the social environment in which the concepts of economics and exchange were implemented. He noted that social transactions differ from economic ones, as the parameters of social interactions are defined beforehand, but instead left to the individual's choice. Emerson (1962) pointed out that power is a relational phenomenon rooted in a person's dependence. He also realized that power did not exist in every interaction; rather, power existed as a possibility. Negative actions can be carried out by withholding a reward until an action is taken, or by punishing or inflicting of costs (Blau, 1964).

This theory supports that increased business activities and interactions will help advance the financial literacy of entrepreneurs owning SMEs. If SME owners take upon the gaining financial literacy as their responsibility, they ought to earn various significant benefits such that they will be informed of their financial systems and also learn of the emerging trends and changes related to those systems. The contribution of this theory to the study is that it explains why people have different levels of financial literacy and suggests ways to increase literacy (Chamwanda, 2015). This aligns with the study in that, entrepreneurs who own SMEs in Nairobi County can use the knowledge from it to relate their real-life interactions in business and see how they can improve on those interactions so that they can be able to

positively impact their financial literacy levels which will eventually have the overall effect to improve on financial performance. Thus, the SMEs can perceive and utilize the various innovative credit products to access credit, which can aid in growth.

2.3 Determinants of Access to Credit

This section avails reasons, which determine access to credit. The factors discussed comprise of financial innovation, collaterals and guarantees, education and entrepreneurship literacy levels, entrepreneur and firm age, and location of the SME.

2.3.1 Financial Innovation

Boz and Mendoza (2014) define financial innovation as the aspect of coming up financial instruments that are considered new as well as other new markets in the financial sector, organization as well as technology. Similarly, Laeven, Levine, and Michalopoulos (2015) regard innovations to include conducting research as well as the implementation of development functions along with the adoption and the diffusion of new commodities and services. The Laeven, Levine, and Michalopoulos (2015) further identify the three types of financial innovations as Financial System innovations, Process innovations as well as Product Innovations. Moreover, Beck et al. (2016) defines it as the adaption of new products but also as the improvisation of the exiting services and concepts that will encourage investors to pool more funds; consequently, increasing a company's liquidity to finance its activities as well as to manage the vulnerability in the industry.

Park and Mercado (2015) declared that financial development permits new goods, platforms and processes to be created, promoted and adopted, or technologically enabling new methods or modifications of activities related to finance are conducted. Financial innovations provide

multiple aims and therefore covering aspects like; boosting credit creation and availability, reducing transaction costs, risk sharing and transfer, risk pricing, and liquidity management. Financial innovations provide the occasion for lending platforms to bridge information flows from traditional banking systems to unbanked lenders while supporting credit risk analysis as well as risk sharing (Beck et al., 2016). Furthermore, since financial innovation serves the intermediation role, it reduces costs of capital (Salampasis & Mention, 2018).

2.3.2 Collateral

Collateral is defined as the amount of assets issued to represent security for loans such that the lender is covered in a situation where the borrower ends up defaulting on the loan. More often, loans collateral takes the form of assets that are fixed, these include land, buildings and even personal certificates in some instances. In a situation where the borrower defaults on a loan due to various reasons, assets acting as security should have the capability to be sold in a fair market at its value and its selling expenses should be very minimal. This is a major precondition that limits the ability of an entrepreneur to access loans among other financial services. Most entrepreneurs are not in a able for conciseness to afford collaterals placed on loans which therefore means they do not meet this requirement and therefore cannot access loans. The fact that most financial institutions label most of the SMEs risky sectors impels them to implement these harsh strategies on loans to access the ability of the borrower to repay loans. Findings from the study by Basu (2015) indicate that the criteria financial institutions implement collateral for loans on borrowers so that the risk of loan default is covered is a practice accepted globally. It is perceived as a basic requirement before issuing a loan.

The SME sector is a potential sector however these financial institutions tend to be reluctant

in lending money to them. Strategy used to determine the loan repaying ability of SME is their collateral for loans. This is considered as the main factor that hinders SME from accessing loans because most of their assets are not kept in a register, in most cases these assets are kept under the owner's names rather than the name of the business which makes them appear as if they do not exist. However, there is significant progress in criterion used to lend money to SMEs but financial institutions still are very cautious in offering lending services.

2.3.3 Education and Entrepreneur Literacy Levels

The education levels of different individuals set up a substantial knowledge gap between these individuals. To run an enterprise, the education and quality skills of an entrepreneur are very crucial and they play a major role. Individuals who have attained at least an education up to the high school level are able to effectively manage their enterprises and they have more knowledge on the concepts of finance such as risks involved, places to invest and diversification. Individuals with low levels of education suffer from innumeracy. To make appropriate decisions regarding financial issues and also be able to access loans it is crucial that an enterprise provide complete, accurate and precise information. According to Njoroge (2013), the ability of an entrepreneur to have the right skills for bookkeeping is the measurement scale for their literacy levels

More often, banks will demand for cash flows and other financial records as a requirement before a borrower can access their loans. In most cases, the financial products offered by banks contain languages that are complex, which end up in discouraging an entrepreneur to apply for a loan in the first place. Lack of adequate financial management skills strategic planning and access to markets places the SMEs in a situation where they are disadvantaged

because competition with big firms which are most likely to be under the management of entrepreneurs who have high literacy levels and quality skills and are exposed to more opportunities to access financial services including loans compared to their uneducated counterparts. Konchella (2013) states that the above situation puts the SMEs entrepreneurs in a situation where they prefer informal market loans rather than the formal market loans.

2.3.4 Entrepreneur Age

The inadequacy of financial literacy skills is more associated with the youth as compared to older individuals. In their study Lusardi and Mitchell (2014) state that financial literacy declines with age. Individuals who are middle-aged have the self-assurance about their finances and investments choices, which therefore implies of their confidence in their abilities to make informed financial decisions. The working age groups have higher chances in accessibility of financial services. Individuals who are between the age of 26-35 years have lower levels of constraints compared to individuals who are 25 years and below in terms of loans capacity.

2.3.5 Firm Age

According to Moore (2015), the age of an SME depicts their experience in the market. The stability of an SME is measured through their experience with their clientele and is advanced credit by its suppliers; a stable SME is therefore able to generate a lot of income compared to an unstable SME. An enterprise that is still young is considered less stable and perceived to low level of experience in the financial market making it hard for it to easily access loans from financial institutions because there exists information variations.

2.3.6 Location of the SME

This is perceived as the situation of economics an element that cannot be ignored when evaluating the success, failure and effectiveness of the activities of an enterprise Chamwanda (2015). It is crucial than an entrepreneur critically evaluate the strategic location to base their business activities because location significantly affects the performance of a firm. A strategic location may contain the following: an appropriate road network, raw materials source and accessibility to the enterprise premises. Most SMEs base their enterprises in places that are conducive for their business activities to run smoothly.

Siekei (2013) states that a strategic location is a necessity for any firm, policy makers and business owners in the journey to enhance their performance. Thus, this indicates how crucial the location of an enterprise is in influencing the performance of the firm such that it helps a firm to improve its sales hence generate more earnings, reduce the costs of transaction and enhance its performance in terms of the profit margins.

2.4 Empirical Literature Review

In the global arena, Nemoto, and Koreen (2019) investigated whether technological innovation can lead to higher financial access for SMEs. The study conducted a literature review of previous empirical literature. Using existing technology, data is utilized to improve traditional lending; expanding funding options, including capital market finance; strengthening financial institutions' consulting functions. This presents a contextual gap, which the current study is aiming to fill by conducting the current study in the Nairobi County context, Kenya. There is also a methodological gap in the study as it only conducted a literature review. The current study will conduct an empirical analysis with inferential analysis methods entailing correlation and multiple linear regression analysis.

Creehan (2018) did a study to find out the impact of digital innovation on the improvement of credit accessibility to small business in Asia. The study conducted a literature review of previous empirical literature. From the findings, this study revealed that the new digital innovations can be used in enhancing the accessibility of finances to SMES in Asia and this would boost the long-term economic growth. There is a contextual gap within the research. The current study will be done in the Nairobi County within Kenyan context. There is also a methodological gap in the study as it only conducted a literature review. The current research will conduct an empirical analysis with inferential analysis methods entailing correlation and multiple linear regression analysis.

Khan, Shah, and Rizwan (2017) analyzed innovation and access to finance in developing markets. The study utilized data obtained from the reports in the World Bank compiled for 26,700 enterprises in 21 countries located in all continents. The study findings established that bank financing plays a key task in motivating and promoting an assortment of innovative activities in the developing economies. Further findings showed that financial constraints resulted in decreasing the innovation output novelty. Additionally, the effect of financial constraints is more felt for less novel products as compared to more novel products. There is a conceptual gap inherent in the research as it endeavored to analyze the impact of credit access on innovation and not the effect of financial innovation on credit access, which the current study will endeavor to accomplish.

Regionally, Kojo (2013) investigated microfinance trends in Ghana. The study endeavored to find out investigate the various inventions offered by microfinance institutions in Ghana's three northern regions. The study used primary data had embrace used of the wide range technologies in the latest three years. As indicated by the findings, product innovation,

research and development innovation are all examples of innovations that have been used in various ways. The study also established that the underserved market is huge in the study area and for it to be exploited; the management of MFIs needs to have committed efforts for developing unique products in order to fulfill the marginalized and the poor needs. There are risks that come with innovations. There is an inherent conceptual gap in the study, as it did not endeavor to relate financial innovations and access to credit by SMEs. The current study will endeavor to fill this conceptual gap.

Mbowe, Shirima, and Kimolo (2020) did an assessment of the extent to which financial innovations aid Tanzania's SMES have accessibility to credit. Questionnaires and interviews guides were used in collecting data. For a thorough check of the variables that influences SMEs borrowing behavior, probit estimates were used. The findings reveal that the need to meet business operational costs is one of the factors that drive SMEs to borrow money through creative channels. Despite progress in improving MSMEs' access to financial services, access to finance by households or enterprises through innovative platforms remains limited. The innovation variable's coefficient was found to be statistically negligible. Unfavorable loan terms, high lending rates, a lack of understanding contribute to this anomaly. There is a contextual gap in the study because it was done in the Tanzanian context. The current study will be done in the Nairobi County context, Kenya.

Local studies done on the context of this study include; Sabana (2014) found out the link between financial literacy and access to finances by micro enterprise entrepreneurs in Nairobi County. The conclusions from this study argued that financial literacy level of entrepreneurs showed a significant statistical relation with profitability of an enterprise involved hence; the assumption that financial literacy has an influence on the performance of an enterprise was

evidenced. There is an inherent conceptual gap in the study, as it did not endeavor to relate financial innovations and access to credit by SMEs. Hence, the current study attempts to provide a solution to this existing contextual gap.

Atieno (2013) explored how SMEs access to finance is impacted innovations by Microfinance Institutions (MFI) in Kenya. The study interrogated the relationship between MFIs transformational products for SMEs and their impact on accessibility of finance by SMEs. Primary data was collated and was subjected to various statistical analysis methods, such as correlation, linear and multiple regression analyses to figure out the link between the variables. The study concluded that there was a positive correlation between credit access and innovative Microfinance products. It was further concluded that innovative saving products and location played a significant role to improve access to finance by SMEs. The study also found out that the four Deposit Taking Microfinance Institutions had introduced a wide variety of innovative products in the past four years; innovations that include, savings and loans, marketing innovations, micro insurance and location innovation. The study further found out that one of the major challenges of SMEs is lack of initial capital or operating capital. There is a contextual gap in the study because it was restricted in the MFI context and it was done in the entire Kenyan context. The current study will analyze all financial institutions while it will be done in the Nairobi County context.

Atieno (2012) in her paper titled “gender, institutions, access to finance and the development of SMEs in Kenya” established that it is critical to support organizations such as organizations, which help women in medium enterprises overcome some of their barriers. Financial services can be accessed through connections among businesses and between businesses and financial institutions. The services either directly add up to business

expansion by providing external monetary resources to businesses. The findings from her research revealed that, despite their size, businesses provide a variety of interactions among them and other monetary institutions. The connections have benefits that are reviewed in the company's performance. There is a contextual gap in the study because it was done in the context of women owned SMEs in Kenya. The current study will be done in the SMEs located in Nairobi County, Kenya context.

Kiraka, Kobia, and Katwalo (2013) conducted a case study through the Women Enterprise Fund. The study reviewed the importance of financial innovation in coming up with small, and medium-sized businesses. The research population consisted of SMEs who had received funding from the Women Enterprise Fund and were evaluating their financial performance after receiving the funds. The study took place in four of Kenya's 47 counties, with 14 constituencies chosen within each county. The primary data was gathered. The results of the study revealed that women-owned companies showed significant growth. There is an inherent conceptual gap in the study, as it did not relate financial innovations and access to credit by SMEs. The current study will endeavor to fill this conceptual gap.

Mbogo and Ashika (2012) studied the organizational factors, competitive pressure and legal environment factors like liquidity and risk management issues, leverage, human resource challenges and distribution. The legal climate, competitive pressure, and liquidity and risk management challenges were found to have the greatest impact on MFI innovation, according to the data. The coefficients of the linear equation were estimated using multiple linear regression analysis. The results of this study revealed that the legal climate, liquidity management, and human resources for MFIs all have a positive correlation with product innovation. Competitive pressure, risk management, distribution channels, and a lack of

adequate finances were also found to have a negative impact on MFI product innovation processes. There is an inherent conceptual gap in the study as it did not relate financial innovations and access to credit by SMEs, and the current study endeavored to fill it.

2.5 Conceptual Context

The 2.1 figure displayed below represents a diagrammatic relationship between the dependent and the independent variables. The dependent variable was access to credit while the predictor variables were process innovation and product innovation. Firm age and firm size were the study's control variables.

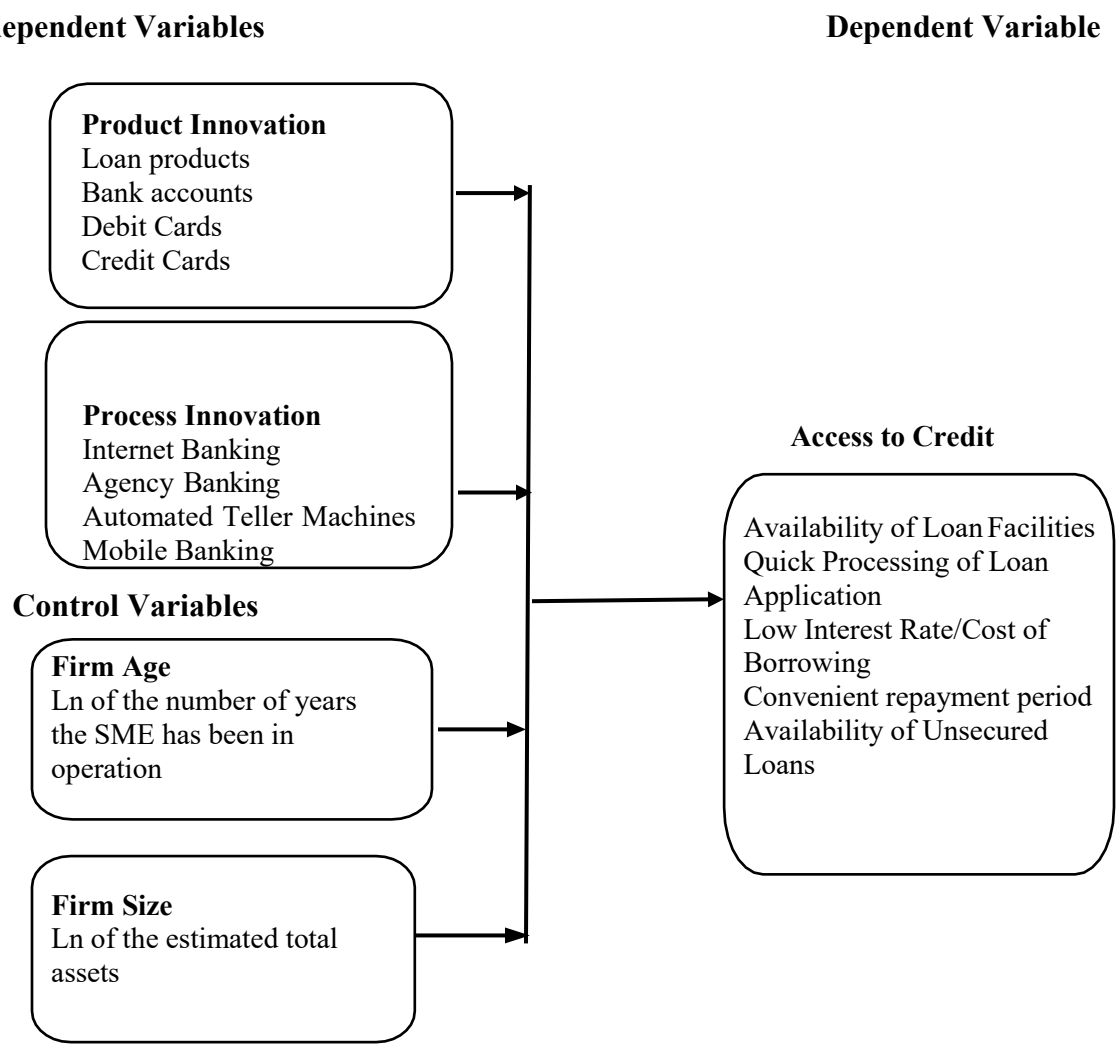

Figure 2.1: Conceptual Framework

2.6 Summary of Literature and Research Gap

The literature review shows existence of a positive correlation between accessibility of financial services of SMEs with financial innovation. However, some studies have not focused on the influence of financial innovation on access to credit thus presenting a conceptual gap. In addition, the above studies mostly concentrate their work on a limited number of countries. The results from most of these studies cannot be generalized on the situation of SME entrepreneurs in Nairobi County. This brought up a research gap on financial innovation and accessibility of financial credit of entrepreneurs of SMEs in Nairobi County. Therefore, this research sought to bridge that gap.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the researcher will briefly discuss the methods and procedures that will guide the study. The different segments in this chapter includes the research design, the population being studied, the criteria of sampling and the procedures employed during the process of collecting data as well as analysis the respective data.

3.2 Research Design

Creswell (2015), a scientist gives a view of a research design being termed as a description of how one is planning to conduct the study. The study subjects and the site of study are selected through the basis. It is a systematic plan to study a problem and it involves the actual execution and implementation of the research plans.

The study utilized a descriptive research design in a bid to measure the data trends that exists in reference to the topic of study. According to Nassaji (2015), the descriptive method gives the researcher a way to compare and contrast the different types of data in order to ascertain the trends that exist therein. The study chose the descriptive research design since it could be used to describe different phenomenon and their characteristics. In addition, the data sets produced through the descriptive method help to summarize and support assertion of facts.

3.3 Population

According to Bhaskar and Manjuladevi (2016), a study population is the group from which the study details will be derived. It is an aggregate of a set of subjects that will be made to conform to a set of expectations to derive meaningful data. According to the Public Procurement Oversight Authority (2018), there are 98,600 SMEs in Nairobi that have a

trading license, with 21,100 located in the Central Business District (Mugure, 2017). The research targeted the 21,100 registered SMEs operating in the Central Business District.

3.4 Sample

Sample is defined as a unique subset linked to the statistical population in which the particular attributes are investigated in to gain further understanding of the entire population (Ordho & Kombo, 2002). Desu (2012) notes that a sample is a subgroup of the entire population. This study considered probability-sampling technique as all SMEs had an equal chance of being in the sample using random selection. Simple random sampling ensures greater statistical efficiency and reduces any sampling error that might occur. To calculate the sample size of this study Yamane (1967) formula was used to identify the number of responses needed. The equation as below;

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

Where:

n = sample size

N = population size

e = the level of precision

1 = Constant

The assumption of this formula is 0.5 degree of variability and precision level of 5% and 95% confidence level.

n = 21,100/ 1+ 21,100(0.05)2

n = 393 SMEs

The resultant sample size is 393 licensed SMEs operating in Nairobi County and operating within the Central Business District.

3.5 Data Collection

The primary data will be collected through questionnaires. Kothari (2004) notes that a questionnaire is a survey instrument for collecting data and contains standardized information. The researcher will use questionnaires since the feedback from the respondents is in a standardized format. The data analysis through a questionnaire will also ease the data analysis process for the researcher.

3.6 Data Analysis

The study analyzed data in a systematic process. The raw data was first be coded, then data entry and data cleaning followed. Data analysis was then done through descriptive and inferential statistics. Descriptive statistics is the quantitative description of the main features collected in the data and it summarizes the characteristics of the sample being studied. Inferential statistics were used to draw conclusions from different data sets in addition the researcher also used inferential statistics to make predictions and generalizations (Van-Elsht, 2013). The analysis under inferential statistics comprised of both multiple linear regression and correlation analysis.

3.6.1 Diagnostic Tests

When performing linear regression models, a number of assumptions are made to ensure the validity of the regression analysis. There should be no multi-collinearity, observations should

be sampled at random, and the conditional mean should be zero, in spherical errors, the regression model is linear: homoscedasticity and no self-connection, and the discretionary presumption: error terms should generally be allotted. Gauss-theorem Markov's states that the first 5 assumptions of the linear regression model best linear unbiased estimators regression OLS estimators.

The above stated ideas are crucial because if any of them are broken, the regression estimates will be inaccurate and unreliable. A violation, in particular, will result in inaccurate regression estimates or unreliable differences between estimates, resulting in confidence intervals, which might be too wide or too narrow (Gall et al., 2006). Diagnostic tests are conducted to make sure that the assumptions of linear model are not violated. Regression diagnostics examine model assumptions and determine whether or not there are any interpretations that have a significant, unjustified impact on the examination.

The gathered data was subjected to diagnostic tests for normality, homoscedasticity, and multicollinearity in order to determine its suitability for the formulation of a linear regression model. Shapiro Wilk test was applied in testing for normality, which though uncommon, fails to work well where large amount of data is involved, and the test was supplemented by the Kolmogorov-Smirnov test that is appropriate to test the distributions of Gaussian nature that have a particular variance and mean. Homoscedasticity is referred to as direct link between the dependent and independent variable. The Breuch-Pagan test was used to determine homoscedasticity. The Variance Inflation Factors (VIF) and tolerance were undertaken to establish whether the predictor variables used in the current study have a significant association amongst themselves. According to Grewal et al. (2004) the primary causes of multicollinearity in the independent variables is caused by low measure of reliability, low

explained variables as well as small sample sizes.

3.6.2 Analytical Model

The multiple regression models to determine the link between financial innovation and financial inclusion. Below is the study model:

$$Y=\alpha+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3+\beta_4 X_4+\varepsilon$$

Where:

Y = Access to credit, measurement-5point (likert scale)

X1 = Product innovation, measurement- 5 point (likert scale)

X2 = Process innovation, measurement-5 point (likert scale)

X3 = Firm age (Control Variable, to be measured based on natural logarithm of interval scale)

X4 = Firm size (Control Variable, to be measured based on natural logarithm of interval scale)

α = Constant,

ϵ = error term

$\beta 1$= Regression coefficients or change included in Y by each X value

Table 3.1: Operationalization of the Study Variables

Variables	Type of Variable	Indicators	Measurement Scale	Tools of Analysis
Access to Credit	Dependent Variable	• Availability of Loan Facilities • Quick Processing of Loan Application • Low Interest Rate/Cost of Borrowing • Convenient repayment period • Availability of Unsecured Loans	Ordinal – Likert Scale	• "Descriptive Statistics • Inferential Statistics (Pearson Correlation and Multiple Linear Regression Analyses)"
Product Innovation	Independent Variable	• Loan products • Bank accounts • Debit Cards • Credit Cards	Ordinal – Likert Scale	• "Descriptive Statistics • Inferential Statistics (Pearson Correlation and Multiple Linear Regression Analyses)"
Process Innovation	Independent Variable	• Internet Banking • Agency Banking • Automated Teller Machines • Mobile Banking	Ordinal – Likert Scale	• "Descriptive Statistics • Inferential Statistics (Pearson Correlation and Multiple Linear Regression Analyses)"
Firm Age	Control Variable	• Ln years of SME operation	Ratio Scale	• "Inferential Statistics (Pearson Correlation and Multiple Linear Regression Analyses)"
Firm Size	Control Variable	• Ln total assets	Ratio Scale	• "Inferential Statistics (Pearson Correlation and Multiple Linear Regression Analyses)"

3.6.3 Tests of Significance

The model's relevance was evaluated using 95 percent confidence intervals. The significance values determined the meaning of the association between each predictor variable and the response variable. T-test and F-Test were likewise undertaken in establishing the significance of individual co-efficient and overall model respectively.

The study used a 95 percent confidence interval. The significance value for the outcome is set to be less than 0.05, which means that the significance value should be less than 0.05. In order to draw conclusions about the model's accuracy in forecasting access to credit, a statistical inference technique was used. The model's relevance was evaluated using 95% confidence intervals. The value, which shows how much defect the sample is different from the value tested, was also used to identify the significance of the connection between each variable of predictors and the response variable.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

The present chapter focuses on the analysis of data, discussion and interpretation of the results, which are all presented in the previous chapter. It is divided into five parts, which are as follows: rate of questionnaire response, respondent's characteristics and the characteristics of business, discussion of results, descriptive statistic and inferential statistic.

4.2 Response Rate

From the survey carried out, the rate of return is termed as the total replies in percentage form that is received to the total of the targets. The response rate or rate of return is usually stated as a percentage. Table 4.1 shows the response rate for the present research.

Table 4.1: Study Response Rate

Response	Frequency	Percentage
Returned	309	78.63%
Unreturned	084	21.37%
Total	393	100%

Table 4.1 emphasizes that 393 questionnaires were distributed for SME owners/managers in the City Centre of Nairobi County. The results show that 309 of the 393 questionnaires sent to the targeted population had sufficient information and replied to a total response rate of 78.63%. It conforms to Mugenda and Mugenda (2010), who said that a research with a response rate of 70 percent and above has sufficient analysis and may make a conclusion.

4.3 Respondents Background and Firm Characteristics

The goal of the study was to find out about the backgrounds of the respondents and the

characteristics of the 393 SMEs in Nairobi County's Central Business District and owners/managers of the SMEs. The backgrounds characteristics of the study's 309 respondents and the firm characteristics of the SMEs examined as highlighted in the Part A of the study's questionnaire, which comprised; gender, education qualifications, work experience, annual turnover, and sector, are displayed in this section.

4.3.1 Gender

The participants in the "target sample" were asked to identify their gender. This was done to see whether gender has anything to do with how people think about financial innovation and lending. Table 4.2 summarizes the findings.

Table 4.2: Gender

		Frequency	Percent	Cumulative Percent
Valid	Male	201	65.0	65.0
	Female	108	35.0	100.0
	Total	309	100.0	

According to Table 4.2, 65 percent of the SME owners/managers surveyed were males while 35% percent were females. The fact that the number of responses was evenly distributed between genders indicates that there was no gender bias. Gender can have a bearing on the perception of the respondents towards financial innovation and access to credit.

4.3.2 Education Qualifications

Participants were requested provide information about their academic backgrounds. This was done so as to find out whether academic credentials had any impact on people's perceptions of financial innovation and access to credit. Table 4.3 summarizes the findings.

Table 4.3: Education Qualifications

		Frequency	Percent	Cumulative Percent
Valid	Secondary	46	14.9	14.9
	Diploma	137	44.3	59.2
	Bachelor Degree	108	35.0	94.2
	Postgraduate	18	5.8	100.0
	Total	309	100.0	

Table 4.3 shows the respondent's different educational credentials. The largest percentage of the respondents, who made up 44.3%, had achieved a diploma. A bachelor's degree represented a percentage of 35 percent of the respondents while those whose highest credentials were high school stood at 14.9 percent. The respondents who had attained postgraduate qualifications accounted for a proportion of 5.8 percent. The evenly distributed number of respondents according to their academic degrees indicates a lack of prejudice. Additionally, because majority of the respondents have attained post secondary education qualifications, it is more probable they will have adequate knowledge on financial innovation and access to credit.

4.3.3 Work Experience

The “target sample” was asked to specify their work experience with the SME they're presently involved in. This was done in an attempt to ascertain whether duration of working under one organization has anything to do with the public's view of financial innovation and the availability of credit. Table 4.4 summarizes the results.

Table 4.4: Work Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5 and below	77	24.9	24.9	24.9
	6 – 10	86	27.8	27.8	52.8
	11 – 15	78	25.2	25.2	78.0
	16 – 20	45	14.6	14.6	92.6
	21 and above	23	7.4	7.4	100.0
	Total	309	100.0	100.0	

Table 4.4 shows that the largest portion of respondents, who make up 27.8%, had been engaged in their current SMEs for 6 to 10 years. The proportion of respondents who have been engaged in their respective SMEs for 11 to 15 and for 5 years below was 25.2% and 24.9% respectively. Individuals who had worked in their corresponding SMEs for 16 to 20 years were represented by 14.6 percent of the total. The smallest percentages of those who answered the survey questions (7.4 percent) had been engage in their current SMEs for 21 years and above. The even distribution of work experience may indicate an absence of prejudice and the random distribution of respondents. Employees who have been engaged in their respective SMEs for longer seem to be more inclined to be informed and knowledgeable about credit access and financial innovation.

4.3.4 Annual Turnover

The “target sample” was asked to report the yearly turnover of the individual SMEs that the study was interested in to know the analysis. The main agenda was to carry out an evaluation of the respective target sample to determine whether these target samples can be categorized as SMEs or not. Taking a look at Kenya, a criteria on the categorization of SMEs is set out in the 2012 Micro- and Small Enterprises Act. It leads to micro enterprises having sales below KES 0.5 million per annum. In respect to that, the small enterprises do fall in the category of

companies as they have their respective annual sales ranging between half a million Kenya shillings and on the highest being 5 million Kenya shillings. Additionally, a survey by the Kenya National Bureau of Statistics (KNBS) in 2017, outlines that Medium enterprises are firms that have a turnover range of between KES 5,000,000 to KES 800,000,000. The findings are displayed in Table 4.5.

Table 4.5: Annual Turnover

N	Valid	309
	Missing	0
Mean		49442071.1974
Median		19000000.0000
Std. Deviation		81743932.08098
Minimum		3000000.00
Maximum		700000000.00

Table 4.5 exhibits that the minimum annual turnover was KES 3 million, while the maximum turnover was KES 700 million. This indicates that there was no micro-enterprise that was included in the study sample. Consequently, SMEs were included in sample. The mean annual turnover exhibited was KES 49,442,071.20 with a standard deviation of ± KES 81,743,932.08. A median turnover of KES 19,000,000 was also exhibited. The unequal distribution of yearly sales is a sign of partiality indicating that companies have not been distributed randomly. Nonetheless, the medium enterprises might constitute the bulk of SMEs. Thus, the measures of central tendency displayed in Table 4.5 exhibit that most of the firms included in the survey sample were medium enterprises. Additionally, the measures of dispersion measures of dispersion entailing the minimum and maximum statistic displayed in Table 4.5 displayed that no micro enterprise was covered in the current study's analysis.

4.3.5 Sector

The "target sample" was asked to specify the sector in which the SME that they are currently engaged in operates. This was to determine if the sector an SME operates in has any bearing on credit accessibility. Table 4.6 summarizes the findings.

Table 4.6: Sector

		Frequency	Percent	Cumulative Percent
Valid	Raw Material Extraction	89	28.8	28.8
	Agriculture	33	10.7	39.5
	Manufacturing	27	8.7	48.2
	Retail	36	11.7	59.9
	Financial Services	42	13.6	73.5
	Hospitality and Leisure	52	16.8	90.3
	Communication	7	2.3	92.6
	IT	17	5.5	98.1
	Education	6	1.9	100.0
	Total	309	100.0	

According to Table 4.6, the greatest share of the SMEs sampled, with a proportion of 28.8%, operated in the raw material extraction. A proportion of 16.8%, 13.6%, 11.7%, 10.7%, 8.7%, 5.5%, and 2.3% of the SMEs sampled operated in the hospitality and leisure, financial services, retail, agriculture, manufacturing, information technology, and communication sectors respectively. The least proportion of the sampled SMEs, which entailed 1.9%, operated in the education sector. The even dispersion of industries in which the enterprises operate indicates that there was no prejudice and that the firms were assigned at random.

4.4 Descriptive Statistics

The study was based on descriptive cross-sectional research, because it permits the generalization of results, analysis and related variables. Product and process innovation were

two of the financial innovation aspects examined in the study. Additionally, firm size and firm age were the studies control variables while the study's response variable was credit access.

4.4.1 Product Innovation

The study participants were asked to evaluate the characteristics of product innovation shown by their particular financial service providers. The variable was rated on a 5-point Likert scale using a standard measurement scale to quantify the respondent's opinion of product innovation at their individual financial institutions. Consequently descriptive data on product innovation were obtained and the results are presented in Table 4.7.

Table 4.7: Product Innovation Descriptive Statistics

	N	Mean	Std. Deviation
To what extent are small business loan products offered by your financial services provider	309	3.4628	1.45140
To what extent are various bank account products offered to you by your financial services provider	309	3.4175	1.47836
To what extent are debit cards are offered by your financial services provider	309	3.7767	1.21355
To what extent are credit cards are offered by your financial services provider	309	3.7120	1.34039
To what extent does your financial service provider have quality products that generate your customer satisfaction	309	3.6214	1.27755
To what extent does your financial service provider usually generate new products	309	3.6440	1.33975
To what extent does your financial service provider usually make improvements on current products	309	3.5793	1.38792
Composite Mean and STDDEV		3.6020	1.35556
Valid N (listwise)	309		

Table 4.7 displays that debit cards are offered to a great extent by the respective financial service providers, this is due to the fact that the characteristic mean is 3.7767 and a standard deviation of 1.21355. Additionally, it is shown that the respective financial service providers offer various bank account products to a great extent. In terms of this characteristic, the mean is 3.4175 and the standard deviation is 1.47836. The respective financial service providers offer credit cards to a great extent. In terms of this characteristic, the mean is 3.7120 and the standard deviation is 1.34039. The respective financial service providers usually generate new products to a great extent. In terms of this characteristic, the mean is 3.6440 and the standard deviation is 1.33975.

The respective financial service providers, to a great extent, have quality products that generate customer satisfaction. In terms of this characteristic, the mean is 3.6214 and the standard deviation is 1.27755. The respective financial service providers usually make improvements on current products to a great extent. In terms of this characteristic, the mean is 3.5793 and the standard deviation is 1.38792. Finally, Table 4.6 exhibits that small business loan products are offered by the respective financial services providers to a great extent. In terms of this characteristic, the mean is 3.4628 and the standard deviation is 1.45140. The composite mean of the characteristic was 3.602 and the composite standard deviation of the characteristics was 1.35556. This signifies that product innovation is highly shown by the various financial service providers as one element of financial innovation.

4.4.2 Process Innovation

The study participants were requested to evaluate their individual financial service providers' characteristics of process innovation. An ordinary measuring scale was used to assess the variable by means of a Likert scale of five points to quantify the respondent's opinion of

process innovation in the different financial institutions. Therefore, descriptive statistics for process innovation were generated and Table 4.8 presents the findings of the study.

Table 4.8: Process Innovation Descriptive Statistics

	N	Mean	Std. Deviation
How often does your financial services provider offer internet-banking services?	309	3.5663	1.53941
How often does your financial services provider offer mobile banking services?	309	3.7379	1.25844
How often does your financial services provider offer Automated Teller Machines for customer withdrawals?	309	3.4660	1.45818
How often does your financial services provider offer agency-banking services?	309	3.8770	1.20244
How often is the speed of processing of your transactions fast in your financial services?	309	3.8932	1.17810
How often is the security of your deposits and data guaranteed in your financial services provider?	309	3.8026	1.34955
Composite Mean and STDEV		3.7238	1.33102
Valid N (listwise)	309		

Table 4.8 displays that the respective financial service providers often offer internet-banking services, this is because the attribute exhibits a mean of 3.5663 and a 1.53941 STDEV. It is further displayed that the respective financial service providers often offer mobile banking services. In terms of this characteristic, the mean is 3.7379 and the standard deviation is 1.25844. The respective financial service providers often offer Automated Teller Machines for customer withdrawals. In terms of this characteristic, the mean is 3.4660 and the standard deviation is 1.45818. The respective financial service providers often offer agency-banking services. In terms of this characteristic, the mean is 3.8770 and the standard deviation is 1.20244.

The respective financial service providers often speed up processing of transactions while

offering financial services. In terms of this characteristic, the mean is 3.8932 and the standard deviation is 1.17810. Finally, the security of deposits and data is often guaranteed in the respective financial service providers. In terms of this characteristic, the mean is 3.8026 and the standard deviation is 1.34955. The composite mean of the characteristic was 3.7238 and the composite standard deviation of the characteristic was 1.32102. This leads to an inference that financial service providers often greatly exhibit the innovation process as a part of the major financial innovation aspects.

4.4.3 Firm Age

A descriptive analysis of firm age was conducted. Firm age is of the interval measurement scale, which was transformed to the ratio scale by applying natural logarithms for purposes of conducting the multiple linear regressions. The descriptive analysis included measures of central tendency that entailed mean together with deviation of standard and the median, and measures of dispersion that included the minimum and maximum statistic. Table 4.9 displays the descriptive statistics.

Table 4.9 Firm Age Descriptive Statistics

N	Valid	309
	Missing	0
Mean		12.15
Median		12.00
Std. Deviation		5.084
Minimum		4
Maximum		26

The maximum figure for firm age is 26 years, according to Table 4.9, and the lowest value is 4 years. The mean was 12.15 years and the value of the standard deviation depicts variability in firm age of ±5.084 years. The measure of central tendency that entailed the median was 12 years.

4.4.4 Firm Size

A descriptive analysis of firm size is conducted. Firm size is of the interval measurement scale, which was transformed to the ratio scale by applying natural logarithms for purposes of conducting the multiple linear regressions. The descriptive analysis included measures of central tendency that entailed mean together with deviation of standard and the median, and measures of dispersion that included the minimum and maximum statistic. Table 4.10 summarizes the results.

Table 4.10: Firm Size Descriptive Statistics

N	Valid	309
	Missing	0
Mean		178523236.2460
Median		102370000.0000
Std. Deviation		195437921.86722
Minimum		7000000.00
Maximum		1200000000.00

The maximum number for company size is KES 1.2 billion, while the lowest value is KES 7 million, according to Table 4.10. The mean was KES 178.52 million and the value of the standard deviation depicts variability in firm size of ± KES 195.44 million. The measure of central tendency that entailed the median was KES 102.37 million.

4.4.5 Access to Credit

The participants were requested to evaluate the characteristics of credit access they had with their various financial service providers. The respondent's views on access to credit in their individual financial institutions were quantified using an ordinal measuring scale and a five-point Likert scale. As a result, credit descriptive statistics were obtained, and the results are presented in Table 4.11.

Table 4.11: Access to Credit Descriptive Statistics

	N	Mean	Std. Deviation
Wide variety of loan facilities	309	4.0518	1.10661
Quick processing of loan application	309	4.0324	1.20291
Affordable interest rate/cost of credit	309	4.0647	.99790
Convenient repayment periods for credit advanced	309	3.7929	1.15481
Unsecured loan facilities	309	4.1424	1.03468
Composite Mean and STDEV		4.0168	1.09938
Valid N (listwise)	309		

Table 4.11 displays that the respective financial service providers always offer a wide variety of loan facilities, this is because the attribute exhibits a mean of 4.0518 and a 1.10661 STDEV. It is further displayed that the respective financial service providers always perform quick processing of loan applications. In terms of this characteristic, the mean 4.0324 and the standard deviation is 1.20291. The respective financial service providers always offer affordable interest rate/cost of credit. In terms of this characteristic, the mean is 4.0647 and the standard deviation is 0.9979.

The respective financial service providers often offer convenient repayment periods for credit advanced. In terms of this characteristic, the mean is 3.7929 and the standard deviation is 1.15481. Finally, the respective financial service providers always offer unsecured loan facilities. In terms of this characteristic, the mean 4.1424 and the standard deviation is 1.03468. The composite mean of the characteristics was 4.0168 and the composite standard deviation of the characteristics was 1.09938. This signifies that the SMEs always access credit from their respective financial service providers.

4.5 Diagnostic Tests

To fulfil the analysis of Best Linear Unbiased Estimators (BLUE), there were diagnostic tests

that were carried out much earlier to carrying out the linear regression. Tests such as normality tests, homoscedasticity tests, and multicollinearity tests are some of the tests that were diagnostically carried out in this research. To determine normality of the distribution, the Shapiro-Wilk model was used for this particular test and later used the used the Kolmogorov-Smirnov model to complement it. Test of Breusch-Pagan was employed to determine homoscedasticity while to establish multi-collinearity, tolerance and VIF were adopted.

4.5.1 Normality Test

The table below, i.e. 4.12 gives an emphasis of the normal distribution analysis linked to the study variables.

Table 4.12: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cred_Acc	.272	309	.000	.790	309	.000
Prod_Innov	.278	309	.000	.839	309	.000
Process_Innov	.218	309	.000	.853	309	.000
Ln_FirmAge	.152	309	.000	.920	309	.000
Ln_FirmSize	.160	309	.000	.953	309	.000

a. Lilliefors Significance Correction

Both Kolmogrov-Sminorv and Shapiro-significant Wilk's values for all variables are lower than the α values (0.05) as indicated in Table 4.12. Therefore, the variables' data series are not regularly distributed. Standardization is the cure for non-normal data. The data series of all variables were thus normalized as a means to correct distribution non-normality.

4.5.2 Test for Homoscedasticity

Test for homoscedasticity for all of predictor variables used in this research is summarized in

Table 4.13. The Breusch-Pagan test was used to determine the results. In SPSS, there's really no explicit Breusch-Pagan heteroscedasticity test. Nonetheless, there is a less straightforward way to go about it. The residuals, both standardized plus unstandardized are saved and transformed through squaring them and the resulting variable is then regressed with all of the study's predictor variables. The resulting Analysis of Variance output is the Breusch-Pagan test.

Table 4.13: Test for Homoscedasticity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.658	4	1.664	.635	.638[b]
	Residual	796.218	304	2.619		
	Total	802.876	308			

a. Dependent Variable: RES_1_SQ

b. Predictors: (Constant), Ln_FirmSize, Ln_FirmAge, Process_Innov, Prod_Innov

Because the significance factor as shown in the above table is i.e. (0.638) is higher as compared to the threshold value (0.05), it is clear that the serial data for all the entire response variable are homoscedastic, as demonstrated by the findings.

4.5.3 Test for Multicollinearity

Table 4.14 shows the results for VIF and tolerance to ascertain multi-collinearity test.

Table 4.14: Multicollinearity Statistics

		Collinearity Statistics	
Model		Tolerance	VIF
1	Prod_Innov	.410	2.441
	Process_Innov	.411	2.434
	Ln_FirmAge	.995	1.005
	Ln_FirmSize	.916	1.092

a. Dependent Variable: Cred_Acc

Table 4.14 findings reveal all of predictor variables used for the research are more than 0.1 in tolerance, while the value of VIF falls between 1 and 10. Thus, the predictor variables in the research do not exhibit multicollinearity.

4.6 Inferential Statistics

The relationship, strength and direction of the link between the response and predictor variables are determined using inferential statistics. This section contains inferential statistic used in this research, which comprise of analyses of multiple linear regression and correlation. The characteristics of several variables on a scale of ordinal that used the 5-point Likert scale were summed together to form a complete variable. The median value for all characteristics was estimated.

4.6.1 Correlation Analysis

Correlation analysis measures two or more aspects to regulate or ascertain the degree to which the values for the variables are associated (Higgins, 2005). The degree and connection of a linear association between two factors is measured by correlation, which ranges from -0.1 to +0.1 (Skeran & Roger, 2009). The current study employed ordinal scale of measurement, thus Spearman's correlation, denoted by (r_s), displays the direction and strength of association among financial innovation, firm age, firm size, and access to credit. Spearman correlation is frequently employed for evaluating connections with ordinal variables whereas the extent of link among continuous variables is determined by Pearson correlation (Hauke & Kossowski, 2011). Table 4.15 summarizes the findings.

Table 4.15: Correlation Analysis

			Cred_Acc	Prod_Innov	Process_Innov	Ln_FirmAge	Ln_FirmSize
Spearman's rho	Cred_Acc	Correlation Coefficient	1.000	-.017	-.035	-.093	-.044
		Sig. (2-tailed)	.	.760	.537	.104	.444
	Prod_Innov	Correlation Coefficient	-.017	1.000	.712**	-.028	.233**
		Sig. (2-tailed)	.760	.	.000	.624	.000
	Process_Innov	Correlation Coefficient	-.035	.712**	1.000	-.022	.210**
		Sig. (2-tailed)	.537	.000	.	.705	.000
	Ln_FirmAge	Correlation Coefficient	-.093	-.028	-.022	1.000	.042
		Sig. (2-tailed)	.104	.624	.705	.	.464
	Ln_FirmSize	Correlation Coefficient	-.044	.233**	.210**	.042	1.000
		Sig. (2-tailed)	.444	.000	.000	.464	.
		N	309	309	309	309	309

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

The results in Table 4.15 show that non of the predictor factors used in the study associated substantially within the 5 percent significance level to access to credit. This is due to the fact that their significance values are higher than the α (0.05). There is no significant association,

according to the null hypothesis, but there is a significant link according to the alternative hypothesis. The null hypothesis cannot be rejected since the significance levels of all predictor variables exceed the α (0.05). As a result, at the 95 percent confidence range, the predictor factors are not substantially associated to credit access. Access to credit had a positive non-significant association with all of the predictor variables included in the study.

4.6.2 Multiple Linear Regression Analysis

The existing link between the cause as well as the effect of the variables used in the prediction as applied throughout the research with relation to the response variable, was thus assessed by making use of the multiple model of linear regression. From the display given by the Shapiro-Wilk and Kolmogrov-Sminorv tests on table 4.12, it is evident that the not all the used variables were normally distributed, hence the remedy to make the corrections of non-normal had to be formulated and for that reason data standardization was done. A significance level of 5% was utilized for the multiple linear regression analysis. The critical values displayed in the variance analysis as well as the outputs of the Model Coefficients were contrasted to the significance factors that were gotten after carrying out the study analysis. Both the T and F-value statistics that were obtained in the analysis of the study were also contrasted to values critically obtained.

Table 4.16: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.112[a]	.012	-.001	1.00027298

a. Predictors: (Constant), Zscore(Ln_FirmSize), Zscore(Ln_FirmAge), Zscore(Process_Innov), Zscore(Prod_Innov)

The Determination Co-efficient (R Square) shows changes in the variable given as response as a result of modifications of the predictor variables that were used in the model of research.

Table 4.16 data reveal that the value of R Square is 0.012, which shows that the model of financial innovation, company age, and business size results in 1.2 percent of credit access differences. Other variables not included in the model account for 98.8% of differences in credit access.

Table 4.17: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.834	4	.959	.958	.431[b]
	Residual	304.166	304	1.001		
	Total	308.000	308			

a. Dependent Variable: Zscore(Cred_Acc)

b. Predictors: (Constant), Zscore(Ln_FirmSize), Zscore(Ln_FirmAge), Zscore(Process_Innov), Zscore(Prod_Innov)

The results shown in Table 4.17 display that the significance value of obtained the current research (0.431) exceeds the crucial threshold used in the study (0.05). This means that the model of entailing financial innovation, corporate age and corporate size is insufficient to forecast access to credit. The critical F-value in this research is 2.40067832, whereby the F-value(0.958) obtained in the research study is smaller than the crucial threshold (0.05). This means that the model entailing; financial innovation, company age and corporate size is not adequate to forecast access to finance.

Table 4.18: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.225E-16	.057		.000	1.000
	Zscore(Prod_Innov)	.124	.089	.124	1.394	.164
	Zscore(Process_Innov)	-.140	.089	-.140	-1.571	.117
	Zscore(Ln_FirmAge)	-.059	.057	-.059	-1.033	.303
	Zscore(Ln_FirmSize)	-.003	.060	-.003	-.050	.960

a. Dependent Variable: Zscore(Cred_Acc)

The results in Table 4.18 demonstrate that product innovation, process innovation, company age and company size each individually do not have a significant relationship with access to financing. Their significance levels are all higher than the crucial threshold used in the research of 0.05. In addition, for a two-tail test the critical T value is ±1.9675. The T values of all the independent variable included in the research fell under ±1.9675.

4.7 Interpretation and Discussion of Findings

This study aimed at finding the connection between financial innovation and access to credit for small and medium-sized companies in Nairobi County, Kenya. It also aimed at unraveling the impact of; product innovation, process innovation, SME age, and also SME size, on access to credit by SMEs in Nairobi County, Kenya. The variables of the research were normally not distributed as shown in table 4.12 in the Shapiro-Wilk and Kolmogrov-Sminorv tests. The test statistics of the parameters were thus normalized to correct non-normal distribution.

The study findings established that product innovation is exhibited to a high extent in Kenyan financial service providers. It further revealed that process innovation is also exhibited to a high extent in Kenyan financial service providers. Additional study findings showcased that SMEs in Nairobi County always access credit from their respective financial service providers. Further findings were that the SMEs in Nairobi County's Central Business District have been in operation for considerable amount of time, an average of 12 years. This was revealed by the central tendency measures entailing the mean and median employed on firm age. The final study finding from the descriptive statistics section revealed that no micro enterprise was covered in the study analysis, only small and medium sized companies were covered. This was revealed by the measures of dispersion entailing the minimum and

maximum statistic employed on the firm size variable.

Further findings were that that none of the financial innovation aspects, firm age and firm size were significantly correlated at the 5% significance level to access to credit. Additional findings were that the model entailing financial innovation, firm age, and firm size explains to a least extent access to credit by having a co-efficient 1.4% as the determinant. The findings that were identified included models related to the financial innovation, firm age, and firm size does not significantly predict access to credit. The final findings were that product innovation, process innovation, SME firm age, and SME firm size did not individually have a significant relationship with access to credit.

The study finding that financial innovation does not have a significant impact on access to credit contradicts the Diffusion of Innovation (DOI) theory by Rogers's (1962) which stipulated that innovations by the financial institutions that are tailor-made for the SMEs can diffuse and be adopted by the SMEs and these innovations can be geared to facilitating the SMEs to attain easier access to credit. The study finding is also not congruent to Beck et al.'s (2016) assertion that financial innovations provide multiple aims and therefore covering aspects like boosting credit creation and that financial innovation occasions or rather takes up the advent of platforms used for lending that in one way or another mediate the pieces of information to flow right from the banking system that is conventional to the borrowers that are unbanked while additionally aiding in the analysis of credit risk on top of risk sharing.

However, the current study findings are similar to the study findings by Mbowe, Shirima, and Kimolo (2020) who did an assessment of the extent to which financial innovations aid Tanzania's SMEs have accessibility to credit. The findings reveal that the need to meet

business operational costs is one of the factors that drive SMEs to borrow money through creative channels. Despite progress in improving MSMEs' access to financial services, access to loans by either on personal terms or businesses terms through the particular innovative platforms remains limited. The innovation variable's coefficient was found to be statistically negligible. Unfavourable loan terms, high lending rates, a lack of understanding contribute to this anomaly.

Carballo-Huerta and González-Ibarra's (2008) assertion that financial innovations, in particular, have make it easier for households to obtain financing.is not congruent to the current study findings. Nemoto, and Koreen (2019) investigated whether technological innovation can lead to higher financial access for SMEs. The study established that existing technology data to improve traditional lending; expanding funding options, including capital market finance; strengthening financial institutions' consulting functions. This also is not parallel with the current study findings.

Creehan (2018) did a study to find out the impact of digital innovation on the improvement of credit accessibility to small business in Asia. From the findings, this study revealed that the new digital innovations can be used in enhancing the accessibility of finances to SMEs in Asia and this would also boost the long-term economic growth. This is not in tandem to the current study findings. Khan, Shah, and Rizwan (2017) analyzed innovation and access to finance in developing markets. The study findings established that bank financing plays a key task in motivating and promoting an assortment of innovative activities in the developing economies. Further findings were that financial constraints resulted in decreasing the innovation output novelty. Additionally, the effect of financial constraints is more felt for less novel products as compared to more novel products. The study findings are not similar to the

current study findings.

Kojo (2013) investigated microfinance trends in Ghana. The study endeavored to find out investigate the various inventions offered by microfinance institutions in Ghana's three northern regions. As indicated by the findings, product innovation, research and development innovation are all examples of innovations that have been used in various ways. The study also established that the underserved market is huge in the study area and for it to be exploited; the management of MFIs needs to have committed efforts for developing unique products in order to fulfil the marginalized and the poor needs. The study findings are not congruent to the current study findings.

Atieno (2013) explored how SMEs access to finance is impacted innovations by Microfinance Institutions (MFI) in Kenya. The study interrogated the relationship between MFIs transformational products for SMEs and their impact on accessibility of finance by SMEs. The study concluded that there is a positive correlation between access to finance and innovative Microfinance products. It was further concluded that innovative saving products and location played a significant role to improve access to finance by SMEs. These findings are not in tandem with the current study findings. However, the study also found out that the four Deposit Taking Microfinance Institutions had introduced a wide variety of innovative products in the past four years; innovations that include, savings and loans, marketing innovations, micro insurance and location innovation. This finding is congruent to the current study finding that financial innovations are exhibited to a high extent in financial service providers located in Nairobi County and also process innovation is often exhibited in these financial service providers.

The study finding that firm age has neither a significant association nor relationship with access to credit contradicts Moore's (2015) assertion that the age of an SME depicts their experience in the market and that stability of an SME is measured through their experience with their clientele and is advanced credit by its suppliers. A stable SME is therefore able to generate a lot of income compared to an unstable SME. An enterprise that is still young is considered less stable and perceived to low level of experience in the financial market making it hard for it to easily access loans from financial institutions because their exists information variations.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

The overview of the research results, as well as conclusions and suggestions for policymakers and practitioners, are all included in this section. In addition, the study limitations and recommendations for further research are discussed.

5.2 Summary

The goal of the current study was to determine the connection between access to credit and financial innovation of SMEs in Nairobi County, Kenya. The specific objectives of the current study was to figure out how product innovation, process innovation, SME firm age, and SME firm size impact on access to credit by SMEs in Nairobi County, Kenya.

Multiple linear regression, Descriptive statistics, and correlation analysis were comprehensively used to achieve the study objectives. According to the descriptive data, product innovation is exhibited to a high extent in Kenyan financial service providers. Further findings revealed that process innovation is also exhibited to a high extent in Kenyan financial service providers. Additional study findings showcased that SMEs in Nairobi County always access credit from their respective financial service providers. Further findings were that the SMEs in Nairobi County's Central Business District have been in operation for considerable amount of time, an average of 12 years. The final study finding from the descriptive statistics section revealed that no micro enterprise was covered in the study analysis, only small and medium sized companies were covered.

The examination of the correlation used in the research found that none of the financial

innovation aspects and also firm age and firm size were strongly linked within the 5 percent significance level to credit access. Analysis from multiple linear regressions showed that model entailing financial innovation, firm age, and firm size explains to a least extent access to credit by the determination co-efficient of 1.4 percent exhibited. Furthermore results revealed that the model that includes; financial innovation, firm age, and firm size does not significantly predict access to credit. The final findings were that product innovation, process innovation, SME firm age, and SME firm size did not individually have a significant relationship with access to credit.

5.3 Conclusion

This section contains the research's conclusion. The conclusion is written in accordance with the study's overarching objective. The study's broad objective was to to determine the effect of financial innovation on access to credit by SMEs in Nairobi County, Kenya. The study concluded that financial innovation does not significantly impact on access to credit by SMEs. The study conclusion contradicts the Diffusion of Innovation (DOI) theory by Rogers's (1962) which stipulated that innovations by the financial institutions that are tailor-made for the SMEs can diffuse and be adopted by the SMEs and these innovations can be geared to facilitating the SMEs to attain easier access to credit.

The study's specific objectives were to determine the effect of product innovation, process innovation, SME firm age, and SME firm size on access to credit by SMEs in Nairobi County, Kenya. The study concluded that product innovation, process innovation, SME firm age, and SME firm size do not significantly impact on access to credit by SMEs.

5.4 Recommendations

Those who will conduct future research in the area of finance will benefit from the results of this study in regards innovation and access to credit. Subsequent researchers interested in financial innovation and credit availability will use the study results as a reference. The study will bring about curiosity among scholars and challenge them into carrying out further studies on access to credit by SMEs. Similarly, the work will provide resourceful material for future scholars and researcher interested in the subject of financial innovation and financial inclusion for SMEs, especially in highly marginalized areas.

Policy recommendations that are created are meant to aid the officials of the government as well as the policy formulators that are in the financial sector, mainly the regulator's the Central Bank of Kenya (CBK) and Sacco Societies Regulatory Authority (SASRA) and the Treasury, that since it has been established that financial innovation does not have a significant influence on access to credit, the policy makers should not majorly focus on financial innovation when trying boost access to credit. The research project findings will serve as a road-map for key government bodies and authorities as they develop policies and procedures to strengthen the financial sector. The current study findings will provide empirical findings to the government and other relevant agency to help guide the formulation and implementation of relevant policies and regulation. Similarly, these findings will not only help highlight financial inclusion gaps in marginalized areas with high inequality but also suggest ways of incorporating financial innovation to curb the needs for inclusion.

Exploring the effect of financial innovation on access to credit is specifically important to SME enablers such as the Micro and Small Enterprises Authority (MSEA) and the Ministry of Industrialization and Trade, specifically the department of Trade to craft strategies on how to spur the growth of SMEs. This is because SMEs are present in every sector and also SMEs

employ most Kenyans. Additionally, SMEs are the highest income generator as well as the largest contributor to poverty alleviation. Similarly, in Kenya, SMEs stand out as the largest contributor to the economy by providing jobs to more than 80% of the entire working population. Its contribution to the Gross Domestic Product has risen from 13 percent in the early 1990s to 40 percent in 2008 (Janet & Ngugi, 2014). The Central Bank of Kenya (2018) National Economic Survey report found out that SMEs make up 98% of all enterprises in the country. According to the report, the sector not only creates about 30 percent of new jobs each year but also contributed a 3 percent growth of the total 6.4% growth of the GDP in 2017.

The finding of the study that financial innovation does not have a significant influence on access to credit generates recommendations to the financial sector practitioners and consultants not to focus on financial innovation when crafting strategies to increase their loan books. The study findings will also educate the SMEs owners/managers as well as the general public on the benefits of financial innovation in ensuring credit access. Additionally, financial entrepreneurs will get to understand the relationship of financial innovation and access to credit to device ways of implementing financial innovations as well as the challenges and opportunities surrounding the subject.

5.5 Recommendations for Further Study

To explore the impact of financial innovation on access to credit is very important for financial sector policy makers, mainly regulators such as SASRA, CBK, and as well as National Treasury, practitioners in the financial sector, SME owners/managers and consultants. Exploration of financial innovation on access to credit is also important to SME enablers like MSEA and Industrialization and Trade ministry, specifically the department of

Trade to craft strategies on how to spur the growth of SMEs.

However, the current study has been performed in the context of SMEs; the same study might be repeated across various sectors of the economy to see if the current study results were contained. The research may be conducted in the context of the listed companies, for instance. The present research has been performed solely in Kenya, additional investigations may be carried out in Kenya, in African or global settings to determine if current results of the studies are conveyed.

The present research has solely taken into account the elements of financial innovation that include product and process changes. A research may be carried out to cover additional areas of financial innovation. In addition, a research may be carried out to identify elements of financial innovation. Additional research may be carried out to see if there are variables that moderate, intervene, or mediate the connection between financial innovation and access to credit, other than company age and size.

This study has only utilized a combination of primary and secondary data, the study can be followed by studies using primary or secondary data alone. This may either compliment or criticize the study's findings. The statistical analytical techniques of the present research were descriptive statistics, multiple linear regressions and correlation analyses. For example, additional methods for statistical analysis; cluster analyses, discriminant analysis, granger causality, components analysis, among other things, further studies should consider to incorporate them.

5.6 Limitations of the Study

The present research was a formal study and it applied the deductive research approach for the reason that it was guided by pertinent literature and theories to further test the theories and empirical literature findings. Employing theories and previous empirical literature assists in laying the groundwork for comprehending the research issue being investigated. However, there was absence of previous researches on the effect of financial technology on access to credit. The research was carried out solely in the Kenyan SME sector in view of time and financial limitations, which does not clearly demonstrate the present outcome if other sectors of economy are taken into consideration. In addition, there would be more uncertainty if comparable research were repeated in other nations.

While the research primarily dealt with primary data sources using questionnaires, significant difficulties such as respondent failure or a misunderstanding of the questionnaire were faced. Also, due to the Covid-19 pandemic, administering the study questionnaire was challenging due to the owners/managers of the SMEs not wanting to have any contact with the study's research assistants. Additionally, most of the SME owners/managers were not technologically literate hence electronic questionnaires could not be administered.

Furthermore, because of the time and financial constraints, the study was a cross-sectional study. A panel study could have been able to investigate the research problem, how financial innovation impacts on access to credit by SMEs, and to measure change or stability over time. Another limitation of the current study was that it was not clear if the respondents comprehended the study questionnaire even though the study's research assistants were trained to clarify the questionnaire to the respondents. In addition, raw information cannot also be used and thus data must be coded into SPSS to get synchronized information to assemble and make conclusions. The procedure also took a significant amount of time to

compile and synchronize the data over time.

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APPENDICES

Appendix I: Letter of Introduction

University of Nairobi

Dear Respondent

My name is Lei Zheng, a graduate student at the University of Nairobi. As part of my dissertation I am examining:

THE EFFECT OF FINANCIAL INNOVATION ON CREDIT ACCESS BY SMALL AND MEDUIM ENTERPRIES IN NAIROBI COUNTY, KENYA

The following questionnaire will require approximately five minutes of your time to complete. This is an academic research and information provided will be used for academic purpose only. There will be no reference to your name and strict ethical principles will be observed to ensure confidentiality. Please do not indicate your name in the questionnaire.

CONSENT SECTION

- I agree to participate in this study
- I do not agree to participate in this study

Appendix II: Questionnaire

PART A: RESPONDENTS AND FIRM DEMOGRAPHICS

1. What is your title/role in your respective organization?

…….

2. What is your gender?

Male ( ) Female ( )

3. What is your highest education level?

Secondary ( ) Diploma ( ) Bachelor Degree ( ) Postgraduate ( )

4. What is your work experience in your current role?

5 and below ( ) 6 – 10 ( ) 11 – 15 ( ) 16 – 20 ( ) 21 and above ( )

5. Kindly specify the year of incorporation of your company

.....

6. Please specify the annual turnover (approx. in nearest thousands) of your company for the year 2015 to 2019.

.....

7. What sector does your organization operate in?

Raw Material Extraction ( ) Agriculture ( ) Manufacturing ( )

Construction ( ) Utilities ( ) Real Estate ( )

Retail ( ) Financial Services ( ) Hospitality and Leisure ( )

Communication ( ) IT ( ) Education ( )

8. Kindly specify the products/services that your organization delves in

.....

PART B: FINANCIAL INNOVATION

Product Innovation

10. Rate the extent the following products are offered by your financial services provider? Use 1- Least Extent, 2 – Small Extent, 3 – Moderate Extent, 4 – Great Extent, 5 – Very Great Extent

Component	1	2	3	4	5
To what extent are small business loan products offered by your financial services provider					
To what extent are various bank account products offered to you by your financial services provider					
To what extent are debit cards are offered by your financial services provider					
To what extent are credit cards are offered by your financial services provider					
To what extent does your financial service provider have quality					

products that generate your customer satisfaction					
To what extent does your financial service provider usually generate new products					
To what extent does your financial service provider usually make improvements on current products					

Process innovation

10. How generally does your financial services provider utilize the following processes to serve your banking needs? Use 1- Never, 2 - Rarely, 3 - Sometimes, 4 - Often, 5 - Always

Component	1	2	3	4	5
How often does your financial services provider offer internet-banking services?					
How often does your financial services provider offer mobile banking services?					
How often does your financial services provider offer Automated Teller Machines for customer withdrawals?					
How often does your financial services provider offer agency-banking services?					
How often is the speed of processing of your transactions fast in your financial services?					
How often is the security of your deposits and data guaranteed in your financial services provider?					

PART C: FIRM AGE

11. Please specify the number of years your organization in operation

.....

PART D: FIRM SIZE

12. Please specify the total assets which your company is in possession of

.....

PART E: ACCESS TO CREDIT

10. How generally does your financial services provider offer the following services? Use 1- Never, 2 - Rarely, 3 - Sometimes, 4 - Often, 5 – Always

Component	1	2	3	4	5
Wide variety of loan facilities					
Quick processing of loan application					
Affordable interest rate/cost of credit					
Convenient repayment periods for credit advanced					
Unsecured loan facilities					

Thanks for your Corporation!!

Appendix III: Data Collection Letter

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

Telephone: 020-8095398
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsities
Our Ref: **D61/11795/2018**

Tel: 020 8095398
Nairobi, Kenya
Date: 26th May2021

TO WHOM IT MAY CONCERN

The bearer of this letter, **Zheng Lei** of Registration Number **D61/11795/2018** is a Master of Business Administration (MBA) student of the University of Nairobi.

He is required to submit as part of his coursework assessment a research project report. We would like the student to do his project on **the effect of financial innovation on credit access by small and medium enterprise in Nairobi County, Kenya.** We would, therefore, appreciate if you assist him by allowing him to collect data within your organization for the research.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organization on request.

Thank you.

PHILIP NGIGI
FOR: DEAN, SCHOOL OF BUSINESS

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