

# **Effect of Fintech on Growth of Small and Medium Enterprises in Kiambu County, Kenya**

**NG'ANG'A PIUS NDUNG'U:**

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## **ABSTRACT**

*Small And Medium Enterprises businesses, (SMEs) are the backbone of the Kenya economy, accounting for the greater part more than 50% of total employment and more than eighty percent of growth in employment in the previous decade. The investigation indicated that, notwithstanding their implication, historical statistics illustrate that in every five SMEs three of them don't see their first year of their undertaking while 80 per cent of those that continue flop before the fifth year. The general objective of the study is to determine the effect of FinTech on growth of Small and Medium Enterprises (SME's) in Kiambu County. The overall objectives guiding this study was to determine how mobile money has influenced growth of SME's in Kiambu County, to establish how digital lending has impacted on growth of SME's in Kiambu County and to measure how online banking has influenced growth of SME's in Kiambu County. Some of the theories that were used in the study included; Technology Acceptance theory, Unified Theory of Acceptance and use of technology, Diffusion innovation Theory and Technology, organization and Environment theory. The study utilized descriptive illustrative design to accomplish the objectives. The population target under study was 4897 licensed SMEs that are in the County of Kiambu according to the Business Register of 2018. Stratified random sampling was applied and Krejcie & Morgan (1997) formula used to arrive at the sample size of 356 SMEs. The study used primary data obtained by means of a self-administered questionnaire. Using forty questionnaires to ensure data validity and reliability, a pilot test was performed. The data collected was analyzed using version 25 software of the Statistical Package for Social Sciences (SPSS). The quantitative information was analyzed using both inferential and descriptive statistics. Normality test was carried out to test for any outlier. The study also carried out model specification tests to determine whether linear regression analysis best fits the data. Coefficient was used to analyze the relationship between variables. The Pearson correlation was conducted to establish linear relationship between study variables. Regression analysis was conducted to establish the nature of relationship of which from the study there was a positive significance on effect of FinTech on growth of SMEs. From the study 16% of SME growth was attributed to mobile money, digital lending and online banking. The study recommends that financial institutions should take advantage of the increase in use of mobile money services to form collaborations with mobile phone services providers and provide flexible financial services to the traders. The study further suggests that comparative study ought to be carried to examine other variables and their effect on growth of SMEs that are not covered under this study.*

**Key Words:** *FinTech and Small and Medium Enterprises (SMEs)*

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## **I. Introduction**

### **1.1 Background of the study**

Development and advancement of digital era, technology has continued to play a vital role in the financial sector as emphasised by Chatchai and Ho-don Yan (2019) in their study on the impact of FinTech in the financial industry. With evolution of digital economy where by the entire world is unified through use of systems, financial institutions are expected to converge with the technology in providing services to their customers in order to meet their expectations.

In 1950's, automated teller machines (ATMs) were introduced in the market as form of financial technology (FinTech). These eased the burden of carrying cash. By 1960's people had embraced the technology and found no reason to keep on going to their branches in order to withdraw cash, and ATMs were viewed as a technology which would replace bank tellers and branches. In 1970's most institutions had started to see the future of technology in doing business and the first online stock trading was introduced. Come 1990's the business models had been transformed to Internet and E-commerce business models. Advanced business models had evolved by 21<sup>st</sup> century as a result of FinTech, as the financial institution were able to offer diversified products and services through digital lending, mobile wallets, payment applications and online banking (Cham,

2018). This is expected to increase the adoption of FinTech globally by 52% on average while the Fintech transaction are projected to increase to 9.82 USD trillion in 2023 from 5.49 USD trillion in 2019 (PWC report, 2019).

Through FinTech technology, financial institution are able to structure innovative products / solutions such as mobile money, online banking, digital lending, advisor sites such as robo, block chains, cloud data storage for different organizations. This would enhance technology embracement by most of the SMEs, who have been reluctant in adopting new technologies in their business. Growth in digital economy has left most of the small and medium enterprises (SME's) with no other option than to embrace technological. This has resulted to innovative business models through; improved receipts and payments systems, online invoicing and billing system and effective customer relationship management. All these is geared towards competitive advantage of the SMEs, increased economic opportunities and activities as well as economic growth of the Country. In addition, most SMEs have continued to suffer information asymmetry in regards to global market for the sake of expansion and growth. However, FinTech has played a vital role in mitigating this gap as it has been termed as an essential tool towards SME's stable growth and development of financial. Moreover, there has been improved liquidity in market enhancing efficient allocation of scarce resources to the SMEs (Chatchai and Hodon Yan, 2019).

An overall increase in the usage of mobile phones in developed world countries and developing countries among the SMEs. The most noteworthy trend however is the financial technology services such as mobile payment, mobile banking and mobile finance. As reported by Gartner (2012) and ITU (2014), the size of mobile transactions worldwide is projected to increase from USD 37.4 billion in 2011 to more than USD 1.13 trillion in 2014 through the use of mobile phone technology for both remittance and banking among SMEs, reflecting a 65% increase in growth and efficiency among SMEs using FinTech. There has been a positive development in the adoption by small and medium businesses of mobile payments in Kenya as a means of conducting their business transactions. This has been improved by the affordability of cell phones and the facilities they provide for online / mobile banking (Mbogo, 2010). He also noted that about 73% of SMEs that used financial innovation in their business recorded an increased growth overall.

The Kenyan government on its Vision 2030 position SMEs growth as one of the means of achieving the vision. According to Kithae (2012), Kenya's SMEs generate 80 percent of jobs, while the sector contributes only 18 percent of the country's GDP, so more support is needed to boost SME efficiency. In most of the developing countries in Africa SMEs are crucial and they contribute in sustaining economic growth and industrial development. SMEs in Kenya despite being recognized as one of the major sector that enhance industrial development and economic development they have not performed credibly well hence their contribution has not been achieved (Economy Survey 2012).

Information and Communication Technology (ICT) development has been a catalyst towards growth of FinTech. According to the study by Ghosh (2016), on effect of ICT in growth of business, it was concluded that ICT has played a major role in reducing cost for users, as well as business transaction cost incurred especially in developing countries. (Das, Chowdhury, and Seaborn, 2018) & (Andrianaivo and Kpodar, 2012).

The study of Mehrotra and Yetman (2015) emphasised that, ICT enhanced effective financial system through access of funds by SMEs, hence accelerating economic growth resulting to growth and expansion of the industries. Adoption of FinTech in most of the countries in the world, has seen a boom in SME sector, which is normally termed as driver of the economy around the world. Aim of the study was to establish the effects of Fintech on growth of SMEs with key focus to Kiambu County.

### **1.1.1 FinTech**

FinTech is an acronym of 'financial' and 'technology', whereby technology is deployed in an innovative way in delivering financial solutions. Being an emerging trend especially in developing countries, it has continued to attract public attention, due to its effectiveness and efficiency in delivery of financial solutions. Covid-19 has painted Fintech as the solution towards enhanced digital economy as customers were able to place orders, pay via mobile platforms. SMEs were able to thrive despite the distress economic situations, due to use of FinTech. Financial Technology (FinTech) has the capability to disrupt and transform finance in a number ways, mostly in emerging markets: such as payments, insurance, credit and financial compliance. There has been no agreed definition of Fintech (Puschmann, 2017; Schwabe, Dolata and Zavolokina, 2016). The study has summarized the definition based on few scholars as below;

Fintech was identified by Sweeney (2015); Kuo Chuen and Teo (2015) as a product centered on highly innovative and disruptive service technologies, especially in financial service companies. Fintech is related to encrypting systems that value, model, and process financial products such as money, contracts, stocks and bonds, as defined by Freedman (2016). Fintech is an innovation where technology is key enabler used in financial service (Ernst and Young, 2015).

Globally a flood of FinTech development is prodding a race to frame biological systems that convey esteem all inclusive particularly to European shoppers. European buyers are enormous enthusiasts of FinTech, and their excitement is motivating new ways to deal with the manner in which monetary administrations are conveyed (Huebner et al., 2019). Utilization of FinTech applications has become altogether in the course of recent years all through Europe. According to the EY Global FinTech Adoption Index 2019, FinTech acceptance among carefully dynamic shoppers reached 73 percent in the Netherlands, 71 percent in both Ireland and the UK, and 64 percent in Germany, Sweden and Switzerland, which are all at or above the worldwide normal of 64 percent. In 2015, the key year of the summary study by (World Economic Forum, 2015), 14% of carefully dynamic buyers were FinTech adopters, one example of the speed of growth in the UK.

The SMEs especially have risen and developed essentially by embracing FinTech. Some European computerized challenger banks have increased huge footing across provincial and worldwide markets, drawing in a huge number of clients since they propelled only a couple of years back. The SMEs have perceived the incredible job that FinTech can play in improving customer experiences, especially in these areas; they have ventured to improve their own FinTech recommendations (Andrew & Drew, 2017). They have additionally joined forces with FinTech in environments. The spread of open banking and SME operations, as mandated by the Revised Payment Service Directive of the European Union, known as PSD2 is one of the key drivers behind the rapid growth of FinTech in Europe among SMEs

The retail division and SMEs is maybe perhaps the greatest champ from late headways in budgetary innovation in East Africa (KPMG, 2017). In any case, progresses in FinTech are altering the way that clients shop coming up, yet additionally on the web. As in the remainder of the world, retail stages have built up in East Africa that lone exists on the web. All through East Africa, Jumia is maybe the best case of an online retail shipper. Jumia is an online entrance that offers shopping, travel, food supplies and removes, all conveyed to your home and paid for either by portable cash, MasterCard or money on appearance. Such markets have adopted FinTech services in running their business efficiently and also reach a wider market.

The Kenya Bureau of Statistics (KBS) information demonstrated that starting at 2016, 40% of all SME proprietors had business applications in their cell phones, and that while 29% of SMEs were had enrolled take care of tab/till clients, and 49.3% had versatile cash as methods for executing business. Further investigations done show that nine of the biggest Financial Technology firms offered installment stages or loaning administrations for SMEs (Deloitte, 2016). The investigation cites information from the Communications Authority of Kenya (CA), which features solid development in versatile trade contrasted with individual to individual (P2P) installments, with the previous account of 85.5% development in exchanges in 2017, against 8.4% for the last mentioned.

Different members drivers are the like of Tala, Branch which offer loaning administrations for the most part to SMEs and have scattered right around a billion shillings since fusing in 2011 and 2015. Such rivalry to serve the regular mwananchi and independent company as far as advanced loaning has seen likewise the banks offer portable credits; such cases incorporate KCB Mpesa which started in 2015 and Timiza which is related with Barclay's banks. Kenya was positioned in front or in front of Nigeria Tanzania and South Africa as the most encouraging state for FinTech selection this was finished by advanced outskirts foundation report by (PwC, 2017).

Over half of the respondents in the examination said that the high wages was because of energetic rivalry among FinTech organizations, suggesting that the ability pool is constrained and pulls in a critical premium. Without an endorsed lawful structure for information assurance, digital security dangers additionally represent a noteworthy test to firms and SMEs receiving FinTech arrangements going ahead. Report on Global Economic Crimes found that up to 41% of Kenyan organizations came up short on an operational digital security program, introducing open doors for would-be digital hoodlums (PwC 2018). For the most part FinTech in Kenya has quickly developed in the previous five years as most business and SMEs consider it to be a method of cost productivity and arriving at a more extensive market.

### **1.1.2 Growth of Small and Medium Enterprises (SME's)**

There has been no unified definition of the SMEs, since different countries and bank adopt unique meaning of the SMEs. For instance, United Kingdom (UK) through its Companies Act (2016), defines SMEs are the companies whose turnover ranges between £10.2 million to £36 million, balance sheet total from £5.1 million to £18 million and the number of employees between 50 to 250.

According to Subhan *et al.*, (2013), SMEs have continued to play a vital role in job creation, employment creation, poverty reduction, spurring innovations, creating new products thus being considered as contributing factor of economic development in both developed and developing nations. Avendano (2013) emphasized that, SMEs has remained the key employment sector in the developing countries as well as being the keystones in the productive structure of emerging economies. OECD (2000) stated that, SMEs has continued to play an important role in job creation considering 60% to 70% which was contributed by 95% of the firms.

Ayyagari et al. (2007) emphasized that 50% of the GDP on average in the developed countries is contributed by SMEs.

In European Union economy, 99.8% equivalent to 17.9 million businesses constitutes of Small and Medium Enterprises (SME). This sector has continued to be a major contributor towards the economy growth of the country with over 66% contributed through exports. This contributes to over 70% in the workforce and 56.2% of its private segment turnover (Duarte & Martins, 2016). Research has indicated that capital structure is an essential influence in contributing to the development of small firms (Brown, et al., 2008). Towards the end of 2015, United Kingdom (UK) Small and Medium Enterprises (SMEs) had about £50.9 billion worth of stock on their accounting report (ABFA, 2015). This amount shows that investment in stock is substantial for UK SMEs.

In developed countries, most of the economies are driven by strong SMEs. For instance, Out of 5.5 million private businesses in UK, SMEs accounted for 99.9% (5,490,470) which employed 60% of the work force (15.7 million people) while 0.1% (7,200) represented large corporations and employed 40% being 10.5 million people. In Germany, two-thirds of workers are employed by SMEs. Asian countries which are newly industrialized, SMEs have become the driving force of rapid economic growth. In South Korea 99% of all enterprise is comprised of SMEs of which 88% of the work force is employed by the sector. Some of the renowned brand names like Samsung, LG started as SMEs and due to support from the country governments and embrace of technology resulting to innovations, the SMEs grew to world largest companies. The above examples clearly indicate the importance of SMEs to the growth and development process. Hence developing countries should borrow a leaf from the developed countries in promoting growth of SMEs (Otero and Rhyne, 1994).

Though African countries are yet to match the developed countries in number of SMEs, their growth and potential, they have continued to play a substantial role in the macro economy. South Africa one of the power house in Africa, SMEs contributed approximately 42% of GDP and accounts for 60% employment. They also provide incubator and breeding ground or entrepreneurship and innovation (Stats SA 2015). According to Machirori & Fatoki (2015), large companies and the public sector have not been able to resolve major economic crises, hence the need for SMEs. McCormick & Pedersen (1996) pointed out that the civil war in the Democratic Republic of the Congo led to the bankruptcy and cessation of most SMEs in the region.

In Kenya, SMEs have continued to thrive considering the support received from the government, in terms of enabling business environment, marketing for the products (Buy Kenya Build Kenya initiative), funding through Micro small and medium enterprises authority (MSEA). This has enhanced greater integration into global market, where the SMEs are able to participate in the international value chain and supply chain networks. Small and Medium Enterprises that are making use of technology and knowledge to innovate and develop high value added products of good quality, will keep on competing globally as per (Gok, 2007).

Most governments in developing countries have continued to emphasis on importance of the SMEs in steering economic growth, since large projects in industrial sector which require high capital intensity of output in the sector, are less likely to generate requisite employment. However, SMEs has continued to face several impediments which threaten their growth especially in developing countries. For instance, Hallberg (1999) established that, strong presence of Asian SMEs in Africa has continued to threaten growth of local SMEs. Other factors which has led to slow growth of SMEs in Africa may include but not limited to lack of adequate financing (Ngugi and Bwisa, 2013) in terms of long term finance either as a debt or equity (MeyerStamer and Waltring, 2004). Poor managerial and governance systems have been key hindrance for the SMEs to attract financing (Dockel and Ligthelm, 2005).

Small and medium enterprises (SMEs) are regularly identified as one of the most significant methodologies for upgrading the livelihoods of people in Rwanda as stated by Kanuma and Mutandwa (2015). Aside from expanding per capita income and yield or output, SMEs create job opportunities, improves regional economic balance through industrial dispersal and by and large advance effective resource or asset utilization considered critical in steering economic development.

In Kenya, Kithae, Gakure and Munyao (2012) explain that SMEs play a critical role in achieving the broad goals set out in the 2030 vision and are critical drivers for making Kenya a developed nation with an improved quality of life for its citizens. Mulwa (2014) indicated that the small and medium size businesses present the most unique financial establishment for growth, income and job creation. According to Kithae (2012), Kenya employs approximately 18 percent of GDP and 80 percent of the working population in the SME market. It is assumed that SMEs obviously supply goods and services to a greater number of individuals at equal prices, jobs and incomes (Kauffmann, 2006).

Effect of FinTech on growth of SMEs in Kiambu County would be measured in terms of usage of mobile money systems, online banking and access to digital lending as key derivatives.

### **1.1.3 FinTech and Growth of SMEs**

To measure extent of growth of SMEs in relation to FinTech we consider various types of FinTech and their effect. Mobile financial transactions lead to increased efficiency in SMEs according to Bangens and Soderberg (2010) in their study on impact of mobile money technology on growth of SMEs. This is on the grounds that mobile financial transactions help in saving time while conducting business transactions. Moreover, mobile technology can be utilized in reaching more customers and enable decision making and exchange of information.

The launch of M-PESA in Kenya by the telecommunications company Safaricom has allowed SMEs to expand and develop (Jack and Suri 2010). This is because the service offers them effective and simpler ways to pay and collect payments for goods and services, thereby promoting their trading activities. M-PESA enables users to withdrawal, save and deposit money into their accounts as well as to send money using SMS technology as per (Chogi 2007) on his study about impact of mobile phone technologies on SMEs. Therefore, mobile financial transactions provide SMEs with a means through which they can lower their operating costs and at the same time increase their capability to grow their business networks and in so doing enabling them to increase their performance.

As noted in their report on mobile money use patterns by SMEs, most SMEs find mobile phone financial transactions easier than bank-based financial transactions (Haggins et al, 2012). This is because they help consumers reduce travel costs as payments are made and received. As emphasized by Chogi (2006), Kenya's small and medium-sized enterprises (SMEs) view mobile financial transactions and their technologies as instruments that can mediate their activities by turning their goals into results, affecting their productivity and profitability. According to (Higgins et al, 2012), continuous financial transactions which may involve large amounts or long distances are described by SMEs. Mobile phone money transactions, in effect, allow them to reduce costs and save time with an affordable and more efficient way of carrying out financial transactions.

A study to investigate the effect and adoption of mobile phone technologies on SMEs in Nairobi was carried out (Chogi, 2006). The data from the analysis was gathered using a questionnaire on self-structure. The results of the study showed that most SMEs thought that their profits were positively affected by cell phones. In addition, the results of the study showed that most SMEs thought that mobile banking allowed them to reduce their operating costs. Similarly, (Donner & Escobari, 2010) assessed the use of financial services by SMEs in developing countries for mobile phones. Questionnaires were used to take data from 14 study studies that examined SMEs' mobile use. Mobile phones have enabled SMEs to become more profitable and raise revenues, thus enhancing their financial results and development to some degree, according to their findings.

A contextual study was carried out in Kenya to assess the effect of M-banking in developing countries (Wambari, 2009). The researcher obtained data from a sample of 20 SMEs using a semi-structured questionnaire. The results of his research showed that mobile banking had a positive impact on the financial transactions of small and medium-sized businesses. The results of the study also showed that the adoption of mobile banking allowed SMEs to boost their sales, resulting in improved financial performance. A study was conducted to examine the patterns of mobile money use by Kenyan SMEs (Higgins et al, 201). Using a questionnaire, data from 356 owners of SMEs was collected. Using a questionnaire, data from 356 owners of SMEs was collected. The results of the study showed that mobile cash was used by most SMEs. Additionally, results of the study showed that use of mobile money as a form of FinTech has enabled SMEs to improve their performance.

### **1.1.4 Overview of Kiambu County**

Kiambu County is located in central region and one among 47 counties in the Republic of Kenya. It covers an area of 2,543.5 Km<sup>2</sup> approximately. Of which, forests cover 476.3 Km<sup>2</sup> (Kenya Population and Housing Census, 2009). Nairobi and Kajiado Counties are bordering counties in the south, Machakos in the east, Murang'a in the north and north east, Nyandarua in the northwest, and Nakuru in the west. The population of the county in accordance to KNBS census results 2019 stood at 2.4 million citizens.

According to KNBS (2019) gross county product report, Kiambu is ranked 3<sup>rd</sup> richest county in Kenya with contribution of 5.5% towards the Gross domestic product (GDP). This has been contributed by large number of industries (both formal and informal) in the county, specifically in Thika and Ruiru sub-counties. The number of registered SMEs in the county stand at 4,897 (Kiambu County, 2018). The SMEs business comprises of general, wholesale and retail outlets, transport, food kiosks, communication and last but not least industrial factories and workshops.

## **1.2 Statement of problem**

Financial technology services have been developed to support microfinance institutions and small and medium-sized enterprises streamline their operations (OmwansaEnd Match 2010), with an overwhelming adoption in Kenya since its launch in 2007. This performance is due to the affordability and accessibility of the

service, including low-income earners (Mbogo 2010). The invention on technology is considered to be easy to use, but effective and reliable, with the ability to expand financial services to unbanked or cheaper financial services that are preferred. It is an appropriate technological innovation for small and medium-sized enterprises which continue to face the challenges of minimal, affordable and accessible financial services to support business operations.

Despite the critical role played by SMEs, they face a myriad of problems. Statistics indicate that the rate of small business failure is high with only 3 out of 5 business surviving 5 months to one year after formation and those that survive 80% of them collapse before the fifth year world bank (2015). Majority of the SMEs working in Africa face numerous difficulties that hinder their performance and development (Mihajlovic and Kume 2015). Adoption of technology provides an avenue for SMEs to improve their performance which would reduce the failure rate, McEvily et al. (2014) argued out that innovation was key in driving competitiveness, more profits and greater productivity to unlock the potential of many SMEs. Hence SMEs have to adapt innovative ways as well as new financial systems in carrying out their business to maintain their sustainability and continued existence

Research exists on role of traditional banking services on performance of SMEs in Kenya but little has been done on FinTech and its effects on growth of SMEs. A variety of these studies are; mobile phone banking experiences in Kenya by Njenga (2009), effect of E- money transfer on liquidity of SMEs by Moenga (2013) on, Wanyonyi and Bwisa (2013) on effect of virtual money transfer services on performance of SMEs in Kitale municipality, Jack and Suri, (2014) on transaction costs and risk sharing as evidenced from Kenya's E- money revolution. None of these studies has been carried out on the role of FinTech on micro and small businesses growth.

Small business development in Kenya is largely based on social, monetary systems, economic and administrative skills, which prevents SMEs from increasing. The proposed inquiry, however, concentrated on the key sources of formal and informal SME funding Research on effect of FinTech on growth of SMEs has not been fully done. The proposed field of research, i.e. Kiambu County is one of the most prolific business towns in the world, with very little documentation on the impact of FinTech on SME development. Consequently, this forms the basis of the proposed research study.

Global economy have continued to evolve to a digital economy, whereby the entrepreneurs are able to transact globally at the comfort of their premises. Traders are in a position to buy products globally as well as sell them regionally if not globally without necessary moving from one point to another. Therefore the study sought to establish if the SMEs traders have embrace the use of technology in order to enjoy the comparative advantage resulting to growth of their businesses. The study focused on three variables being mobile money, digital lending and mobile/online banking which would affect the growth of SMEs in Kiambu County.

### **1.3 Research Objective**

The research objective of this study was;

#### **1.3.1 General Objective**

To determine the effects of FinTech on growth of Small and Medium Enterprises (SME's) in Kiambu County

#### **1.3.2 Specific Objectives**

- i) To determine effect of mobile money on growth of SME's in Kiambu County.
- ii) To establish the influence of digital lending on growth of SME's in Kiambu County.
- iii) To measure the effect of online/mobile banking on growth of SME's in Kiambu County.

### **1.4 Research Hypothesis**

The study used the following research hypothesis: -

H<sub>01</sub>: Mobile money has no significance on growth of SMEs in Kiambu County.

H<sub>02</sub>: Digital lending has no significance on growth of SMEs in Kiambu County.

H<sub>03</sub>: Online banking has no significance on growth of SMEs in Kiambu County.

### **1.5 Justification of the Study**

The main aim of the research is to explore the effect of FinTech on growth of micro and small enterprises. The justification of the research comes from the fact that there are numerous programs designed to assist micro enterprise but little is disclosed on how SMEs should adopt FinTech in order to experience growth in their businesses. During the pandemic of covid-19, it was clear that most of the SMEs who were quick to adopt the technology in terms of service delivery, money transfer among other services, were able to continue with their businesses. This was significant advantage for the online businesses as they did not experience severe disruption compared to the offline businesses who most of them ended up shutting down completely. (GPMI, 2020). This has also prompted the need to research more on how SMEs should make use of FinTech in their operations in order to compete and be in line with new financial technologies as well as the digital economy.

Most of the micro enterprise fails within the first few months of operation due to the challenges encountered in operation (World Bank, 2015). Micro and Small enterprises provide employment to majority of the entrepreneur in Kenyan and most of the entrepreneur does the business for their survival. The contribution of micro-enterprise to the economy growth and development has been found to be important and access to finance, online banking or savings, access to business information and business regulation seems to be a challenge to their survival. Therefore, the finding of the research would be of great help to the various stakeholders as they would gain insight on what to do to increase uptake of FinTech among SMEs.

## **1.6 Significance of the study**

### **1.6.1 Scholars**

To the researchers and academicians these study findings led to contribution of the professional extension of existing knowledge on effects of FinTech on growth of SMEs. Future researchers and scholars would benefit from this study as it would act as a reference material besides suggesting areas for further research that they can further knowledge on growth of SMEs with respect to FinTech.

### **1.6.2 Owners of SMEs**

The research study would be of help to the many SMEs owners on the various types of financial technology innovations that they can adapt in order to enable them have a better market access and also give them a competitive advantage by coming up with new products as well as access to new markets. Further the study would assist the SMEs operators to fully understand the entrepreneurial impact of this technology on their business so as to cope with the increasing developments in the financial technology on one hand, and the challenges of the micro business operating in such an environment.

### **1.6.3 County Government**

The county government of Kiambu can make use of the findings from the study to help in advancement of structure in development and market the SMEs ventures in the county. Also it would be of help to the county government since it would contain recommendations of FinTech on growth of SMEs and in so doing the county can strategize on policy that would improve the SMEs in terms of technology.

### **1.6.4 Government**

The government and policy makers would gain valuable information on effects of FinTech on growth of SMEs. The study would be used in policy making regarding disruptive technologies. Policy makers would as well learn challenges and loopholes in their current framework and how it's affecting operations of SMEs.

## **1.7 Scope of the study**

This study seeks to examine the effects of financial technology on growth of small and medium enterprises in Kiambu County. As it is an industrial city and its proximity to adequate infrastructure like that of the capital of Kenya, Nairobi, and Kiambu was chosen. In Central Kenya, it is highly conducive to economic development. The study attempted to explore cross-industrial similarities or disparities between small and medium-sized companies in relation to factors influencing the choice of financial technologies used. The independent variables included size of the firm, information availability and type of FinTech used; whereas dependent variable was the SMEs FinTech usability

## **II. LITERATURE REVIEW**

### **2.1. Introduction**

The chapter represents a review of different literature so as to be able to identify literature gap which the study attempt to fill. In this chapter the researcher mainly focuses on literature concerning what various researcher and author have said about effects of FinTech on growth of small and medium enterprises (SMEs), types of the FinTech used by SMEs and whether it contributed to their growth. The chapter dealt with theoretical literature review, empirical literature review and the conceptual framework of the study.

### **2.2 Theoretical Review**

Scholars have come up with various theories; this study would be guided by four theories that suggest effect of FinTech On growth of SMEs. The theories help to understand the study as they form the frame work of the research.

#### **2.2.1 Technology Acceptance Model**

The Technology Acceptance Model (TAM) was first proposed by Davis, Bagozzi and Warshaw (1989) to examine the conceptual model of the intention of user or the degree to which information systems or new technology has been done. The model is established in the Theory of Reasoned Action (TRA). The model is viewed as the most compelling and ordinarily utilized hypothesis portraying an individual acknowledgment data framework (Lee et al., 2003). Initially, the model was made with four factors; saw helpfulness, saw simplicity to utilize, demeanour toward utilizing and real framework employments. Later two factors where included the

model which was outside factors and social expectation (Eramus et al., 2015). Likewise the hypothesis recommends that apparent convenience and saw usability are influenced by outer factors (Alharbi & Drew, 2014).

As indicated by the model, perceived usefulness is a key motivation to technology adoption, outside factors demeanour towards utilizing genuine utilize apparent handiness saw usability conduct expectation the normal advantages to SMEs incorporate lower organization cost, expanded interior proficiency, upgraded relationship with colleagues, improved competitiveness, improved nature of data, access to financial balance, subsidize move just as bill instalment (Riyadh et al., 2009). The model hypothesized that the mentality of usability is the significant determinant of whether the client would utilize or dismiss the framework. The client accepts that the framework which is simpler to utilize is progressively valuable to their activity execution. Seen convenience decides both saw handiness and mentality towards utilizing the framework. As per TAM both saw of value and saw convenience impacts the clients' mentality toward portable cash administrations. Subsequently valuable and straightforwardness to utilize at that point build up an uplifting demeanour toward administrations (Fethena et al., 2015). In this investigation convenience of portable cash administrations had effect on the development of SMEs.

As the research model, this study used TAM and considered factors such as accessibility, low cost and safety. By demonstrating how small business owners have incorporated modern technologies in the conduct of their companies, this theory is central to the analysis. This is especially the case where small businesses use financial technology in their money transactions, leading to quick, safe and more accessible cash transactions. Also It's not just enough for SMEs to come up with innovative technologies but they must be accepted and adopted by owners and clients. The researcher used this theory to establish if the SME entrepreneurs in Kiambu Country have embrace and adopted use of Fintech in undertaking their business operations. The study established that over 90% of the SME entrepreneurs had accepted the use of FinTech in form of mobile money at 94%, digital lending at 90% and mobile banking at 87% in performing their business transactions.

### **2.2.2 Unified theory of acceptance and use of technology**

The Theory of Unified, Acceptance and Use of Technology (UTAUT) was formulated by Venkatesh (2003) in user acceptance of technology. It intends to explain user expectations in utilizing an information system and resulting utilization behaviour. It fuses more constructs of inspiration, value worth, and propensity to the constructs of TAM specifically mentality, saw helpfulness and saw usability. The impacts of the constructs on social aim and innovation use, it is theorized, are directed by Individual contrasts, for example, age, sexual orientation, and encounters, (Venkatesh, 2003).

Bagozzi (2007) shows a hole that should be tended to in our investigation in that the utilization just of TAM and UTAT which is at the individual level should be fortified by different systems of Information Technology appropriation. Both TAM and UTAUT subsequently can be contended as to be best applied when taking care of exploration from a client level point of view instead of at firm (SME) level viewpoint. This theory was relevant for this study in explaining how the intention of the owners of the SMEs in using financial technology and subsequent usage behavior basing on three key constructs being mobile money, digital lending and mobile/online banking. It was established over 90% of the SME operators had positively embrace the use of Fintech in their business.

### **2.2.3 Diffusion of Innovation Theory**

The diffusion of innovation takes a gander at the rate at which new development is spreading, how the new advancement is spreading and why it is spreading so as to explore the variables influencing the selection of new data innovation development both at individual and SME levels, (Oliveira and Martins, 2011). The different elements to be investigated along these lines are appended to both firm and individual's job in adjusting to new innovation.

This diffusion theory is relevant to the study since it provides an explanation as to why SMEs embrace technological innovations. Chief among this is the relevant advantage they enjoy compared to their counterparts. Therefore SMEs that adopt financial technologies and its innovation have comparatively superior market access as opposed to those that don't. The study concluded that over 78% of the SME traders agreed that through the use of FinTech, they had experience increase in sales, increase in customer base, market share, revenue thus growth of their business.

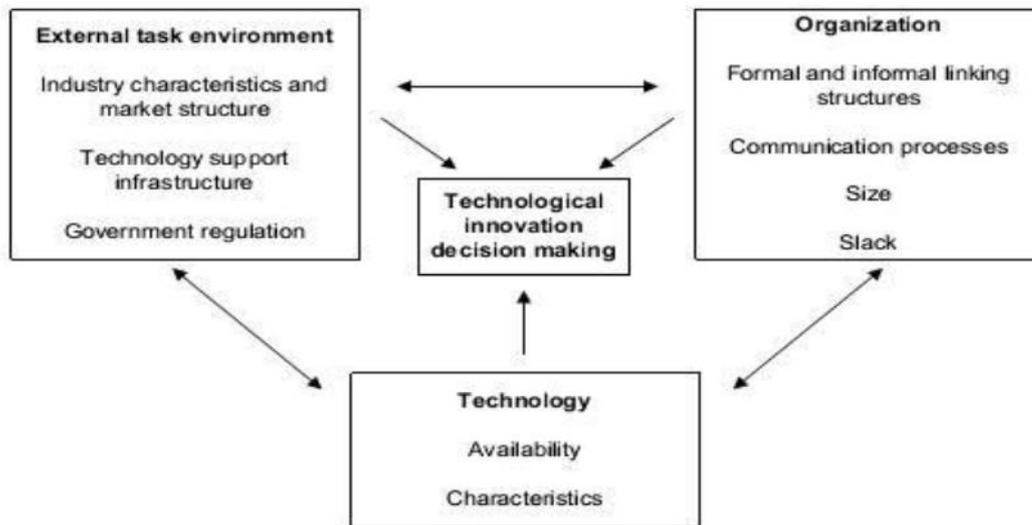
### **2.2.4 Technology, Organization and Environment (TOE) Theory**

The theory of Technology, Organization and Environment (TOE) then again sees three central point that are additionally separated to littler builds when taking a gander at how data innovation is received at firm level, (Oliveira and Martins, 2011), these variables incorporate technology setting inside the SME, organization

setting inside the SME, and ecological setting (Figure 2.1). All these don't consider the firm level dynamic procedure rather than Technology, Organization and Environment.

The internal and external innovations that are important to the business provide the technical context. Both equipment and processes can be used in technologies. The organizational context refers to the features and resources of the company, including the size of the company, degree of centralization, degree of formalization, management structure, human resources, amount of slack resources, and linkages between employees. The environmental context includes the scale and structure of the market, the company competitors, the macroeconomic history and the regulatory climate (Fleisher & Tornatzky, 1990).

(TOE) theory of technology acceptance.



**Figure 2. 1:** Relationships between Technology, organization, and environment framework.

As Oliveira and Martins (2011) demonstrates, unified theory of acceptance and utilization of technology (UTAUT) and Technology Acceptance Model (TAM) are broadly connected with person acknowledgment of more current innovation instead of Technology, Organization and Environment (TOE) and Diffusion of Innovation (DOI) which grasps firm level constructs. The utilization of TOE and DOI is progressively fitting in spite of the way that TAM being broadly referred to in numerous academic works, (Korpelainen, 2011). Rosli et. al. (2012) in their examination, helped in distinguishing the significance of utilizing TOE in the investigation of selection of Information Technology at firm level, and this is additionally improved by Ghobakhloo et al. (2012), who similarly, perceives the uniqueness of every organization and in this way proposing a progressively point by point investigation of drivers, empowering influences and inhibitors of data frameworks appropriation structure. In their decision, they featured the utilization of DOI as one significant structure to be utilized yet additionally supported utilization of other system in deciding the requirements that come in to play when leaders settle on whether to accept a specific technology or not.

Technology, Organization and Environment (TOE) is relevant as the fitting hypothesis choice in studies managing Small and Medium measured Enterprise (SMEs) acknowledgment of Mobile payment and how the reception impacts on their development. Awa et. al. (2012) has additionally utilized a blend of TAM and TOE in their examinations on extending of the construct for internet business appropriation by SME. The study recognized the need for the mobile service providers at 80% to establish new innovative ways of refunding the funds to the original source within reasonable time frame in case of wrong recipient without adversely affecting the business transactions due to experienced delays.

## 2.3 Empirical Review

### 2.3.1 Mobile Money and growth of SMEs in Kiambu County

There has been acceleration in poverty alleviation and financial comprehensiveness in developing countries, due to increased access of financial services through mobile money platform Ease of sending and receiving money through mobile phones, access to mobile loans at an affordable processing cost, enhanced mobile savings and inclusiveness have been some of the catalytic reasons towards acceptability of the FinTech in developing countries (Must & Ludewig, 2010).

Frempong (2009) conducted a study to show that ownership of cell phones has gradually gained access to markets, adding to business performance. Nevertheless, the study verified the limited capacity to perform other financial services that can be possible via the system and correlated with mobile money deals as well as

sending and receiving money. Even within the industrial and metropolitan areas of Ghana, the author made word of declining cell cash service uptake and hence such findings cannot be inferred to a nation such as Kenya.

Mbiti & Weil (2011) in detail studied M-Pesa from Safaricom and detected some positive patterns of habit. Initial intention for M-Pesa was send and receive money rather than money storage. As dynamics continue to evolve, Safaricom has found it ideal to incorporate the function of money storage. This inclusion has made it possible for SMEs to access and incorporate more refined financial services by means of mobile money services that are not limited to deposits, investment of funds, access to credit and insurance (Donovan, 2011).

The research by Mbogo (2010) aimed to examine success factors resulting from the use of mobile money payments by micro-enterprise operators in Kenya. Some of the variables examined in the study ranged from rapid access and satisfaction to mobile payment. Some of the study's variables ranged from easy access and satisfaction to mobile payment services, security, convenience of transaction costs, ongoing support from stakeholders in mobile payment, and the efficient use of mobile payment and business efficiency. The results of the study showed a strong correlation with the behavioral intent towards the actual use of mobile money, but in line with the perceived help and real use, there was little correlation.

The study of (Wanyonyi & Bwisa, 2013) has identified the impact of mobile money transfer services on SME development. The conclusion of the study highlighted main use of mobile money transfer by SME falls under Business to Business (B2B) when making payment to suppliers, Customer to Business (C2B) when receiving payments from the customers and for obligation assortment for credit sales contributes to improved performance of the small and medium enterprises.

Study on risks of mobile money by (Merritt, 2011) discovered existence of inherent risk on mobile money transfer in terms of security and privacy of the data, fraud, money laundering, credit and liquidity as well user protection. The study found that mobile money services were minimizing the inherent risks in cash-based payment services, thereby increasing openness in cash flows and enabling risk management through the regulation of the payment systems.

Nonetheless, Wamuyu *et al.* (2011) detailed a restricted utilization of mobile money transfer for transactions between buyer to buyer (B2B) and B2C contrary to those of customer to customer (C2C) and C2B. Other factors which proven to have significant effect on the performance of SME on usage of mobile money exchange were e-commerce transactions and mobile internet services. Literature demonstrates that mobile money payment involving SME coverage in Kenya is below the necessary required levels as opposed to other sectors (CCK, 2013). There has been low uptake on the usage of mobile money transfer by SME in comparative to other sectors such as large corporate and individual level. This has resulted to discouraging statistics of mobile money systems such as; Mobicash, Lipa Na Mpesa, Bebapay, among others (CCK, 2013). Mobile money service providers have been laying the infrastructure to ensure adequate coverage to all the SMEs. Also, other stakeholders like banking industry have been trying to offer capacity building to SMEs for ease of being integrated in the mobile money transfer era, though little has been acknowledged in the Small and medium enterprises in Kenya (Makau 2010).

### **2.3.2 Digital loaning and Growth of SMEs**

SMEs have continued to enjoy digital loaning services through mobile finance services such as M-Shwari, KCB-MPesa, Tala among other, which in turn assist them to settle their insurance premiums. From the analysis of (Govil *et al.*, 2014) positive correlation between mobile finance and economic growth of businesses was identified. This was as a result of effective flow of goods and services, conducive environment for investment as well security. Through mobile finance, SMEs are able to save and obtain credit to increase on their business operations, as well as communicate with their customers. Through improved communication with customers, SMEs have been able to reduce on the cost of chasing for debts, as clients are able to send the money at the point of their comfort. SMEs would focus more on the sales rather than debt collection, hence increase in sales volume.

Beck, Demirgüç-Kunt and Maksimovic (2011) while utilizing a database of 74 countries on small, medium, and large enterprises firms, found that access to finance as one of the major problem to entrepreneurs involved in these businesses. Further they presumed that lack of access is facilitated by a majority of foreign banks practicing an inefficient credit registry and coupled with more restrictions on bank to SME engagements. Their Study findings also indicate that SMEs access to finance wholly depends on the levels of interactions between the financial manager and their capabilities which may include marketing strategy, financial operations and technological capabilities.

Scholars have also focused their studies on access to finance by SMEs and Berger and Udell (2012) developed a model that is solely analyzed SMEs credit availability and in the framework concludes that technology is the best way through which government policies and financial structural implementations can be effected to ensure credit availability and access. The study concludes that technologies are best placed to

simplify the complexities that are involved in access to finance and the levels of engagement between the financial institutions and the SMEs.

Must and Ludewig, (2010) in their study on access to finance or loans by SMEs found out that, credit is complemented by savings. SMEs are able to accumulate capital and smooth their expenditure during distress times of the economy. In addition, SMEs are able to access loans using the savings as collateral, hence spreading the repayment period for ease of meeting their obligation. Finally, they noted that accumulation of savings overtime boosts the SMEs in expansion of their business capacity and potential.

Access to finances by SMEs remains critical aspect for their survival as articulated in the study by (Wanjohi, 2010). Growth of any SME is catalysed by availability of credit and loans at different levels of product and service development (Birundu, 2015; Berger et al., 2009; and Badulescu, 2011). Access to financing also plays a vital role in enhancing SMEs to develop different product and service mix to address specific market demands thus enhancing the profitability index.

By expanding their access to finance, SMEs can benefit from digital solutions. Nevertheless, most of the SMEs have continued to face challenges in accessing finances due to information asymmetry, limited financial records and book keeping, lack of collateral, limited access to physical branches, limited access to formal loaning system, (ROK, 2005). The said limitations have resulted to most SMEs relying on their family members and friends for informal lending. Funding is limited through this method resulting to derailment in growth and expansion of the SMEs.

### **2.3.3 Mobile or Online Banking and growth of SMEs**

Use of mobile phone to perform monetary transaction from an individual or company bank account is termed as mobile/online banking (Nasikye, 2009). M-banking alludes to delivery of service and offering of financial service and banking through the use of mobile phone (Owen, 2008). Mobile/Online banking services may include confirmation of bank balances, payments from the bank account, transfer of money from bank to mobile phone, loan requests among others. All these services are undertaken through use of mobile phone or Personal Digital Assistant (PDA).

There has been significant contribution to the SMEs by the use of mobile money as was discovered by Nyaga (2013) on his study “the impact of mobile money services on the performance of SMEs”. It has evidently proven that majority of the traders are more oriented towards mobile/online banking on their daily transactions rather than formal banking sector. This is due to its efficiency and effectiveness in settling transactions between the customers and the business. Secondly, SME operators have continued to embrace mobile/online banking services due to the continued exposure and dynamics towards growth in the digital economy activities where one does not need to visit their branches physically to perform the transactions.

The study of Otiso et al. (2013) established that, a significant number of the SMEs have aligned themselves in use of mobile banking in place of traditional banking, since they are in a position to obtain both information and transactional services in their mobile phones. Secondly, SMEs have been able to access mini statement as well as the information relating to their personal and company bank accounts. Managers of the SMEs have been able to focus more on their key objective of generating more income to enhance growth, since the traditional long queuing has been eliminated through use of Mobile banking. In addition, SMEs have been able to outstanding bills to their suppliers’ as well utility bills at the convenience of their office, hence reduction on the conveyance cost as well as cash related risks (Wamuyu, et al., 2011).

In M- banking, there is need for security and trust assurance in relation to payment services (Mallat, 2011: Siau et al., 2004). This can be assured through confidentiality of the customer information, efficiency performing and completion of transaction and customer identification. More importantly, secure PIN and water tight security codes are key areas of focus by the users of mobile banking (Nam, Yi, Lee & Lim, 2010).

A study by Njenga (2010) on Role of M- banking on SMEs argued that the demand of high M-banking usage depend on wide network coverage and quality network connections. This enhances easy, speedy and cheap access mobile transactions available and affordable to all prospective partakers. Most of the SMEs in remote areas of Kiambu County do not have enough network coverage and causes a hindrance in using M-banking services.

## **2.4 Conceptual Framework**

The study conceptualizes a framework consisting of the dependent and the independent variables. The independent variables include financial technology services which mostly include mobile payment, mobile finance and mobile banking. The dependent variable is the growth of SMEs. The conceptual framework for the study shows the relationship between the independent variables and the dependent variable as shown in Figure 2.1

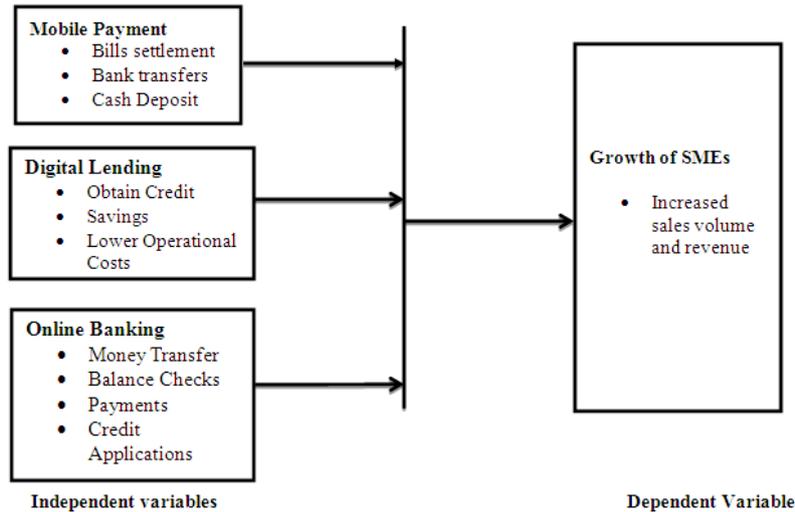


Figure 2. 2: Conceptual Framework

2.3.4 Operationalization of Variables

The researcher identifies the specific concept that contributes to the key variable of the study by identifying what defines the independent variable and dependent variable. The table 1.2 below gives a picture of the operationalization process.

The researcher identifies the specific concept that contributes to the key variable of the study by identifying what defines the independent variable and dependent variable. The table below gives a picture of the operationalization process

Table 2. 1: Operationalization of the variables

Variable Type	Variable	Indicators	Measurement Scale	Type of analysis
Independent	Mobile money	Bills settlement/payments Bank transfers Cash Deposit	Nominal & Ordinal	Descriptive Inferential
Independent	Digital lending	Obtain Credit Savings Lower Operational Costs	Nominal & Ordinal	Descriptive Inferential
Independent	Online banking	Money Transfer Balance Checks Payments Credit Applications	Nominal & Ordinal	Descriptive Inferential
Dependent	Growth of SMEs	Sales revenue Profitability Sales volume	Nominal & Ordinal	Descriptive Inferential

2.5 Research Gap

Recent research on the subject of mobile money focuses mainly on the advancement of technology, mobile payment reception by customers (Dahlberg et al., 2008), exploring the core achievement elements of efficiently applied mobile money services and biological systems (Mas and Ng'weno, 2010) and providing guidance to upgrade another portable cash administration (International Finance Corporation, 2010). This investigation would likewise survey the key achievement elements of the actualized portable cash move frameworks, however the fundamental spotlight is on the pertinence of versatile cash to business people and Small-and Medium-sized Enterprise (SME) proprietors just as why they ought to be keen on utilizing mobile money for business purposes.

2.6 Summary of Literature

This section has reviewed the literature on the effect of FinTech on growth of SMES in Kiambu County. From the reviewed studies, it is evident that there is more emphasis needed in educating the SMEs on the need of embracing Fintech as a platform for business transitions, bearing in mind the world is turning into digital economy. Also, the spread of mobile money transfer has become a catalyst towards monetary exchanges among the SMEs (Lennart & Bjorn, 2010). The theoretical review has covered four broader theories relevant for the study's independent variables. The theories outlined have thus been interlinked with the study variables.

Literature has also been reviewed within the areas of the conceptual framework to cover both independent and dependent variables within this study. Research gap has also been discussed within the chapter to demonstrate the need to undertake this study.

### III. RESEARCH METHODOLOGY

#### 3.1 Introduction

The procedures followed in conducting the study are outlined in this chapter. These include study design, target population, sample and sampling methodology, data collection tool, pilot testing, as well as the data analysis methods used.

#### 3.2 Research Design

The guide to directing the whole study is basically Research design. A descriptive research design was adopted as being the appropriate outline to collect the data and analyse the finding to establish effect of FinTech on growth of SMEs in Kiambu County. Ogula (2012) described research design as the strategy applied to carry out the study and plan on how the data was collected and analysed. Descriptive design was ideal for the study since it described the nature of the respondent and the result of finding in a manner that assist in answering the research question.

#### 3.3 Target Population

A population is an element of collection from any given selection of units or sector where a sample is selected for further study and examination (Kothari 2011). As indicated by Mugenda & Mugenda (2011) population is the total element or entities from which a researcher wished to get a sample for the study and population forms the subject of the study. The targeted population for the study comprises of 4897 registered SMEs (*Business List.co.ke*). The SMEs population was distributed as per Appendix II.

#### 3.4 Sampling and Sampling Procedure

The study applied stratified sampling procedure to pick a sample size from the populace. Stratified sampling is a form of method of sampling in which the overall population is split into smaller groups or strata to complete the process of sampling. As indicated by Mugenda and Mugenda (2011) a stratified or delineated sampling method was appropriate for a study that is heterogeneous. Since the investigation searched for various heterogeneous classifications of SMEs within Kiambu County, stratified sampling would be perfect for the study. It would enable the researcher to cluster the SMEs into various sectors which includes accommodation, storage, education, general trade, agricultural and transport from Kiambu County then the actual sample size was drawn.

Babbie (2010), described sample size is the element of study that represents the actual population or the elements to be examined within the study, from which the results can be generalized to the entire population. A sample is part of the population that has been procedurally selected to represent the populace once the sample has been experimentally taken, the outcome can be summed up to the entire population. The sampling frame comprised of 4897 SMEs which are registered and is obtained from the County of Kiambu register business 2018 according to the Act of Kiambu Business Trade License 2016. Sampling includes choosing from a given populace from a small group to be utilized for study using the sampling technique (Cooper & Schindler 2012). Krejcie & Morgan (1997) technique was utilized to determine the sample size of 4897 SMEs as follows

$$S = \frac{\chi^2 \mathcal{N} \mathcal{P}(1 - \mathcal{P})}{d^2 (\mathcal{N} - 1) + \chi^2 \mathcal{P}(1 - \mathcal{P})}$$

S= required sample size

$\chi^2$ =Chi Square value at 1 degree of freedom (3.841)

N=Population Size

P=Population proportion (assumed to be .50)

d=Degree of accuracy expressed as a proportion (.05)

$$S = \frac{3.841 * 4897 * 0.5(1 - 0.5)}{0.05^2 (4897 - 1) + 3.841 * 0.5(1 - 0.5)}$$

Sample size S = 356

**Table 3. 1:** Types of SMEs and sample size distribution

SMEs Sector	Population	Sample	Percentage
Accommodation and Catering	244	18	5%
Storage transport and communication	295	21	6%
Private education & health	538	39	11%
General trader, Retailer, Wholesale and store	1909	139	39%
Industrial plants, Factories & Workshops	491	36	10%
Professional and Technical services	1028	75	21%
Agricultural producer / Processor	392	28	8%
<b>Totals</b>	<b>4,897</b>	<b>356</b>	<b>100%</b>

Source: *Kiambu County Registers 2018*

### 3.5 Research Instrument

Structured questionnaire or organized survey was utilized to accumulate information from the respondent. Questionnaire was the best option for the study so as to get actual information from respondent as well as observing the feelings, altitude, and experience of individual (Baker & Ponton 2013). The questionnaire had open ended questions to help in expounding responses to some closed ended questions asked which helped to give a wider perspective of the issue discussed by specific questions.

According to Copper and schindler (2012) a data collection method is a mechanism that a researcher employs to collect data from the respondent by using questionnaire to answer the research question. The investigation utilized primary data which was gathered by conveying questionnaire to the respondents. Utilization of questionnaire was a straight forward process as the sampled respondents were allowed to fill the questionnaire as per their assessment. The questionnaire reflected data relative to respondents' background. Above all, it reflected data concerning both the independent and dependent variables. Likert scale was used to collect data on the questionnaire by the researcher.

### 3.6 Validity and Reliability of the Study

#### 3.6.1 Validity of the Research Instrument

Validity is the extent to which a concept, conclusion, or measurement is well-founded and corresponds precisely to the real world, asserted by Brains and Manheim (2011). In other words, the legitimacy of a measurement tool for instance a questionnaire is hypothesized to be the estimate to which that tool measures what it claims to measure. The investigation aims to find out the content validity of the instrument of research. The extent within which an instrument provides adequate inclusion of the objectives being examined by the study is referred to as content validity. To affirm that the tool gathered the information as planned, hence it is imperative to authenticate them before administering them to the sampled population. Varied forms of validity were utilized to authenticate them namely the face as well as the content validity. The researcher shall seek the expert opinion of University supervisor, peers, and research experts to ascertain the content validity of the questionnaire. Feedback from the parties was used to correct any typing errors, spelling mistakes and any other ambiguity that might compromise the validity of the instrument.

#### 3.6.2 Reliability of the Research Instrument

Reliability is the degree to which a measurement produces results that are accurate, reliable and stable. When reliability is preserved, according to Cooper and Schindler (2011), and then when administered to various sampled populations exhibiting related characteristics, the research instrument can collect similar data. To test for the internal consistent reliability analysis, Cronbach alpha as a coefficient of internal consistency was used to measure the consistency. To be able to gauge the reliability of the questions and the consequent reliability of the data was gathered using the instruments, a pilot test was carried out before the real data collection.

Pilot testing involves directing the quality and nature of questionnaire before the main investigation (Tandon 2014). To test for reliability, the researcher directed a pre testing questionnaire from alternate SMEs which were not to be included in the study. Connelly (2008) suggested that 10% of the main study's sampled population is appropriate for pilot testing. In this study, 36 respondents represent 10% of the sampled participants thus the study adopted the suggestion of Isaac and Michael (2015) that 10–30 participants were sufficient. Mugenda and Mugenda (2009) emphasised that effectiveness of an instrument during the actual study is determined during pretesting. Piloted respondents were excluded in the main study, though the researcher can select them from groups whose characteristics are similar to those targeted in the main study (Babbie, 2011). The information collected was subjected for validity and reliability.

The pilot tests were done utilizing respondents who did not structure the population of the actual study. A pilot study was good at enabling the researcher to evaluate the instruments clarity and its efficiency. As a coefficient of internal consistency, Cronbach alpha was used to measure this reliability. The researcher uses internal consistency to measure the relationships between various items in an instrument and whether the various items measuring the same main hypothesis yield the same scores. Rules provided by Castillo (2009) on

this include: <0.5 – Unacceptable, >0.5 – Poor, >0.6 – Questionable, >0.7 – Acceptable, >0.8 – Good, and >0.9 – Excellent. The designated limit of reliability for this study was the value of 0.7 which is deemed acceptable.

### **3.7 Data collection procedure**

The researcher used questionnaire to collect data in the field. The respondents were assured of confidentiality by the researcher that the administered instruments were only for research reasons and the responses given upheld with total confidence. First, an authorization letter was sought from the university, seeking permission to collect data, after which delivery of the questionnaires to the respondents was done either physically or remotely due to the current Covid-19 pandemic in the Country. For hand delivered questionnaires, the researcher followed up to ensure they have been filled in and later collect them.

### **3.8 Data Processing and Analysis**

Primarily quantitative method was used to analyze the collected data. In evaluating the data obtained, both descriptive methods and inferential statistics were used. The data that was collected was first edited to recognize and eradicate mistakes and omissions. This stage was completed at the same time as data collection in the field. It was coded for entry into computers for data processing and entered into the machine according to categorization. The data collected was analyzed by use of both descriptive and inferential statistics with the use of the Statistical Package for Social Sciences (SPSS) version 24. Descriptive investigation included frequencies and rates for segment information of respondents. Likewise, means and standard deviations were utilized over all factors (autonomous and subordinate factors). Inferential insights in type of connection and multiple relapse investigations used.

In order to show how data-related variables were obtained, the correlation coefficient was used to figure out if dependent variables were associated with the growth of SMEs. To assess if the three independent variables had any important influence on the growth of SMEs, multiple regression analyses were used. The decision coefficient, ( $r^2$ ) is the square of the coefficient of sample correlation between results and expected values. The degree to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variance in the dependent variable (SME growth), which is explained by all three independent variables, is explained as such.

Multiple regression model adopted was as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y= represents SMEs Growth

$\beta_0$ = represents Constant

$X_1$ = represents Mobile money

$X_2$ = represents Digital lending

$X_3$ = represents Online Banking

$\varepsilon$  = represents Error Term

$\beta_1, \beta_2, \beta_3$ , represent Regression coefficients of Independent variables

### **3.9 Diagnostic Tests**

The researcher carried out diagnostic test to assess the validity of the model in a number of different ways, and ensure accuracy which would address various form of bias that might occur. Some of the tests which would be used by the researcher would include;

#### **3.9.1 Normality**

As highlighted by Cooper & Schindler (2011), normality tests the difference between forecasted and obtained responses variable which need to be generally distributed about the distributed dependent variable scores. Shapiro Wilk test was utilized by the researcher to confirm the normality test. The null hypothesis for the test of the data was considered normally distributed if the significant value (p-value) > 0.05; on the contrary the null hypothesis was be rejected if the value is < 0.05, which indicated normal distribution of data.

#### **3.9.2 Multicollinearity**

To determine if independent variables are highly correlated with each other, multicollinearity was carried out. Kothari & Garg (2014) stated that, a very strong relationship exists if the independent variables are similar in any way. Testing for Multicollinearity involved the use of variation inflation factors (VIF). Absence of Multicollinearity indicators was shown by a VIF value of 1-10.

### 3.9.3 Linearity

Linearity tests whether if there is existence of linear relationship between the dependent variable and each of the independent variable. Borg & Gall (2012) highlighted that, it tests whether the residuals have a straight line relationship with the predicted dependent Variables. The relationship can be measured using correlation analysis. Linearity was tested using analysis of variance (ANOVA) to determine the relationship between independent and dependent variables. Deviation from linearity is  $> 0.05$ , then the relationship between the dependent and independent variables are linearly dependent while if  $< 0.05$  there is no linear relationship.

### 3.9.4 Homoscedasticity

Homoscedasticity alludes to the suspicion that the dependent variable shows comparative measures of variance and fluctuation across the range and scope of values for an autonomous independent variable (Babbie, 2011). The error term ( $\epsilon$ ) is normally and identically independently distributed with mean zero and constant variance. If the error term is not constant, the data suffers from heteroscedasticity. One can use graphical method to check for homoscedasticity. The Breusch-Pagan test was undertaken where the BP Lagrange Multiplier (LM) statistic was computed for the residuals. The BP and Koenker test the null hypothesis is that residuals do not exhibit heteroscedasticity. If the P-value of the BP-LM test is greater than 0.05 implied that the residuals do not exhibit heteroscedasticity thus meeting the homoscedasticity assumption.

### 3.10 Research Ethics

The research guaranteed that all data accumulated was treated with most extreme privacy and for academic purposes as it were. Information assortment process was clung to exclusive expectations of good and legitimate standards regarding objective respondents' views and levels of participation. Formal techniques and correspondence channels were utilized during information assortment. The target of the investigation and presence or non-attendance of accumulating benefits was unmistakably spelt out to the respondents before information assortment with the end goal of transparency.

## IV. Data Analysis, Findings And Discussion

### 4.1 Introduction

This chapter focuses on the study by the use of questionnaires of the collected data from the field as well as the discussion of the results. Data was analyzed according to the study's aims, interpretation was performed and conclusions were drawn. The study's main objective was to examine the effects of FinTech on SME growth in Kiambu County. The findings were mainly investigated in the context of both descriptive and inferential statistics and the investigator first reviewed the results and discussions related to the background information and then accompanied by descriptive and inferential statistics.

The findings on mobile money has been presented first, followed by digital lending, and finally, findings on online/mobile banking are presented last. To assess the validity and reliability of the report, a reliability review was also performed. The research tool has to have a Cronbach Alpha of more than (0.7) for a research to be accurate and effective The study revealed that Mobile money had a Cronbach value of (0.894) for this analysis, digital lending had a value of (0.772), while mobile / online banking had a Cronbach value of (0.776) as summarized in table 3

**Table 4. 1:** Reliability analysis

Variables	No. Items	Alpha Value
Mobile money	7	0.894
Digital lending	5	0.772
Mobile/Online banking	6	0.776

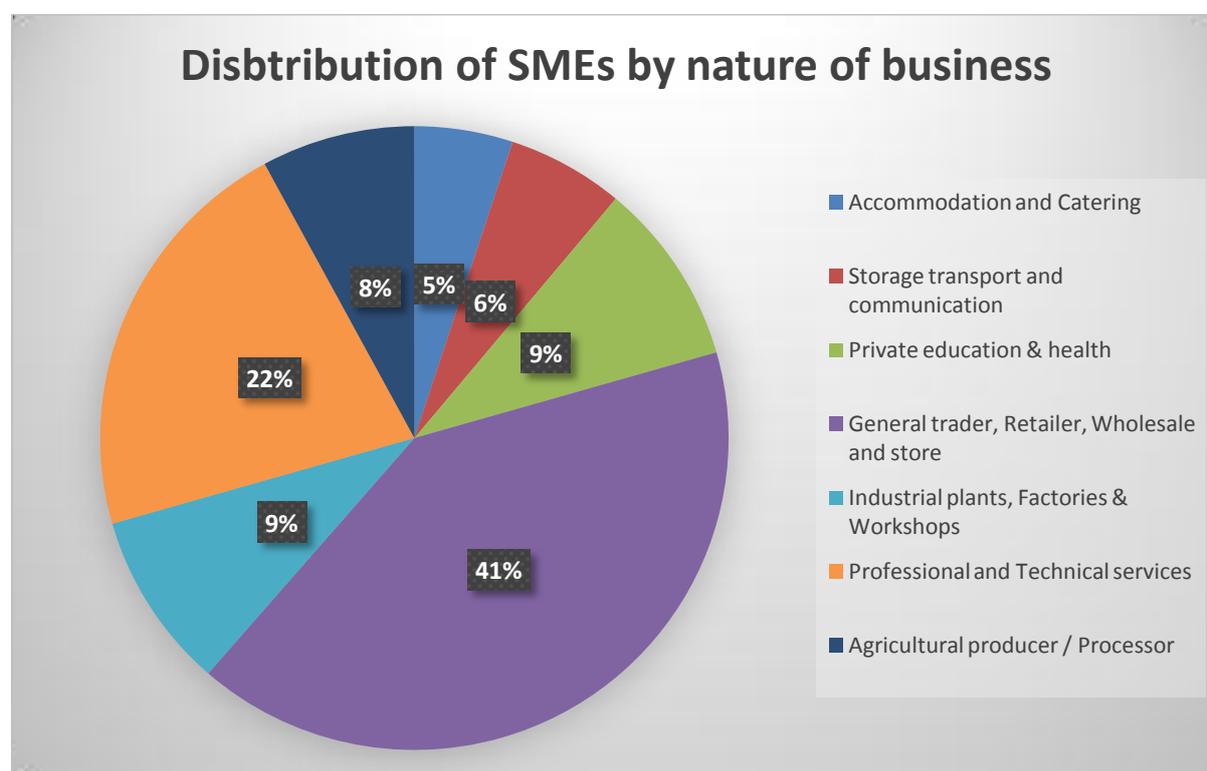
### 4.2 Response rate

From the 356 sampled respondents, 316 respondents representing the six categories of SMEs under this study filled and returned the questionnaires thus a response rate of (89%). This feedback rate was adequate for the analysis as pointed out by Mugenda and Mugenda (2003), that a response rate should meet a threshold of at least 70%.The researcher achieved this through the use of an introduction letter which comprehensively explained the purpose of the survey, phone calls and physical visits to the respondents

**Table 4. 2:** Summary of the response rates per SME industry

SMEs Sector	Population	Sample	Response	Response rate (%)
Accommodation and Catering	244	18	16	5%
Storage transport and communication	295	21	19	6%
Private education & health	538	39	30	9%
General trader, Retailer, Wholesale and store	1909	139	129	41%
Industrial plants, Factories & Workshops	491	36	29	9%
Professional and Technical services	1028	75	68	22%
Agricultural producer / Processor	392	28	25	8%
<b>Totals</b>	<b>4,897</b>	<b>356</b>	<b>316</b>	<b>100%</b>

Figure 4.1 shows the distribution of SMEs as indicated by nature of business in the seven industries under this study. A majority of the respondents were from General trader, Retailer, Wholesale and store at 41%, followed by Professional and Technical services at 22% while the other five sectors were below 10%. This shows the respondents were from all the sectors in the SME industry thus the information received was adequate and sufficient for further analysis.



**Figure 4. 1:** Distribution of SMEs by nature of business

### 4.3 Demographic Information

#### 4.3.1 Gender Respondents

The researcher sampled both male and female respondents involved with SMEs. Table 5 shows the proportion of respondents that were male and those that were female

**Table 4. 3:** Gender respondents

Gender	Frequency	Percent
Male	236	74.7
Female	80	25.3
<b>Total</b>	<b>316</b>	<b>100</b>

As indicated in Table 4.3, there were more male respondents (74.7%) than female respondents (25.3%) indicating a gender disparity in SMEs participation in Kiambu County.

#### **4.3.2 Position held in the company**

The sampling unit target by the researcher in the study were the business owners, Key management employees and family members running a business in the category of a SME which is using Fintech in daily running of their business.

**Table 4. 4:** Position held in the company

<b>Position held</b>	<b>Frequency</b>	<b>Percent</b>
Business Owner	255	80.7
Employee	48	15.2
Family member	13	4.1
<b>Total</b>	<b>316</b>	<b>100</b>

From the above Table 4.4, large number of the sampling unit was represented by the Business owners at 80.7%, followed by employees at 15.2% and lastly by family members at 4.1%, a clear indication that most of the SMEs in Kiambu County are managed by the proprietors.

#### **4.3.3 Age group of the respondents**

The researcher made a decision to demarcate respondents based on the age group from 21 years to over 50 years

**Table 4. 5:** Age of the respondents

<b>Age group</b>	<b>Frequency</b>	<b>Percent</b>
Between 21-30 years	52	16.5
Between 31-40 years	155	49.1
Between 41-50 years	39	12.3
Over 50 years	70	22.2
<b>Total</b>	<b>316</b>	<b>100</b>

Table 4.5 above indicates the age group of the respondents of which most of the respondents fell in the age group between 31-40 years at 49.1% followed by over 50 years at 22.2%, then age group between 21-30 years and lastly 41-50 years. A clear indication that most of the SMEs in Kiambu County are managed by entrepreneurs at the age bracket of 31 to 40 years being a sizable youthful generation of the population.

#### **4.3.4 Level of Education**

The study required the respondents to disclose their level of education. Majority of the respondents (59%) fell under the category of post graduate level, followed by 25% of the respondents had undergraduate degrees, 14% of the respondents had college certificates while 2% of the respondents went up to high school as shown in Figure 4. This was an indication that the respondents were well-versed on the topic of research and therefore, gave relevant data for this study.

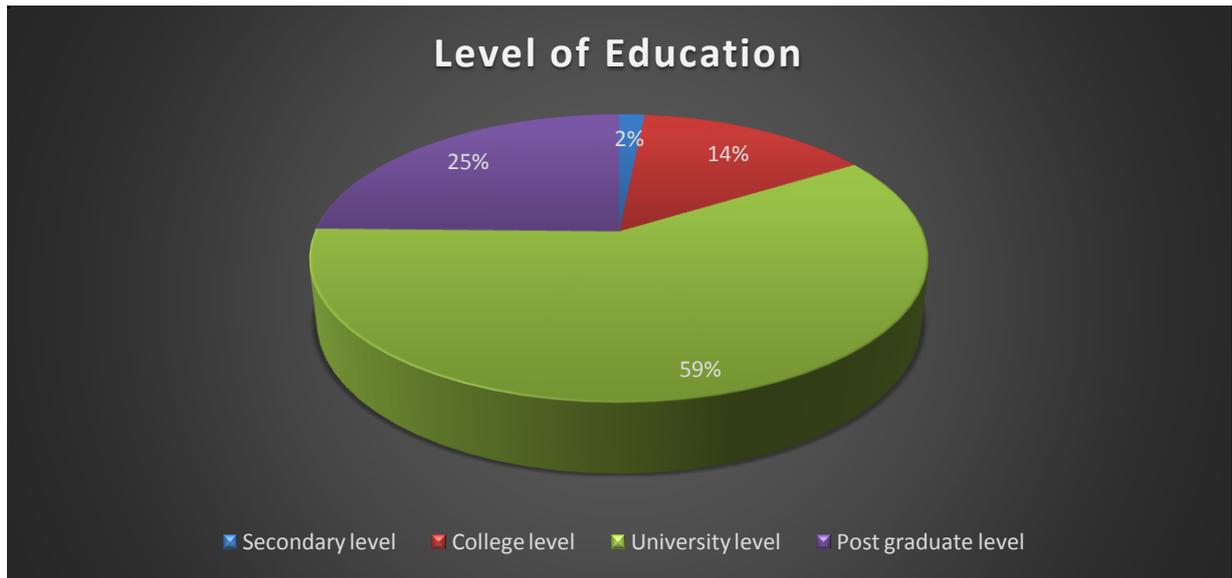


Figure 4. 2: Level of Education

#### 4.3.5 Number of Employees in the organization

Respondents also indicated the total number of employees working for their respective SMEs. From the figure 5 below, most of the SMEs employ 1-10 employees which represents 56.6% while the least of the respondent indicated their organizations have hired more than 50 employees representing 2.8% of the total respondents. This gives a clear definition of the SME as an enterprise which employs between 1 to 50 employees.

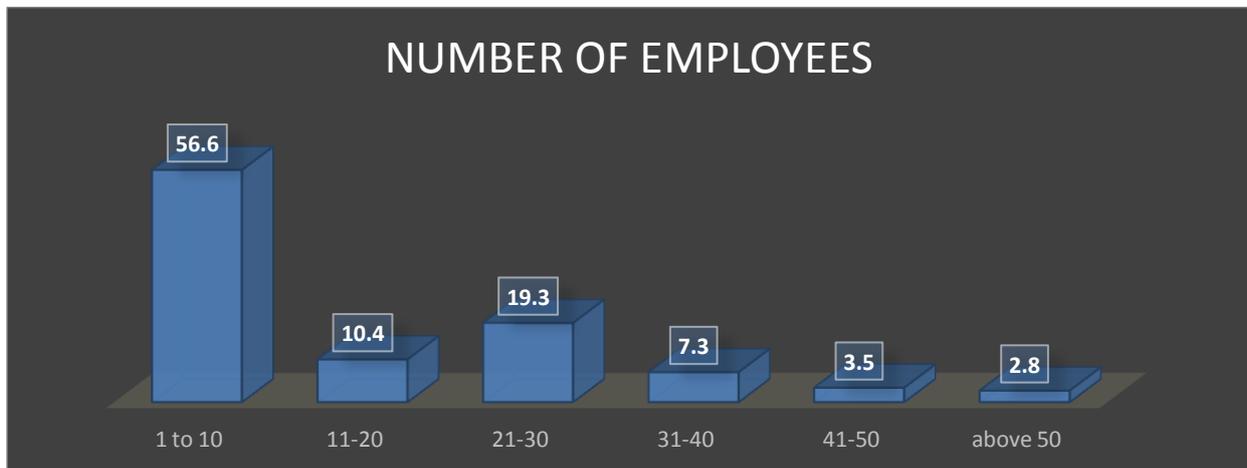


Figure 4. 3: Number of Employees in organization

#### 4.3.6 Number of years in operation

Respondents were also asked to indicate the number of years their respective SMEs have been in business since establishment. Table 4.6 shows the distribution of SMEs by the respective number of years they have been in business.

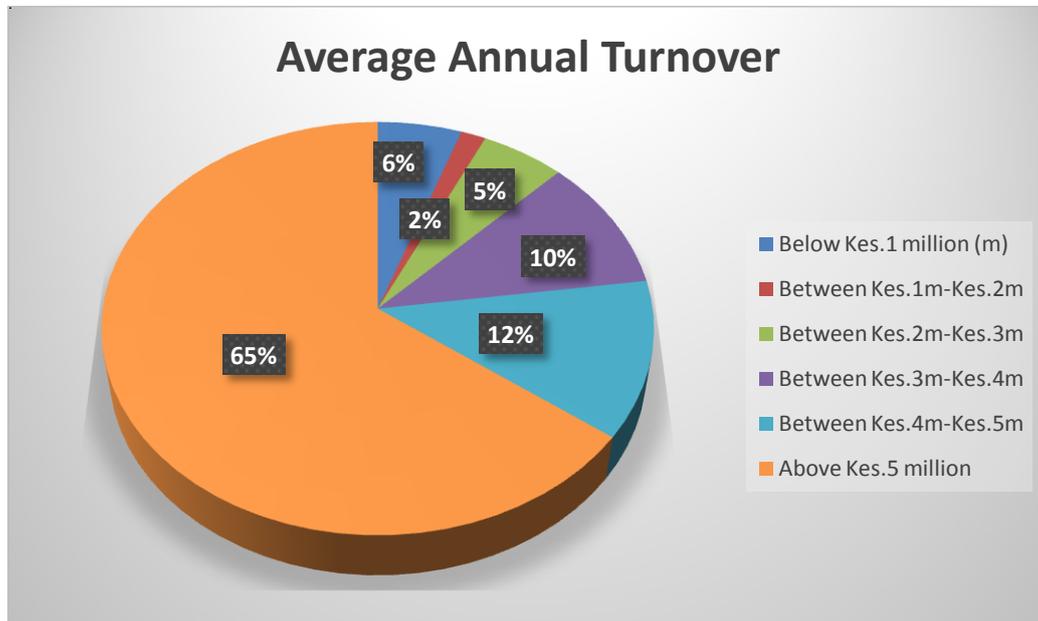
Table 4. 6: Years in business operation

Years of operation	Frequency	Percent
Below 2 years	27	8.5
Between 2-5 years	32	10.1
Between 5-10 years	214	67.7
Above 10 years	43	13.6
<b>Total</b>	<b>316</b>	<b>100</b>

From the above table 8 outcomes, majority of the SMEs (67.7%) were in operation between 5-10 years. Also it was noted that many levels of business growth were fairly covered in the study, hence an indication that respondents had vast understanding and information about SMEs, thus provided accurate data for the study.

**4.3.7 Average annual turnover**

The study required the respondents to capture their annual turnover which would play a significant analysis in trying to establish whether the use of Fintech has any positive correlation to the increase in sales turnover. From the figure 4.4 below, 65% of the SMEs made a turnover above Kes.5 million, followed by 12% of the SMEs at the range of Kes.4million to Kes. 5 million. 10% of the SMEs turnover was between Kes.3million to Kes.4 million. 13% of the SMEs made an average annual turnover of below Kes.3 million

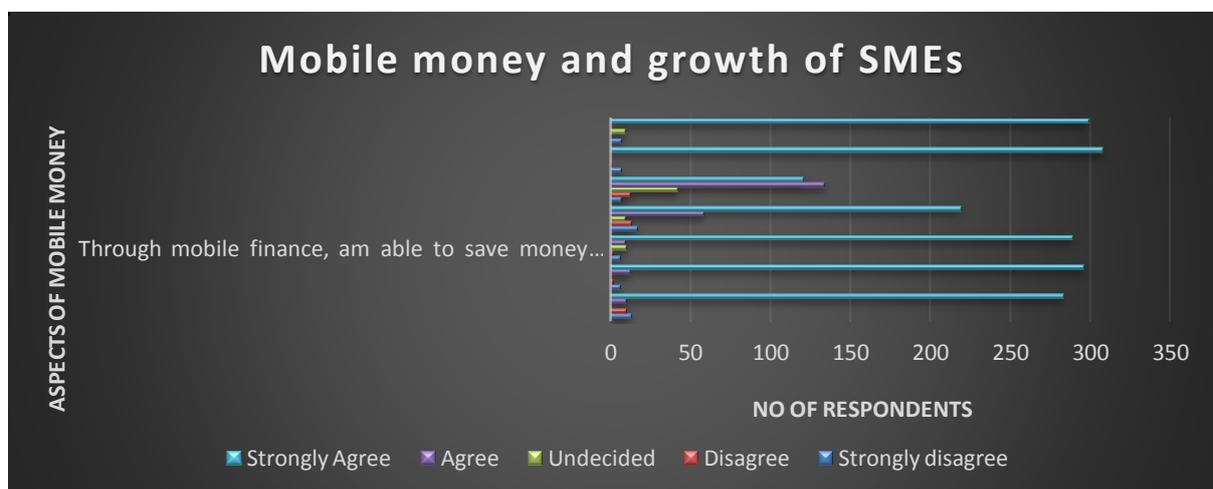


**Figure 4. 4:** Average Annual Turnover

**4.4 Study variables**

The researcher sought to establish the perception of respondents regarding the various variables in the study. Given that the questionnaire elicited responses on 5 point Likert scale, the researcher established the means and standard deviations of the responses to assist in making inferences. The outcome has been presented in the following subsections

**4.4.1 Mobile money and growth of SMEs**

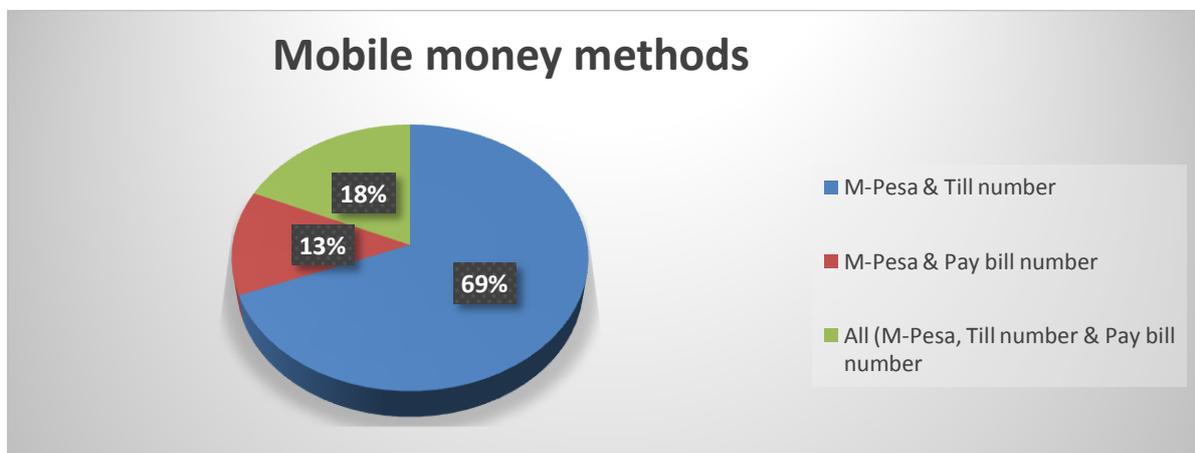


**Figure 4. 5:** Response rating on mobile money

Figure 4.5 clearly indicated that the respondents were in agreement that they use mobile phone to pay their suppliers with a mean of 4.90 and a standard deviation of 0.614. Majority of the respondents comprising of 97.5% strongly agreed and/or strongly agreed that they used mobile phone to pay their suppliers. Respondents further agreed (M=4.76, SD=0.761) that they accept payments through mobile money from their clients with 92.7% of the respondents who agreed and/or strongly agree with the statement. Respondents also agreed that receiving payments through M-pesa relieves them the problem of having so much money in their premises (M=4.90, SD=0.612) having 97.5% of them strongly agree and agree respectively with the statement. Also, majority of the respondents 84.8% strongly agreed they don't receive cash from clients since they have fully adopted FinTech services (M=4.49, SD=0.228). In addition, respondents agreed (M=4.01, SD=0.923) that they transfer money through M-pesa to their colleagues in business this being represented by 94% of the respondents. Respondents were also of the view that mobile payments have enhanced the efficiency of doing business (M=4.82, SD=0.770) having majority of the respondents 94.6% strongly agreeing with the statement.

According to the findings of the study most of the SMEs use FinTech services especially mobile money in conducting their business as it is convenient for most of them in terms of time and resources. The results were in support with the conclusion made by (Must & Ludewig, 2010) in their study that Fintech has enhanced ease of sending and receiving money through mobile phones, access to mobile loans at an affordable processing cost, enhanced mobile savings and inclusiveness have been some of the catalytic reasons towards acceptability of the FinTech in developing countries

The researcher further sought to establish the more commonly used form of mobile payments and the results were presented in figure 4.6 below. Therefore, respondents were asked to indicate the most commonly method used to mobile money. The options at hand were M-Pesa & Till Number; M-Pesa & Pay bill; and M-Pesa, Pay bill & Till Number. The results of the respondents were displayed in the pie chart as shown in figure 7 below.



**Figure 4. 6:** Respondents on the mode of mobile money used

It was established that most of the respondents expressed confidence in the use of M-Pesa & Till number together at 69%, followed by the ones who used M-Pesa, pay bill & till number at 18% and lastly the ones who use M-Pesa and Pay bill at 13%.

It is quite clear that, most of the small and medium enterprises were geared towards satisfying their customer needs through use of M-Pesa and Till number, since there are no charges to the customer while using the Till number mode of payment.

4.4.2 Digital lending and growth of SMEs

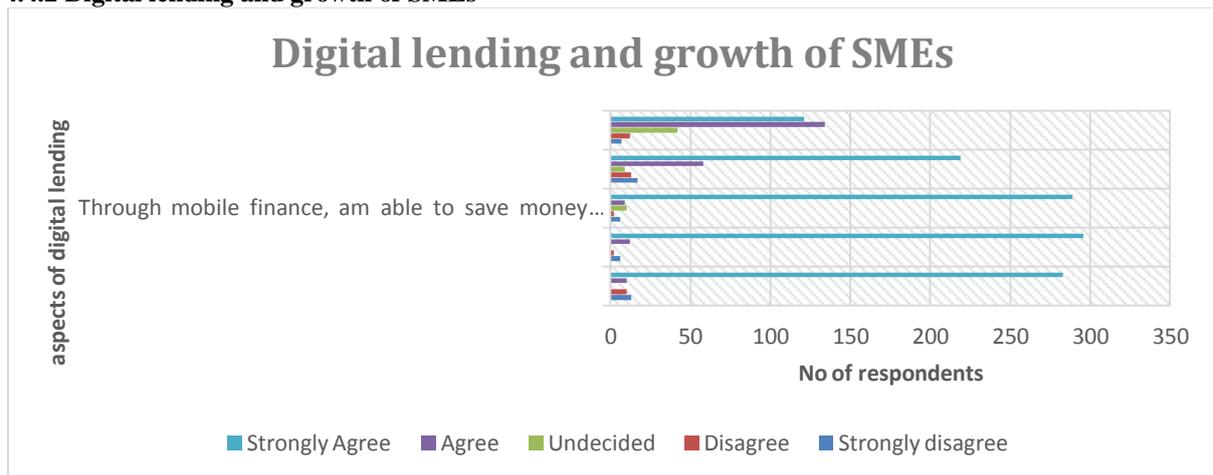


Figure 4. 7: Respondents on digital lending

Respondents agreed with all mobile finance registration attributes that mean greater than 3.5 and less than 1.0.0. Standard deviations. The thoughts of the respondents were also not greatly scattered. From the findings above 89.6% of the respondents agreed (M=4.71, SD=.945) that through the use of mobile finance, they are able to obtain credit from financial institutions. Moreover, mobile finance has made it possible for SME owners to receive ample financing to expand their company (M= 4.87, SD= 0.618), with 97.5 percent of respondents agreeing and/or strongly agreeing with the assertion. In addition, 94.3% of respondents agreed that they can save money from their business procedures via cell phones and that 87.7% of respondents strongly agreed that the existence of mobile finance relieves them of the problems of needing to open a bank account. Furthermore, 80.7% of respondents accepted (M=4.11, SD=0.926) that access to mobile finance helps their swift response to the needs of customers.

From the findings it's evident that most of the SMEs have or utilize mobile banking as it is easy to access and one doesn't have to travel to the bank physically. Also most of the SMEs have applied for loans for various purposes through their mobile phones as it doesn't need collateral and other bureaucracies that hinder access to lending. The findings of the study coincided with the conclusion made by (Udell, 2012) that technologies are best placed to simplify the complexities that are involved in access to finance and the levels of engagement between the financial institutions and the SMEs.

In addition, the researcher went further to establish the mobile finance services utilized by the respondents in their businesses. The findings of the analysis were as shown in figure 4.8 below

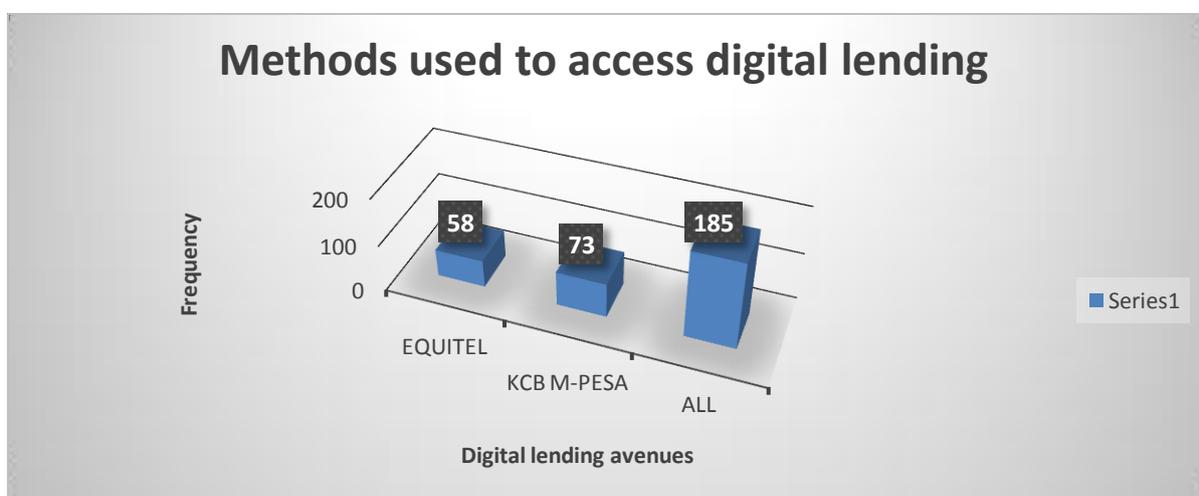


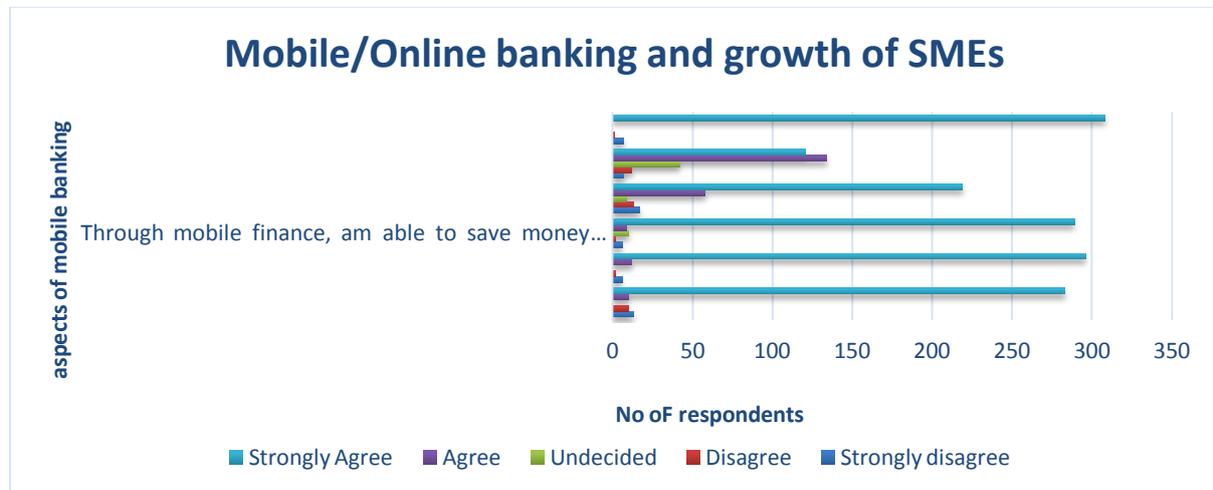
Figure 4. 8: Methods used to access digital lending

The finding indicated that, the majority of the respondents were more confident in using both Equitel and KCB M-Pesa at 58.5%, with the notion that the avenues are aligned with the banks and hence limit of accessing the digital lending was higher. KCB Mpesa stood at 23.1% while Equitel at 18.4%. The result of the finding was that most of the SMEs have embraced the digital lending platform, considering there is no collateral

compared to physical banks. Also the speed of processing and accessing digital loans was considering more comparative compared to the normal bank loans which takes a minimum of ten working days to process and dispatch.

**4.4.3 Mobile/Online banking and growth of SMEs**

The study sought to know the ease of access to mobile banking. Respondents were asked to rate how convenient and how fast mobile banking was in enhancing growth of their business by selecting ‘strongly agree’, ‘agree’, ‘undecided’, ‘disagree’ or ‘strongly disagree’. From the ratings, it was clear that mobile banking was more embraced as described below. Their ratings are summarized in Figure 4.9



**Figure 4. 9:** Respondents on use of mobile/online banking

From the figure 10 above, 91.8% of the respondents agreed that mobile banking enables them to track transactions in their bank (M=4.73, SD=0.909). A further 89.2% of the respondents agreed that they are able to access their account balances through their phones (M=4.39, SD=.934). Further 87.3% of the respondents agreed that they are able to make deposits to their bank accounts through mobile banking (M=4.24, SD=.917) while 90.9% agreed that the presence of mobile banking has prevented theft of money that arises from storing a lot of money in the business (M=4.12, SD=.863). On the other hand, 94% Of the respondents agreed (M=4.31, SD=.827) that they rely on mobile banking for all their banking transactions. Finally 74.7% of the respondents agreed that online banking is convenient in terms of time and cost of transaction.

From the findings, we get to see that a majority of the SMEs agree that mobile banking is an easy way of accessing and monitoring the business account as it saves time and one only needs access to a mobile phone. Otiso *et al.* (2013) conclusion of their study aligned with the finding of the current study that a significant number of the SMEs have aligned themselves in use of mobile banking in place of traditional banking, since they are in a position to obtain both information and transactional services in their mobile phones

Figure 4.10 below reports the general feel of the respondents in relation to Fintech as a new mode of business operation. Majority of the respondents at 79.7% expressed reservations on the time lag especially when one transfers funds to a wrong account, where it takes more than 24 hours to reverse the funds. Most respondents felt this has caused them loss of money and time in following up for the refund. On the other hand 20.3% of the respondents strongly felt that FinTech was more reliable and convenient. From examining how respondents rated convenience and speed of accessing mobile money in relation to other forms of banking and ease of accessing the mobile banking it is possible to conclude that mobile banking is easily accessible and easy to operate for the MSEs in the study. This has a significant effect on growth of SMEs since they can track their transactions. Furthermore it mostly saves time one has to go to the bank thus one need not move from the premise since its readily available through mobile phone.

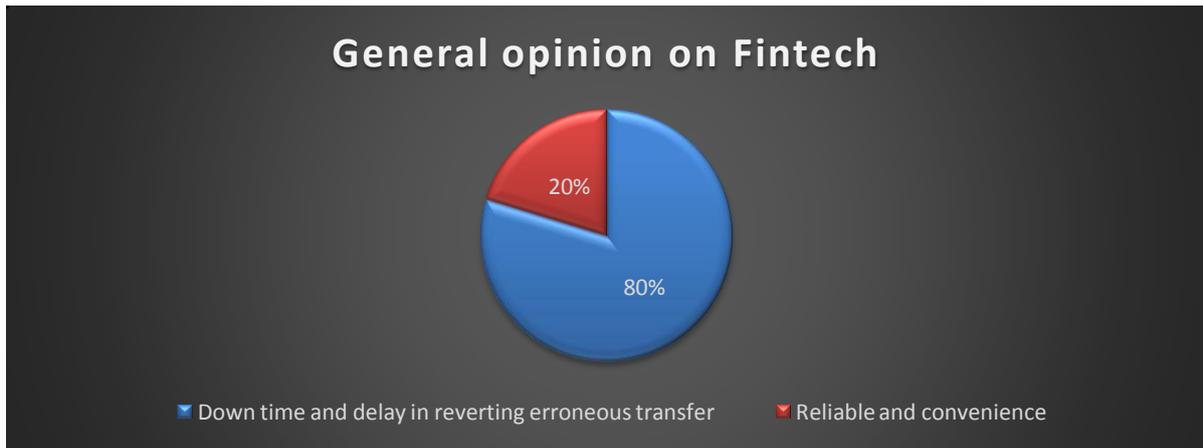


Figure 4. 10: Respondent on general opinion on FinTech

#### 4.4.4 Growth of SMEs

The study evaluated the understanding of the respondents on how Fintech has enhanced growth of the small and medium enterprises in Kiambu County. Thus the interviewees were asked to indicate the perception of growth of their businesses since they started using mobile money. They were required to rate changes in sales volumes, customer base, sales revenue, operation cost and market value of the business. The respondents were to show how strongly they opposed, opposed, undecided, disagreed with or strongly disagreed with each of the five main areas chosen. Figure 4.11 is a summary of their responses

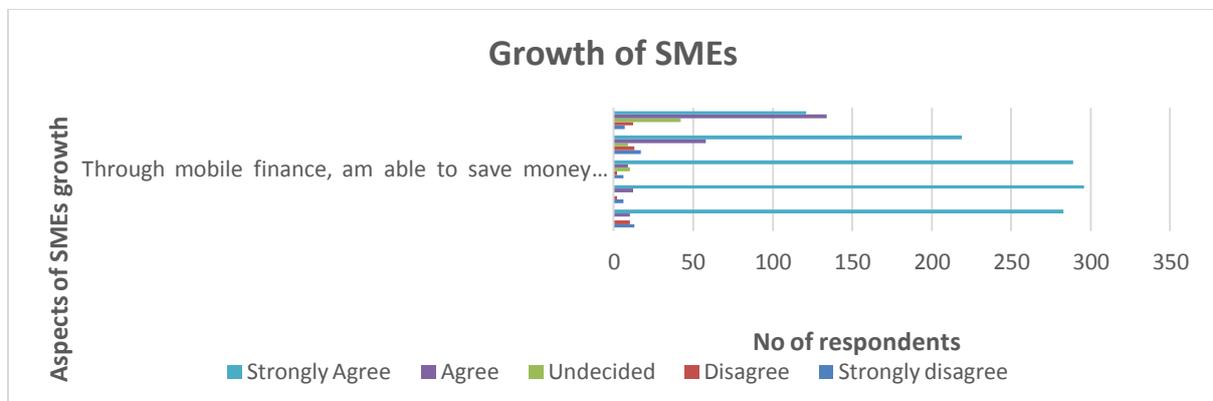


Figure 4. 11: Respondents rating on growth of SMEs in Kiambu County

The researcher found that 63.3% of respondents agreed that the use of FinTech services has improved their sales volume growth over the past three years ( $M=3.37$ ,  $SD=1.434$ ) while 83.2% agreed that the use of FinTech services has contributed to a rise in their company customer base ( $M=4.04$ ,  $SD=.1.135$ ). On average, 83.2% of respondents accepted that their company had encountered increased sales revenue over the last three years ( $M=4.03$ ,  $SD=1.122$ ). In addition, 81.7% of respondents agreed ( $M=4.03$ ,  $SD=.1.063$ ) that by the time they started using FinTech, they have seen a decrease in operational costs in their companies and that FinTech systems have provided alternative sources of credit from banks that are difficult to access. Finally, 81.1% of the respondents agreed that adoption of FinTech has resulted to an increase in market value and share of their business ( $M=3.99$ ,  $SD=1.081$ ).

From these findings there was a direct relation between effect of FinTech and growth of SMEs. This is so because from the data, businesses that adopt the various FinTech services have seen some growth in their business as indicated by the number of respondents who agree and strongly agree that FinTech has had a positive impact on their business. The study by (Gok, 2007) concluded that Small and Medium Enterprises that were making use of technology and knowledge to innovate and develop high value added products of good quality, were able to compete globally achieving higher growth than those who did not embrace technology in running their businesses.

#### 4.5 Diagnostic Tests

##### 4.5.1 Normality / Descriptive statistics

The descriptive statistics results for the study were displayed in table below

**Table 4. 7:** Descriptive statistics results

Variables	Mean	Std. Deviation	N
Mobile money	4.8	0.611	316
Digital Lending	4.58	0.631	316
Online/mobile banking	4.28	0.634	316
Growth of SMEs	3.89	1.02	316

The researcher was able to conclude the data was normally distributed since the mean were almost similar, while the standard deviation between variables was almost at the same range.

##### 4.5.2 Correlation Analysis

In order to establish if there existed any relationship between the study variables, Pearson correlation coefficient analysis was performed. A correlation of 1 shows a perfect positive correlation while correlation of 0 or value close to zero shows no relationship or rather weak relationship respectively. -1 value, shows a negative perfect relationship and values close to it have strong negative relationship. The table below shows the value of Pearson correlations for the variables.

**Table 4. 8:** Correlation Analysis

Variables		Mobile money	Digital Lending	Online/mobile banking	Growth of SMEs
Mobile money	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	316			
Digital Lending	Pearson Correlation	.774**	1		
	Sig. (2-tailed)	.000			
	N	316	316		
Online/mobile banking	Pearson Correlation	.416**	.457**	1	
	Sig. (2-tailed)	.000	.000		
	N	316	316	316	
Growth of SMEs	Pearson Correlation	.295**	.280**	.385**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	316	316	316	316

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

In the table 4.8 key interest was on the correlation between the dependent variable (growth of SMEs) with the independent variables (Mobile money, digital lending and mobile/online banking). The study conclude that, there was a significant relationship (Sig 0.000) between growth of SMEs and mobile money, as well as weak correlation ( $r=0.295$ ) at the 0.01 level in a two tailed test. Secondly, there was a significant relationship (Sig 0.000) between growth of SMEs and digital lending with a weak correlation ( $r=0.280$ ) at the 0.01 level in a two tailed test. Finally, there was significant relationship (Sig 0.000) between growth of SMEs and mobile/online banking with a weak correlation ( $r=0.385$ ) at the 0.01 level in a two tailed test. From the results we can conclude that, the topic of the study “Effects of Fintech on growth of SMEs in Kiambu County” was valid as all the variables exhibited positive relationship despite the weak correlation.

##### 4.5.3 Multicollinearity Using Variance Inflation Factors (VIF)

Multicollinearity measures the inter-correlation between predictor variables. Independent variables should have low correlation with other independent variables. If the tolerance value is  $> 0.2$ , then there multicollinearity is not significant. In addition, if the variance inflation factor (VIF) is  $< 5.0$ , then multicollinearity does not affect the model fit. The result of the study are reflected in table 11

**Table 4. 9:** Results of coefficients on predictor variables

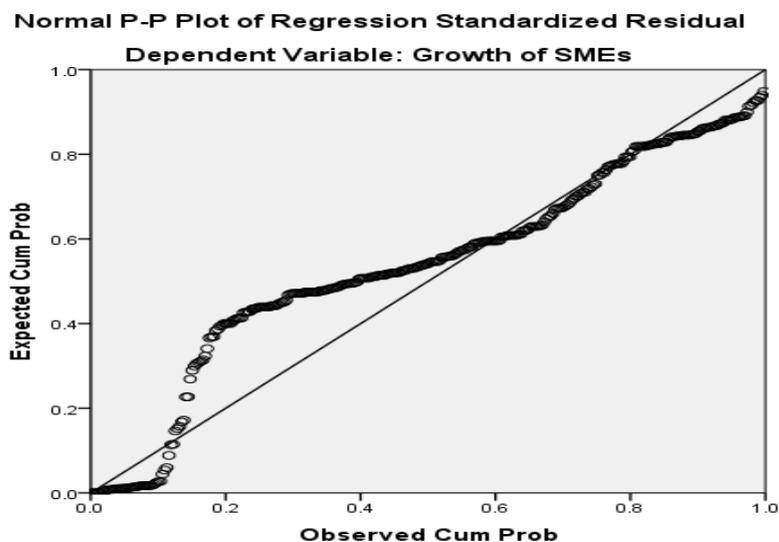
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
	.384	.466		.825	.410		
1	.244	.137	.146	1.784	.075	.396	2.526
	.038	.135	.024	.282	.778	.379	2.642
	.505	.094	.314	5.382	.000	.781	1.280

a. Dependent Variable: Growth of SMEs

From the study, all the predictor variables have a tolerance above 0.2 threshold with mobile banking at 0.396, digital lending at 0.379 and online/mobile banking at 0.781. Furthermore the variance inflation factor (VIF) for all the independent variables was less than the set standard of 5.0, whereby mobile money VIF was 2.526, digital lending VIF was 2.642 and mobile/online banking VIF was 1.28. The researcher concluded that there was no significant collinearity between the independent variables and hence fit good to the regression model.

**4.5.4 Homoscedasticity of variables**

Homoscedasticity articulates how much of an error the regression equation made with respect in predicting individual values in data set. If the error term is not constant then the data suffers from heteroscedasticity.



**Figure 4. 12:** Residual distribution analysis

Figure 4.12 clearly indicate that the residual in the data were equally distributed as they were within line of good fit with minor variation.

**4.6 Model fitting**

A linear multiple regression analysis was carried out to establish the linear relationship between growth of SMEs and Fintech. Likert scales were used to measure the outcome variable which was growth of SMEs as well as the three predictor variables of Fintech namely: mobile money, digital lending and mobile/online banking. A total score was computed for each variable from the likert scales and used in the regression analysis. The researcher predicted that the following regression model would best describe the linear relationship between the four variables:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where;

$\gamma$  = Dependent Variable (SMEs Growth)

B1..... B3= coefficient for independent Variables

B0=the constant

X1= Mobile money

X<sub>2</sub> = Digital lending

X<sub>3</sub> = Mobile/Online banking

e = error term.

A regression analysis was undertaken and the findings stipulated below.

#### 4.6.1 Regression summary

In the regression model summary table, the coefficient of determination that is denoted by R squared is given by 0.163. It shows the strength in which the model is able to predict the dependent variable. Considering all variables demonstrated statistically significant relationships, a regression was conducted to determine the level of significance. The findings in table 4.10 show an adjusted R squared of (.163); which mean that about 16% of growth in SMEs was attributed to mobile money, digital lending and mobile/online banking, while the remaining 84% was ascribed by other factors not considered in this study

**Table 4. 10:** Regression summary model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.413 <sup>a</sup>	.171	.163	.933	.171	21.413	3	312	.000

a. Predictors: (Constant), Online/mobile banking, Mobile money, Digital Lending

#### 4.6.2 Analysis of variance

Analysis of variance is conducted in order to determine the importance of the regression model and whether the null hypothesis should be discarded or not and the results are shown in the table below

**Table 4. 11:** Analysis of Variance (ANOVA) results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.924	3	18.641	21.413	.000 <sup>b</sup>
	Residual	271.614	312	.871		
	Total	327.539	315			

a. Dependent Variable: Growth of SMEs

b. Predictors: (Constant), X<sub>1</sub> = Mobile money X<sub>2</sub> = Digital Lending, X<sub>3</sub> = Online/mobile banking.

The significance of the model is determined by comparing the p value with the alpha value. If the p value is greater than the alpha value then the model is said to be insignificant and if it is less than the alpha it is said to be significant. The regression analysis is measured at 95 degrees of freedom which means the alpha value is 0.05. According to the above table, the value of P is shown as 0.000 which shows that it is less than the alpha value. We therefore come to a conclusion that the relationship between effect of financial technology on growth of small and medium enterprises in Kiambu County is significant ( $F(3, 312) = 21.413, p = 0.000$ ).

In order to determine whether to reject or fail the null hypothesis we compare the F statistic and the calculated value of F as shown in the above table 4.11. If the calculated value was greater than the F statistic hence null hypothesis was rejected. As per the topic under study, the null hypothesis states that there is no effect of FinTech on growth of SMEs in Kiambu County. The calculated value of F is 21.413 while the F statistic at an alpha of 0.05 and 312 degrees freedom is 1.637. The calculated value is greater than the F statistic which means we reject the null hypothesis. In conclusion we say that there is a positive significant effect of FinTech on growth of SMEs in Kiambu County.

#### 4.6.3 Regression coefficients

The coefficient that can be used by the model in predicting the dependent variable are shown in the table 4.12 below

**Table 4. 12:** Regression Coefficients analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Standard Error			
1	(Constant)	.384	.466		.825	.410
	Mobile money	.244	.137	.146	1.784	.075
	Digital Lending	.038	.135	.024	.282	.778
	Online/mobile banking	.505	.094	.314	5.382	.000

As shown in table 4.11 the regression model was significant ( $F(3, 312) = 21.413, p=0.000$ ) where Fintech predictors do predict growth of SMEs. However, looking at each of the coefficients separately as indicated in table 4.12, we realize that only mobile/online banking has a significant ( $r=0.314, p=0.000$ ) influence on the dependent variable (growth of the SMEs) while mobile money and digital lending did not have a significant ( $p>0.05$ ) influence on the growth of SMEs.

The coefficients  $\beta_0, \beta_1, \beta_2, \beta_3$  are given by, 0.384, 0.244, 0.038, 0.505 and the error term  $\epsilon$  is denoted by  $\epsilon$  given by 0.466. The model therefore becomes

$$Y = 0.384 + 0.244X_1 + 0.038X_2 + 0.505X_3 + 0.466$$

This model therefore may be used to show the effect of any of the independent variable on growth of SMEs. For instance, a unit change in  $X_1$  (mobile money) would result to 24.4% increase in  $Y$  (Growth of SMEs), while unit change in  $X_2$  would result to 3.8% increase in  $Y$  and finally a unit change in  $X_3$  would result to 50.5% increase in  $Y$

#### **4.7 Discussion of the findings**

The study focused on three specific objectives namely mobile money, digital lending and mobile/online banking and their effect towards growth of the SMEs in Kiambu County. From the regression analysis it was established that mobile money had a positive relationship ( $r=0.295, p<0.001$ ) with the growth of the SMEs. Furthermore, the study concluded that mobile money was not a significant ( $p>0.05$ ) predictor on growth of SMEs as shown in table 4.12. The study agreed to the findings of (Govil et al., 2014) that there was positive relationship between mobile finance and economic growth of businesses. The study on the contrary did not agree to the findings of (Must and Ludewig, 2010) which concluded that ease of receiving and sending money through mobile phones has been some of the catalyst towards acceptability of the Fintech in developing countries. This was exhibited by weak correlation between mobile money and growth of SMEs which could have been contributed by the fact that most financial institutions have come up with more innovative ways of sending and receiving funds in bulk like Pesa Link and Real Time Gross Settlement (RTGS)

Digital lending was found to have a positive relationship ( $r=0.28, p<0.001$ ) with growth of SMEs though not statistically significant ( $p=0.778$ ) to influence on the development of small and medium enterprises in Kiambu County. The study was in agreement with the findings of (Wanjohi, 2010; Birundu, 2015; Berger et al., 2019; and Badulescu, 2011) that availability of the credit and loans at different levels of product and service development catalysis the growth of SMEs. However, the study painted a different opinion contrary to that of (Must and Ludewig, 2010) which concluded that access to credit by SMEs is complemented by savings. The study established that most of the SMEs average annual turnover as above Kes.5 million and indication that, they required a huge credit for turnaround in their operations which could not have been offered by FinTech platform.

According to Central Bank Rates (CBK), the lending rate stands at 11.94%, thus the commercial bank lending (CBL) should be 15.94% per annum. The CBL rates seemed more favorable than most of the Fintech whose lending rate was 4.5% per month translating to 54% per annum which was quite expensive. The high cost of lending could have resulted to most of the SMEs shying off from obtaining credit from fintech platform. Furthermore, most of the financial institutions have continued to introduce other credit products like overdraft, invoice discounting, letter of credit which did not require any collateral. Hence the SMEs required to enhance their level of interactions with the financial manager, their capability in marketing strategy, financial operations and technology as concluded by (Beck et al., 2011).

Finally, the study established that mobile/online banking had a positive relationship ( $r=0.385, p<0.001$ ) with the growth of SMEs. In addition, it was noticed that mobile banking had statistically significant ( $p<0.001$ ) influence on the growth of the SMEs in Kiambu County. The study was in agreement with the findings of (Otiso et al., 2013) which concluded that significant number of the SMEs have aligned themselves in use of mobile banking in place of traditional banking since they are able to obtain both information and transactional services in their mobile phones. Most of the entrepreneurs were able to access bank balances, transfer funds from one bank account to another through the mobiles phones thus affirming the significant influence of the mobile banking over digital lending and mobile money on the growth of SMEs in Kiambu County.

## **V. Summary, Conclusions And Recommendations**

### **5.1 Introduction**

The chapter present the summary and discussion of the key data finding for each objective, conclusion drawn on the finding highlighted and recommendation drawn were focused on addressing the objective of the study. The researcher then presents recommendation for future research and the major limitation of the study.

## **5.2 Summary**

### **5.2.1 Growth of SMEs**

The growth of SMEs was evaluated using five benchmarks described as; increase in sales volume over the last three years, increase in customer base, increase in sales revenue, reduction in operation cost and increase in the market value and share of the business. Over 63% of the respondents were in agreement that their sales volume had increase while over 80% indicated that their customer base, sales revenue, market share had increased and operation costs reduced as a result of using the Fintech platform. Nonetheless, 31% of the respondents were of contrary opinion in regard to increase in sales volume as a result of using Fintech services. On overall the study established that SMEs in Kiambu County have grown as a result of usage of Fintech services.

### **5.2.2 Mobile money**

The study sought to establish how effective mobile money has enhance growth of SMEs. More than 80% of the respondents indicated their satisfaction in usage of mobile money to make payments to suppliers and other businesses, place orders, receive payments, reduce liquid cash in the office thus enhancing efficiency in operation. In addition 69% of the respondents preferred use of both M-Pesa and Till Number for mobile money operations. From the findings of the regression analysis, mobile money proved to have no significant influence to the growth of the SMEs in Kiambu County, which could have resulted from the general feel that the mobile service providers have not introduced proper effective mechanism to timely reverse the funds ones sent to a wrong recipient.

### **5.2.3 Digital lending**

On the other hand, the study found that over 80% of the entrepreneurs were able to obtain credit, their loan limits had increased, were able to save, did not have to physically go to the bank for loan processing and were able to address their customers' needs more effectively and efficiently. The study further established significant ( $\text{sig}=0.000$ ) positive correlation between digital lending and SMEs growth. It therefore found that there is a clear linear relationship between the two variables, meaning that if one variable increases, the other variable increases as a result. Digital lending as analyzed in the regression analysis exhibited its impact on growth of SMEs in Kiambu County. The study further established that most of the respondents were comfortable in use of both Equitel and KCB M-Pesa as platforms to access digital lending. However, the regression model analysis stipulated there was not significant influence by digital lending on the growth of the SMEs, which could be contributed by the limit of loan an entrepreneur can access, which may not be sufficient to boost on the growth of the business.

### **5.2.4 Mobile/online banking**

The study further established that mobile banking enabled over 90% of the business owners were able to track transactions in their bank, access their account balances, make deposits to their bank accounts, undertake bank transactions through use of their mobile phones. Furthermore, the respondents strongly felt that there was reduction of fraud in the organization due to reduction in liquid cash in the office. Regression analysis indicated that mobile banking had positive significant influence on the growth of SMEs.

## **5.3 Conclusions –**

The study concluded that FinTech had a significant positive relationship on the growth of SMEs in Kiambu County, however looking at each predictor variables separately, mobile/online banking had a significant influence on the growth of the SMEs while mobile money and digital lending did not. The study also established a weak correlation between Fintech and growth of SMEs, which could be as a result of 83% of the total variation on growth of SMEs was not explained in the regression model. Finally, the study concluded that increased use of mobile money has a positive influence on the growth of small and medium-sized enterprises in Kiambu County, considering expansion of SMEs from a single operated company to several employees, increase sales volume and revenue is an exhibition of growth of SMEs

## **5.4 Recommendations –**

The researcher advises that the mobile service provider should strive to advertise their services to enable as many business people to use mobile money product. This can be achieved through clear advertisements that would serve as a source list of the importance of mobile money services to their business operations. On the other hand, financial institutions should take advantage of the increase in use of mobile money services to form collaborations with mobile phone services providers and provide flexible financial services to the traders. Furthermore, the study recommends that SMEs traders should implement mobile money services in their enterprises as this has been shown to serve as an instrument for business development. The use

of mobile money services has been shown to have numerous advantages including protecting traders from fraud as a result of having too much cash at hand.

Simple steps to assess the growth of SMEs are still a critical field in which dedicated attention is required. SMEs have not generally accepted the financial initiatives accepted by larger companies. Book keeping is inconsistent, despite being a valuable source of company turnover, employee data and business growth information. It may be appropriate to think of other realistic resources to bridge the gap that exists when searching for SMEs data. In this regard, the 'Lipa na M-Pesa' Safaricom service, could have the purpose of undertaking simple arithmetic as total revenue and total expenditure in given period.

Finally the service providers of the Fintech services would have to improvise new efficient ways of resolving the time lag experienced in case of erroneous transfer of funds while using mobile phones. This would result to more entrepreneurs coming on board and embracing Fintech as a platform to enhance growth of their business.

### **5.5 Recommendations for Future Research**

The research only covered three variables mobile finance, mobile money and online banking to determine the effect of FinTech on growth of SMEs, a comparative study ought to be carried to examine other variables that are not covered under this study. The research only covered Micro and Small Enterprises in Kiambu County where there are other Medium and large enterprises that need to be covered. The study recommends the study to be carried out in future since in every year new different SMEs are registered under different categories.

### **Acknowledgment**

My sincere gratitude and appreciation goes to the almighty God for safety and energy to undertake this assignment. I am greatly indebted to Dr. Peter Kariuki for his immeasurable support and guidance while writing this proposal report. Special thanks to my family members who realized the course of my study and gave me moral support to complete my studies.

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## APPENDICES

### Appendix I: Data collection letter



Thika Road, Ruaraka  
P.O Box 56805 -00200 Nairobi, Kenya  
Pilot line: +254 020 8070408/9  
Tel: +254 020 3537842  
Mobile: +254 734 888022/710 888022  
Website: [www.kca.ac.ke](http://www.kca.ac.ke)

SCHOOL OF GRADUATE STUDIES AND RESEARCH

KCAU/SGS/MSc/Oct.20/17

October 9, 2020

To whom it may concern,

Dear Sir/Madam,

**RE: NG'ANG'A PIUS NDUNG'U: KCA 13/03620**

It is my distinct pleasure to introduce to you Mr. Pius Ng'ang'a who is a student in our institution pursuing a Master of Science in Commerce at the School of Business and Public Management.

Pius is conducting a research on a topic titled: "*Effect of Fintech on Growth of Small and Medium Enterprises in Kiambu County, Kenya*" which is part of the requirements of the program he is pursuing. The research as well as the data procured thereof shall be used for academic purposes only.

Any assistance accorded to him is highly appreciated.

In case of further inquiry, do not hesitate to contact the undersigned.

Yours faithfully,

Dr. Nyaribo Misuko  
Dean, School of Graduate Studies & Research

**Appendix II: Questionnaire**

I am a Master of Business student at KCA University .I have designed the following questionnaire based on the above topic. I kindly request you answer the questions to the best of your knowledge. All information collected to this questionnaire are confidential and would only be used for this research.

Instruction: Indicate with a tick [ ] in the space provided.

**Part A: General Information**

1. Tick your gender? Female [ ] Male [ ]

2. Indicate position which you hold in the business?

Business owner [ ] Employee [ ] Family [ ]

3. In which SME sector do you operate in

Accommodation and Catering	<input type="checkbox"/>	Storage transport and communication	<input type="checkbox"/>	Private education & health	<input type="checkbox"/>
General trader, Retailer, Wholesale and store	<input type="checkbox"/>	Industrial plants, Factories & Workshops	<input type="checkbox"/>	Professional and Technical services	<input type="checkbox"/>
Agricultural producer / Processor	<input type="checkbox"/>				

4. What is your age group?

Below 20 years [ ]	21-30 Years [ ]
31- 40 Years [ ]	41-50 Years [ ]
Over 50 years [ ]	

5. What is your highest level of Education?

Primary level [ ]	Secondary level [ ]
College level [ ]	University level [ ]
Post graduate level [ ]	

6. How many employees does your business have?

1-10	<input type="checkbox"/>	10-20	<input type="checkbox"/>	20-30	<input type="checkbox"/>
30-40	<input type="checkbox"/>	40-50	<input type="checkbox"/>	50 and above	<input type="checkbox"/>

7. How old is your business?

Below 2 years	<input type="checkbox"/>	2-5 years	<input type="checkbox"/>
5-10 years	<input type="checkbox"/>	Above 10 years	<input type="checkbox"/>

8. What is your average turnover annually in Kshs?

Below Kes.1 Million (m)	<input type="checkbox"/>	Between Kes.1m to 2m	<input type="checkbox"/>	Between Kes.2m to 3m	<input type="checkbox"/>
Between Kes.3m to 4m	<input type="checkbox"/>	Between Kes.4m to 5m	<input type="checkbox"/>	Above Kes.5 Million	<input type="checkbox"/>

**Section B: Type of FinTech used**

9. In the following section, use the following scale to show your level of agreement with the statements therein

1-Strongly Disagree (SD) 2-Disagree (D) 3-Undecided (U) 4-Agree (A) 5-Strongly Agree (SA)

**I. Mobile money**

**Select the method of mobile payments that you usually use in your business**

Till Number  Pay bill Number  M-Pesa

M-Pesa & Till Number  M-Pesa & Pay bill  M-Pesa, Paybill & Till Number

No.	Description	5	4	3	2	1
I	I use my mobile phones to pay my suppliers					
Ii	I place my orders through use of mobile phones with my suppliers					
Iii	I also accept payments through mobile money from my clients					
Iv	I don't receive cash from my clients since I have fully adopted Fintech service					
V	I also transfer money through M pesa to my colleagues in business					
Vi	Receiving payments through M pesa relieves me the problem of having so much money in my premise					
vii	Mobile money have enhanced the efficiency of conducting business					

**II. Digital Lending**

No.	Description	5	4	3	2	1
i	Through use of Digital Lending, am able to obtain credit from the financial Institutions					
ii	Digital Lending has enabled me gain enough finances to grow my Business					

iii	Through mobile finance, am able to save money from my business proceedings					
iv	The presence of digital lending relieves me the problem of having to open a bank account					
v	Access to digital finance enables my quick response to customers' needs					

**Which of the following methods do you use to access Digital Lending?**

M-Shwari  Equitel  KCB-Mpesa  All

**III. Online Banking**

No.	Description	5	4	3	2	1
i	Online banking enables me track transactions in my bank					
ii	Am able to access my account balance through my phone					
iii	Am able to make deposits direct to my bank account through mobile banking					
iv	Presence of Online Banking have prevented theft of money that would have been stored in the premise					
v	I rely on Online Banking for all my bank transactions					
vi	Online Banking is convenient in terms of time and cost of transaction					

**Section C: Growth of SMEs**

10. This section aims to see whether the different types of FinTech have resulted in growth of the respective SMEs under study.

**In the following section, use the following scale to show your level of agreement with the statements therein**

1-Strongly Disagree (SD) 2-Disagree (D) 3-Undecided (U) 4-Agree (A) 5-Strongly Agree (SA)

No.	Description	5	4	3	2	1
i	Use of FinTech services has enhanced growth of sales volume over the last three years					
ii	Use of FinTech services has resulted to increase of customer base in my business					
iii	My business has experienced increased sales revenue over the last three years					
iv	Use of FinTech in my business has reduced operating costs					
v	Use of FinTech has resulted to an increase in market value and share of my business					

11. What is your opinion on use of FinTech in your business?

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 .....  
 .....

Appendix III: Registered SMEs in Kiambu County

Business Category	Business code	Description	Total MSEs
1	495	Other Agricultural, Forestry and Natural Resources	94
	415	Small Agricultural Producer/Processor/Dealer	298
2	695	Other Professional & Technical Services	610
	615	Small Professional Services Firm	341
	620	Independent Technical Operator:	77
3	556	Other eating house, catering	11
	555	Small Eating House; Snack Bar	54
	760	Small Entertainment Facility	15
	532	small hostels with up to 49 rooms	16
	527	Small Lodging House B/C Class:	25
	518	Small Lodging House with Restaurant and/ or Bar	20
	546	Small Restaurant with Bar Up to 10 customers	28
	544	Soup Kitchen(e.g.mutura, kichwa and soup)	15
	558	Butchery with Roasted Meat and/or Soup Kitchen	60
4	895	Other Manufacturer, Workshop, Factory, Contractor	89
	815	Small Industrial Plant: premises up to 100 m2.	55
	830	Small Workshop, Service Repair Contractorlydia123	347
5	395	Other Transport, Storage, and Communications	46
	315	Small Transport Company: From 2 to 5 vehicles	142
	365	Small Storage Facility: Up to 1,000 m2.	39
	320	Independent Transport Operator	68
6	705	Private Higher Education Institution: With between 300 to	25
	706	Private Higher Education Institution With over 500	10
	707	Private Higher Education Institution: Up to 299 students	39
	795	Other Education, Health, and Entertainment Services	32
	720	Small Private Educational Facility	150
	735	Small Private Health Facility	25
	745	Traditional Health Services, Herbalist, Traditional Healer, etc.	5
	740	Health Clinic/Doctors Surgery	212
	721	Driving schools	19
725	Large Private Health Facility	21	
7	295	Small Informal Sector services providers	210
	195	Kinyozi, saloon, milk bars and hawkers operating on 9m	456
	120	Kiosk,light or temporally construction less than 5m2	28
	618	Small security firms. Upto 49 guards	31
	115	Small Trader, Shop or Retail Service	1102
	114	General Retail Shop: From 17 m2 Upto 23	82
		<b>TOTAL</b>	<b>4879</b>

Source Kiambu County Business Registers 2018