

**IMPACT OF MOBILE COMMERCE SERVICES ON THE PERFORMANCE OF  
SMALL AND MEDIUM ENTERPRISES IN NIGERIA**

**BY**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE  
STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc.)  
DEGREE IN BUSINESS ADMINISTRATION**

**DEPARTMENT OF BUSINESS ADMINISTRATION,  
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**AUGUST, 2016**

## Declaration

I declare that the work in this dissertation entitled “Impact of Mobile Commerce Services on the Performance of Small and Medium Enterprises in Nigeria” Has Been Carried out by me in the Department of Business Administration. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other institution.

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.....

.....

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Signature

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### **Certification**

This dissertation entitled “IMPACT OF MOBILE COMMERCE SERVICES ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN NIGERIA” by Isaiah Ogalegwu OBANDE meets the regulations governing the award of the degree of Master of Science (M.Sc.) in Business Administration of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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## **Dedication**

This dissertation is dedicated to the Almighty God, the father, the son, and the Holy Spirit who has been my divine provider, divine sustainer and divine teacher.

## Acknowledgement

First and foremost, my appreciation goes to God almighty, the gracious God who spared my life since the beginning of this Masters programme and who made the completion of this Academic exercise a reality.

No research is carried out without guidance and supervision; this is why it is more expedient to appreciate the rare, untiring and motivating effort of my supervisors, Dr. L. B. Dogarawa and Dr. M.Y Abubakar who had assisted, guided and rendered their best supervisory knowhow throughout the entire process of completing my dissertation to make it a success. May God continue to strengthen and bless them in all their endeavours.

My profound gratitude goes to the Coordinator of the MSc Business Administration programme in person of Dr. O.D.Y Malachy, the Assistant Coordinator Dr. Salisu Umar and the Head of Department, Professor Bello Sabo for their advice and immense contributions towards the successful completion of this dissertation.

I wish to register my heartfelt gratitude and appreciation to Dr. Luka Mailafia and his entire family who painstakingly polished my academic career and have made this accomplishment a heartwarming and a rewarding venture.

My greatest appreciation goes to my beloved parents, Mr. OgbuObande and Mrs. Martha OgbuObande. Who have been resilient in ensuring that this research work was successfully completed most especially for their faith and believe in my potentials, I am so grateful for all their unfaltering love and support. Also to my lovely siblings for their support, understanding and encouragement, May God in his infinite grace continue to bless them and keep them all in good health.

My sincere thanks go to all my course mates for their support, care and love from the beginning of this memorable academic venture till this very moment of its completion I must admit it was a great honour and privilege working together with you all I earnestly hope and pray that that spirit of unity will continue around us and also to my mentor, friends, relatives, senior colleagues, junior colleagues and well-wishers thank you all for being by my side when it matter most.

Finally, I wish to extend my profound gratitude to my darling heartthrob in the person of Lizzy Ochanya Ojile for her patience and understanding throughout this Academic pursuit. Also to the following individuals and families: Pastor & Mrs Josiah Eze and family, Pastor (Mrs.) Beatrice Okpora, Dr. & Dr (Mrs.) Ayuk Essoka and family, Madam Regina, Mr. Micheal Itam Archibong and family, Mrs. Hilda Anyating, Mr. & Mrs. Mulumba Dodo, Mr. & Mrs Boman, sis. Cornelia, Sis. Chiwendu, Sis. Blessing, miss Amina, Miss Kemi Amusan, Modesta Nwachukwu, Mr. Ponjul, Mr. & Mrs John Aikhomu & family. Thanks for your kind words of encouragement and support.

## **Abstract**

The financial vulnerability of the SME sector in Nigeria has led to its slim chances of survival due to low sales, low profitability, high costs of doing business thereby resulting in poor performance. The study seeks to ascertain the extent to which mobile commerce proxied by mobile penetration, internet penetration and lending rate has impact on SMEs performance in Nigeria. The population of the study comprised of all the 17,284,678 registered SMEs in Nigeria. The study adopted correlational research design for all the registered SMEs in Nigeria from the year 2003 to 2014. Secondary source of data collection was adopted for the study and Vector Autoregressive Tool of data analysis to test the formulated hypotheses. The study found that mobile commerce has an insignificant impact on SMEs survival and SMEs access to credit in Nigeria but SMEs asset size was found to be significant. The study concluded that small and medium enterprises in Nigeria patronize internal rather than external sources of finance for their startup capital and even for expansionary purposes but patronizes external sources for their fixed assets. It was therefore recommended that commercial banks should make provision for easy accessibility to adequate and sufficient initial or start-up capital to its committed customers who are consistent in their transactions with their bank.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 BACKGROUND TO THE STUDY**

Over the last decade the world has become more digitalized and mobile. This digitalization brought about by the advancement in technology has affected all sectors of the economy which the small and medium enterprise sector is not an exception. As a result of this, business organisations world over have sought for ways of improving their business operations through improved technologies in order to serve their customers better. Consequently, the advent of Electronic commerce has assisted business organisations in achieving this desired goal. E-Commerce refers to online transactions- buying and selling of goods and/or services over electronic medium especially the internet (Yeo & Huang 2003). It consists of all commercial transactions mediated by digital technologies such as landline telephone, electronic mails, mobile-phones and internet which takes place over electronic networks.

As conceived by some schools of thought, Mobile-commerce is an extension of E-commerce to mobile phones. Therefore, M-commerce involves an emerging set of applications and services people can access from their Web enabled mobile devices (Sadeh, 2002). According to this definition, m-commerce represents a subset of all e-commerce, including both business-to-business and business to consumer. M-Commerce uses the internet for purchasing goods and services as well as sending and receiving messages using hand-held wireless devices. Some other schools of thought think it is another new channel after the internet, since Mobile phones itself provides an easier way to access the internet as it brings about flexibility and speed in its operations, thereby facilitating improvement in its operations leading to substantial cost savings as well as increased efficiency and competitiveness. Generally, m-commerce refers to any transaction with a monetary value that is conducted via a mobile

telecommunications network, thus enabling Wireless web applications users with Internet enabled cell- phones undertake and carry out several kinds of transactions.

One of the fastest developments in mobile commerce has been made in Africa where the inadequate bank infrastructures have encouraged financial firms to make use of mobile phones rather than other E-commerce devices. One of the major characteristics that made M-commerce a major contender in the business world is its accessibility. It gives consumers the flexibility to access goods/services regardless of location or time, other characteristics include; convenience, ubiquity or immediacy, real time, context awareness and personalization (Boateng 2013);

Today, the mobile Internet is emerging even faster because network providers, content partners, customers, and investors are leveraging lessons from e-commerce. Cellular carriers, both nationally and globally, have made significant advances to enable next generation data or wireless Web services and mobile commerce. M- Commerce is believed to be driving fundamental changes in the way business is conducted in many industries, particularly in telecommunications, information technology, media and financial services. As such, accessibility to the mobile phone is to both the poor and the rich.

According to Lennart& Bjorn (2010), the fast diffusion of mobile money transfer was viewed as a potential key tool for facilitating financial transactions. This indicates that the rapid adoption of mobile phone was seen as a means of uplifting the financial functionality of Small and Medium Enterprises. Since some SMEs can be found in rural or remote areas, a positive aspect of mobile phone is that mobile networks can reach remote areas at low cost thereby making it possible for financial transactions to be made in a simple and faster manner from any point in so far as there are mobile money service provider which makes it easier to

transact at a lower cost as against the conventional electronic commerce which provides anytime services but seriously constrained by locational accessibility thereby, improving the performance of the SMEs. The contribution of the SME sector to the development of the Nigerian economy cannot be over emphasised

According to the United Nations Industrial Development Organization (UNIDO) report of 2012, SMEs have a significant role to play in economic development. They formed the backbone of the private sector; they make up over 90 per cent of entrepreneurs of the world and account for 50 to 60 per cent of employment generation. They also play an important role in poverty alleviation.

In the words of Fashola (2013) “The SME sector in any nation is the main driving force behind job creation, export earnings, poverty reduction, wealth creation, income redistribution and reduction in income inequality.” SMEs contribute to a more efficient allocation of resources. They tend to adopt labour intensive method of production and support the development and diffusion of entrepreneurship spirit and skills and helps in reducing economic disparity between rural and urban centers.

Nwosa and Oseni (2013) enunciated that the contributions of the SME sector to output growth and employment generation in United States and some Asian countries has helped in a long way in renewing the focus of economic planners and policy makers in Nigeria on the importance of the sector in aiding industrial growth and reducing the level of unemployment rate in the country. However, Alalade, Amusa and Adekunles (2013) maintained that SMEs whether starting ups or existing entities need capital either to be able to grow or expand operations. Capital can be in form of internally generated funds or external funds such as capital contributed of some types.

Also, poor economic conditions which also imply poor finance and inadequate infrastructures have been identified as the most crucial factors. And no doubt access to finance at relatively cheap cost is the most crucial problem hindering the development of the SME sector in Nigeria. Fashola(2013) described the problem of finance of the SMEs in the country to have essentially accounts for the pervasive level of unemployment we still record in the country. It is however believed that banks have the capacity to spur the growth of SMEs at relatively cheap costs and equally provide some other funding facilities, financial advisory services among others to the sector. It was against this background that the Central Bank of Nigeria (CBN) initiated a directive which mandates banks to set aside 10 per cent of their profit before tax for the funding of the sector. It is somewhat surprising however why the SMEs in Nigeria still lag behind in terms of development despite the huge emphasis the sector is receiving among economists and development experts, with the sector still contributing a minuscule percentage to the country's GDP. It is therefore imperative at this time to examine the role of mobile commerce in enhancing the performance of SMEs in Nigeria,

Financial performance continues to be one of the most significant challenges for the creation, survival and growth of SMEs especially innovative ones. Generally, SME owners are the main decision makers in the business. This determines the probability of success or otherwise of the business as their judgments is key determinants of success or failure of the business.

Legally, Cassar (2004) notes that incorporation may be perceived by banks and other finance suppliers as an encouraging sign of the firm's formality and creditability. Consequently, incorporated firms appear to be in a very favoured position to receiving external funding in comparison with unincorporated firms such as family and single ownership businesses. Incorporated firms are more organised and possess accurate financial data (books of account) along with good loan proposals. For many SMEs in Nigeria, access to finance and capital

appear to be difficult. This comes as a consequence of weak banking institutions, lack of capital market and inefficient legal framework regarding credit and collateral assessment. Financing of SMEs and access to finance play a crucial role in the growth process and development of the enterprises (WB, 2011).

According to Fatoki&Garwe (2010), the lack of capital seems to be the primary reason for business failure and is considered to be the greatest problem facing the survival of small and medium enterprises. This was supported by Shafeek (2009) who view that, from a business viewpoint without adequate financing, the business will be unable to maintain and acquire facilities, attract and retain capable staff, produce and market a product, or do any of the other things necessary to run a successful operation

Stokes & Wilson (2006) also added that financial difficulties of SMEs arise, either because of an inability to raise sufficient funds to properly capitalise the business, or a mismanagement of the funds that do exist or a combination of both. He explained that, access to external funds may be difficult to achieve for new or young, small and micro businesses with no track record, especially for owners without personal assets to offer as security. Also, it is widely accepted that the size of an organization in terms of its assets is a proxy for financial robustness considerations. Therefore, the importance of these variables (survival, asset size and access to credit) makes it necessary to serve as proxies for the measurement of SMEs performance in this study

## **1.2 Statement of the Problem**

According to figures made available by the National Bureau of Statistics (NBS) and the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) documented in the Survey Report on Micro Small and Medium Enterprises in Nigeria (MSMEs) 2013 declared



that Nigeria boasts of specifically, 17,284,678 registered Small and Medium Enterprises in which probably only 50 per cent of this number operates formally.

Famously, SMEs have been acknowledged worldwide as the engine room of national economies, even in developed countries, the SME sector is one of the most critical sectors of the Nigerian economy. Ironically, it appears that considering the enormous potentials of the SMEs sector, and despite the acknowledgement of its immense contribution to sustainable economic development, its performance still falls below expectation in many developing countries (International Finance Corporation, 2014). This may be because the sector in developing countries has been bedeviled by several factors such as government policies and competition from Multi-National Corporations as militating against its performance thereby leading to an increase in the rate of SMEs failure. SMEs are faced with the threat of failure with past statistics indicating that most SMEs die within their first five years of existence. Another smaller percentage go into extinction between the sixth and tenth year, thus only about five to ten percent of young companies survive, thrive and grow to maturity (Basil 2005).

However, most empirical studies on impacts of mobile commerce services on SMEs performance have shown that studies in this area are scanty in Nigeria and have shown mixed findings for instance, Chogi (2006), Bangens&Soderberg (2008), Wambari (2009), Huang (2008), Donner &Escobari (2010)are foreign works conducted majorly in African countries on mobile commerce service usage,their studies used questionnaire to collect data from SMEs and it revealed positive and significant relationship with SMEs performance. Whereas in Nigeria, Okolo and Obidigbo (2014) examined the effect of mobile commerce on the performance of SMEs in Nigeria and how its performance can be boosted, their study adopted survival, asset size and access to credit as a proxy to measure SMEs performance, but the

study did not make use of sufficient test on their time series data. Consequently, Okolo, Ani&Ofoegbu (2014) in their study made use of mobile penetration internet penetration and lending rate as their independent variable which the current study adopted but the study was conducted on economic growth as against SMEs performance considered for the current study.

Therefore, considering the constraints faced by the Nigerian SMEs and the relevance of mobile commerce services on SMEs performance most especially in the aspect of accessibility to finance and low cost, this study empirically assesses the impact of mobile commerce services on the performance of SMEs in Nigeria.

### **1.3 Research Questions**

- i. To what extent has Mobile commerce impacted on the survival of small and medium enterprises in Nigeria?
- ii. To what extent has mobile commerce impacted on the asset size of small and medium enterprises in Nigeria?
- iii. To what extent has mobile commerce impacted on SMEs access to credit in Nigeria?

### **1.4 Research Objectives**

The broad objective of this study is to determine the impact of mobile commerce services on the performance of SMEs in Nigeria, while the specific objectives of the study is to:

- i. Examine the impact of mobile commerce on SMEs survival in Nigeria.
- ii. Ascertain the impact of mobile commerce on SMEs asset size in Nigeria
- iii. Evaluate the impact of mobile commerce on SMEs access to credit in Nigeria.

### **1.5 Research Hypotheses**

H<sub>01</sub> Mobile commerce has not significantly affected SMEs survival in Nigeria.

H<sub>02</sub> Mobile commerce has not significantly affected SMEs asset size in Nigeria

H<sub>03</sub> Mobile commerce has not significantly affected SMEs access to credit in Nigeria.

## **1.6 Scope of the Study**

The research study makes use of secondary source of data of time series of 11 years i.e. from 2003 to 2014. All the data used for both the dependent and independent variables are from the period under review. The independent variable which is mobile commerce is proxied by mobile penetration, internet penetration and lending rate while the dependent variable which is financial performance is proxied by Survival, Asset size and Bank lending to SMEs in Nigeria.

## **1.7 Significance of the Study**

The significance of the study includes the following:

- i. To contribute and add to the scanty literatures on effect of mobile commerce on SMEs performance within the Nigerian context
- ii. The work will be of immense contribution to Entrepreneurs, Telecom companies, microfinance banks and the Nigerian government to make friendly policies and create a safe haven for full adoption of mobile commerce activities in Nigeria.
- iii. This study will be of great importance to managers, owner managers as well as potential entrepreneur of small and medium scale organisations as it will enlighten them on the mobile commerce services to adopt so as to improve their organisational performance.

## **1.8 Limitations of the Study**

The study is subject to some limitations which includes.

Firstly, the study made use of secondary sources of data collection for the entire country based on the fact that SMEs at the local level do not keep adequate records of their daily transactions.

This study is limited in the area of population which may not give a comprehensive view of the impact of mobile commerce services on the performance of small and medium enterprises at the micro level. Therefore, there is need to conduct a comprehensive study in which smaller population may be considered to make concrete conclusions on the performance of Small and Medium Enterprises at the state and local government levels.

## CHAPTER TWO

### LITERATURE REVIEW AND THEORITICAL FRAMEWORK

#### 2.1 Concept of M-Commerce

Mobile commerce means many things to many people: Some people conceive m-commerce as an extension of e-commerce to mobile phones. Some people think it is another new channel after the Internet. M- Commerce uses the internet for purchasing goods and services as well as sending and receiving messages using hand- held wireless devices. As reported in Ayo, Uyinomen, Fatudimu&Adebisi, (2007), the major distinction between the electronic and mobile business transaction prefixed as “e” and “m” is that the electronic medium offers “anytime access”, while mobile medium offers “anytime and anywhere access” to business processes respectively. According to this definition, m-commerce represents a subset of all e-commerce, including both business-to-business and business to consumer.

Tiwari&Buse, (2006) argued that while an electronic transaction is limited to computer networks that are stationary, mobile transactions refer to computer networks that may support both stationary and wireless connections. Ayo, et al. (2007) and Buse (2002) opined that m-commerce has features that are listed as ubiquity, immediacy, real-time, localization (localized contents using a Global Positioning System (GPS), having pro-active functionality (through SMS), simple authentication procedure (based on a subscriber identification module (SIM) and Personal Identification Number (PIN).

However, (Davis et al., 2001) argued that there are still lots of challenges for SMEs in adopting m-commerce because they are small and are challenged by lack of adequate resources and training, inadequate infrastructures, lack of push from the supply chain, lack of

vision and a persistent poor security measures. In general, m-commerce refers to any transaction with a monetary value that is conducted via a mobile telecommunications network.

Bhasin (2005) explained that m-commerce was born due to new technological advances, such as, GSM networks, WAP protocols and 3G technologies. By using 'innovative' technologies, mobile operators have promised to consumers more effective ways of communicating and transacting their business. He further opined that one of the areas of e-commerce that is rapidly growing across the globe is mobile commerce (m-commerce).

Similarly, Obe&Balogun (2007) asserted that mobile phone has become an essential tool for everyday life, offering voice and data communication. They explained that the mobile handset's use is a universal trusted device which makes it the ideal terminal for secure and convenient financial services and benefits from wide familiarity amongst customer-base.

Also, Ondiege (2010) noted that while many people do not have access to financial services, they do have a mobile phone. Capitalizing on the phenomenal growth of mobile telecommunications in Africa, a number of service providers are already active in deploying mobile banking services to tap the demand from the large unbanked population. Guagraw, (2007) is of the view that one of the objectives of mobile commerce is to improve the efficiency of microfinance by using mobile technology to make transactions faster, cheaper and more secured. It involves account transactions, balance checks and payments.

Accordingly, Mbiti& Weil (2011) noted that mobile phones technology has made it easier for SMEs to conduct their financial transactions. This is because mobile phone commercial activities save time and provide a safer means of handling money transfers. In other words, mobile technology can be used to reach more customers and facilitate the exchange of information and decision making. Therefore, mobile commerce provides SMEs with a means

through which they can reduce their operating costs as well as increase their ability to extend their business networks thus, enabling them to increase their performance.

### **2.1.1 Mobile Commerce Services**

Mobile Commerce is the delivery of electronic commerce capabilities directly into the consumer's mobile device, anywhere, anytime via cellular and wireless networks. It consists of mobile marketing services and mobile financial services which is the focus of this study.

#### **Mobile Financial Services**

Mobile Financial Services is an umbrella term used to describe any financial service that is provided using a mobile device. MFS consists of m-Banking, m-Payment and m-money transfer. According to Yakub, Bello&Adenuga (2013)

#### **Mobile Money Transfer (MMT)**

A Mobile Money Transfer is the exchange of funds from one party to another, using a mobile device to either initiate and/or complete the transaction. It is a service that is used by many people and organisations, both small and large. According to Kamau, Cerstin and Mukwana (2003) efficient and affordable money transfer and payment services are important financial services most people require, including those who do not typically use financial or banking services

“Mobile money” is money that can be accessed and used via mobile phone (Jenkins, 2008). Mobile money can be used to settle a variety of transactions conveniently and it transforms the mobile phone into a mobile wallet. To access Mobile Money Transfer Services (MMTS), a customer must first register at an authorized mobile money transfer retail outlet of a mobile network operator offering MMTS. The customer is then assigned an individual electronic

money account that is linked to his phone number and accessible through a SIM card-resident application on the mobile phone. Customers can deposit and withdraw cash to/from their accounts by exchanging cash for electronic value at a network of retail stores (often referred to as agents). As opined by Anurag, Tyagi and Raddi (2009), once money is on the virtual account, the phone becomes a mobile wallet. Micro enterprises view payment through MMT as an easier form of cash delivery to their suppliers and business partners, a system which is relatively affordable, personal and can be used anywhere and at any time. Mobile money transfer has turned out to be efficient and affordable and is therefore preferred by many people.

### **M-Banking**

Yakub, Bello, and Adenuga (2013) are of the view that mobile banking is an application of m-commerce which enables customers to access bank accounts through mobile devices to conduct and complete bank-related transactions such as balancing cheques, checking account status, transferring money and selling stocks. Mobile banking in its simplest form lets a user retrieve the balance of an account, a small number of the recent transactions, and transfer funds in-between accounts that the user holds.

According to Sadana, Mugweru, Murithi, Cracknell and Wright (2011), mobile banking is service that a bank offers, as such, it requires a bank account. It makes use of a mobile telecommunications network as a platform to perform traditional banking activities such as performing balance checks, transferring money between accounts and making payments. Mobile banking is akin to Internet banking and it is often included in the package a bank might offer its clients. In the widest of senses, mobile banking is advanced enough to replace the entire suite of service offered through a bank's branch and internet banking services. Mobile banking is popular and exciting to the customers given the low infrastructure



requirements and a rapidly increasing mobile phone penetration in Nigeria. Services covered by this product include account enquiry, funds transfer, phone vending, changing password, and bill payments (Siyanbola, 2013). Banks like First Bank, Ecobank, Guaranty Trust Bank, United Bank for Africa and others have begun using mobile banking to serve their customers. For example, First Bank's brand for mobile banking is Firstmonies. Some of the features of mobile banking are: the GSM phone number serves as the account number which is linked to the customer's account; it has a wallet which can be loaded just by moving cash from a bank account.

### **M-Payments**

Mobile Payments are payments for which the data and instruction are initiated, transmitted or confirmed via a mobile device. This can apply to online or offline purchases of services and digital or physical goods as well as P2P payments, including transfer of funds.

Mobile payments are often divided into two main categories; proximity payments and remote payments. However, the two are converging as neither is tied to a specific technology. Mobile payments are used for the payment of products and services. This can be C2B transfer, from a customer to a business as when paying utility bills and for purchases from a business, or B2C transfer, where a business disburses funds to customers for instance, when a microfinance institution disburses loans to customers. Wanyonyi and Bwisa (2013) viewed that this transfer of funds from one business to another business is done through a verification process, which involves both parties.

### **2.2 Mobile Money Services in Nigeria**

Nigeria is almost set to join the list of countries in Africa that will benefit from the mobile money market. Mobile money aims to create a cashless society and reduce the cost and

dangers associated with traditional banking transactions, thus catering for millions of unbanked Nigerians. Mobile Money as a service allows you to transfer money using a mobile phone. This initiative was first given impetus by the then Fin bank with its flash me cash product, but is currently being spear-headed by MTN and GLOBACOM NIGERIA. Glo Mobile recently signed a Memorandum of Understanding (MOU), with Afripay Ltd., a member of the UBA Group, which has obtained a Mobile Money License from the Central Bank of Nigeria (CBN), in preparation for the commercial launch of Nigeria's first mobile money services. In the same vein, MTN Nigeria's affiliation with GTB bank is sure to create a formidable alliance in the mobile money market. This service will enable customers open mobile money account to store Electronic Value (E Value) of money easily on their mobile phones, using their mobile number as account number. They can also transfer money to any mobile number, spend the money directly from their mobile money account to pay for goods as well as buy airtime top-up for themselves and others.

According to MTN Nigeria, its Mobile Money service will be a convenient, secure, and affordable way of sending money using an MTN mobile phone, even though you don't have a bank account. The Central Bank of Nigeria had already licensed some providers to offer mobile money services in Nigeria and some of them includes MTN Mobile Money, QikQik Mobile Money, PocketMoni, U-Mo Mobile Money and Glo Text Cash just to mention but a few Mobile Money has been recorded as a huge success in countries like Cote d'ivoire, Kenya and South Africa, and we can only wait and hope that the same appraisal will be seen in the Nigeria Telecommunication Industry. Telecoms Companies will be watching both MTN Nigeria and GLOBACOM closely and we shall be comparing what they are offering. To get info on tariffs, they will charge for transfers, payments and withdrawals and lots more.

### **2.3 Small and Medium Enterprises**

In Nigeria, several attempts have been made to define and classify SMEs. Moreover, probably due to differences in policy focus, different government agencies apply various definitions. The term Small and Medium Enterprises (SMEs) cover a wide range of definitions and reasons, varying from country to country and the source reporting SMEs statistics. There is no universally agreed definition of small and medium enterprises because their classification into large or small is a subjective and qualitative judgment based on number of employees, values of assets, value of sales and size of capital and turnover. The most common definitional basis used is employees because of comparability (Nyangori, 2012)

SMEs are firms or businesses which are small and medium in sizes that arise as a result of entrepreneurial activities of individuals. Nyangori (2012) observed that the SMEs sector has continuously experienced growth, thereby becoming a key sector in the economy of the country as well as creating most of the new jobs. There are several definitions and meaning as regards to SMEs. Moreover, countries do not use the same definition for classifying SMEs due to the varying degree of economic conditions that have defined and categorized their establishments. However, three parameters are generally employed solely or in combination by most developing countries in classifying SMEs. These parameters are; numbers of workers employed; volume of production or turnover of such businesses (Ayanda&Laraba, 2011)

For instance, the Centre for Industrial Research and Development (CIRD) of the ObafemiAwolowo University, Ile-Ife defined a small-scale enterprise as an enterprise with a working capital base not exceeding N250,000 and employing on full time basis, 50 workers or less. The Nigerian Bank for Commerce and Industry (NBCI) adopted a definition of small scale business as one with total capital not exceeding N740,000, (excluding cost of land but including working capital). The Federal Ministry of Industry's guidelines to NBCI defined

small scale enterprise as one with a total cost not exceeding N500,000 (excluding cost of land but including working capital). The Nigerian Industrial Development Bank (NIDB) defined small scale enterprise as an enterprise that has investment and working capital not exceeding N750,000 or \$5,000 (\$1 = N150) while it defined medium scale businesses as those operating within the range of N750,000 to N3.0 million (\$5,000 to \$20,000). In 1979, the Central Bank of Nigeria (CBN), in its credit guidelines to commercial banks, stated that small scale enterprises were those with annual turnover not exceeding N500,000 (\$3,333); while the merchant banks were to regard small scale enterprises as those with capital investment not exceeding N2 million (\$13,333) (excluding cost of land) or with maximum turnover of not more than N5 million (\$33,333). In Nigeria, these businesses are very small employing up to a maximum of 50 people, who in most cases are members of the same family or close associates. The major activities of small scale businesses in Nigeria are food vending, farming, hair dressing/barbing salon, welding, bread/cake baking, sale of second hand clothing, produce buying, sale of health/herbal products, secretarial/telephone services, sale of hand sets and recharge cards, repairs/unlocking of hand sets, moulding of cement blocks for sale, sale of vehicle spare parts, soft drinks/beer sales.

According to European Union (2003), a small size enterprise is a company having employees fewer than 50 with turnover of £50 million which is applicable to all individual firms. In Tanzanian context, small enterprises are mostly formalized undertakings, engaging 5 to 49 employees, with capital investment of TZs5 to 200million, while medium sized enterprises employ about 50 to 49 employees and capital investments of TZs200 to 800 million (Madishetti&Kibona 2013). In Malaysian perspective, the Malaysian Ministry of Internal Trade and Industry defines SMEs as a company with an annual sales turnover of not more than RM25 million, and not more than 150 full time employees (Hashim, 2007)

In Nigeria, there exists varying definitions as to what constitutes the meaning of SMEs. The Central Bank of Nigeria (CBN) and the small and medium scale equity investment scheme (SMEEIS) define SMEs as any enterprise with a maximum asset base of N200,000,000 (200 million naira) excluding cost of land and working capital, with number of staff employed by the enterprise which is expected to be not less than 10 and not more than 300 (Adebayo, Balogun & Kareem, 2013). However the Small And Medium Sized Enterprises Development Agency Of Nigeria (SMEDAN) defines SMEs based on the following criteria: a micro enterprise as a business with less than 10 people, with an annual turnover of less than #5 million, a small enterprise as a business with 10 -49 people with annual turnover of 5 – 49million and a medium enterprise as a business with 50 – 199 people with annual turnover of 50 – 499 million. This study adopts the definition by CBN based on its emphasis in fast-tracking the development of the SME sector of the economy, set the pace for industrialization of the Nigerian economy, increase access to credit by promoters of SMEs taking cognizance of the prevailing high interest rates and other sharp practices in banks and other traditional sources of finance and generate employment.

#### **2.4 Concept of Organisational Performance**

In Nigeria both the federal and state government have recognized that sustainable growth and development as well as financial empowerment of the rural areas is vital, being the repository of the predominantly economically active but poor in the society and in particular the SMEs. Olaitan (2006) says that credit has been recognized as an essential tool for promoting Small and Medium Enterprises (SMEs) in Nigeria. Investor-words (2011) defined performance as the results of activities of an organization or investment over a given period. Organizational goal achievement is the main yardstick of measuring the degree of SSEs performance (Owoseni & Adeyele, 2012).

Neely (1999) define performance as the action of doing things that is, using things attending to conditions and processing, communicating and achieving results. Performance is the actual work that is done to ensuring that an organization achieves its mission. Performance encompasses input conditions, processes elements, output, consequences and feedback. This study defines performance as the systematic and scientific comparison of input and output.

Continuous improved performance is the objective of any organisation because only through performance, organisations are able to grow and progress. Zeitun and Tian (2007), explained performance as a controversial issue in the financial strategy of most corporate organisations due to its multi-dimensional meanings. The concept is used to analyse the performance of a business that possess the quality of an organisation having a legal status. To explain the concept therefore, a precise and satisfactory description of the context in which it is used should be made in order to have a sense of direction.

However, the concept of organisational performance is very common in the academic literature, as it is one of the most widely used variable in organisational research today, yet at the same time, it remains one of the most vague and loosely defined constructs (Rogers et al. as cited in Jahanshahi, Reraei, Nawaser, Ranjbar&Pitamber, 2012). Its definition is difficult as there are many definitions of organisational performance and no two definitions agree on the precise characteristics (Abusa, 2011). According to Griffin (2003), organisational performance is described as the extent to which the organisation is able to meet the needs of its stakeholders and its own needs for survival. Organisational performance according to Iravo (2011) is rapidly becoming more accepted as necessary to enhance the productivity and profitability of organisations and is consequently expanding. Almajali*et al.*, (2012) viewed organisational performance as the result of an activity which has been achieved by an

organisation related to its authority and responsibility in achieving the goal legally, not against the law, and conforming to the morale and ethics of the organisation.

In measuring organisational performance, different approaches may be adopted depending on the perspective of the study. Organisational performance according to Hansen and Mowen (2005) can be measured either financially or non-financially and it is important to note that the measurement of organisational performance may be affected by the objective of an organisation which in turn affects the choice of the performance measures. Financial performance measures such as profit maximization, maximizing profit on asset, and maximizing shareholders benefits are the core of firms' effectiveness (Chakravarthy, 1986). While non-financial performance measures such as growth in sales and growth in market share, provide a broad definition of performance which focus on the factors that ultimately lead to financial performance (Hofer & Sandberg, 1987; as cited in Zeitun&Tian, 2007).

Abusa (2011) expressed organisational performance in eight measurement variables which includes; customer satisfaction, employee morale, defects as a percentage of production volume, sales growth, profit improvement, export growth, production performance improvement, overall business performance compared with an excellent competitor in the same industry.

Heng and San (2011) identified ways of measuring organisational performance, such as productivity, profitability, growth or even customer satisfaction. Mubaraq (2005) stated that there are many measures of performance based on non-financial information as not all activities of an enterprise are capable of being expressed in monetary terms, and only financial statements are not adequate to measure all aspects of performance. According to the author, the following are non-financial measures of performance; number of customers and

suppliers, staff turnover, training time per employee, number of production stoppage through staff, output per employee, adherence to quality and product, absenteeism and accidents, number of complaints received and production lead time. This study adopts the model proposed by Okolo and Obidigbo (2014) for SMEs survival, SMEs asset size and Bank lending to SMEs to measure performance.

## **2.5 Determinants of Financial Performance in SMEs**

The performance measurement system for service industries is also called the Results and Determinants Framework. The framework consists of two types – results and determinants. The measures related to results are competitiveness and financial performance, while the measures related to determinants of those results are quality, flexibility, resource utilization and innovation. The Balanced Scorecard (BSC) emphasizes the linkage of measurement with strategy (Kaplan & Norton, 2001). The BSC has four different perspectives – financial, customer, internal business and innovation and learning. The BSC gives a holistic view of the organization by simultaneously looking at the four perspectives, thereby enabling companies to track financial results while simultaneously monitoring progress in building capabilities and acquiring the assets needed for future growth.

The main issues associated with traditional performance measurement may be summarised as: lack of alignment between performance measures and strategy; failure to include non-financial and less tangible factors such as quality, customer satisfaction and employee morale; mainly backward looking, thus poor predictors of future performance; encouraging short-termism; insular or inwards-looking measures giving misleading signals for improvement and innovation



The discourse on contemporary approaches to performance measurement highlights how shorter term operational measures affect business performance and measures in the longer term. This debate led to the development of the notion of leading and lagging indicators where the leading indicators are the indicators that provide an early warning of what may happen in the future and the lagging indicators communicate what has actually happened in the past (Anderson & McAdam, 2004)

The notion of creating performance measures that are predictive adds an important characteristic to the thinking behind performance measurement in general. In order for any performance indicator (leading or lagging) to be predictive a single point of measure would be meaningless and that prediction would need to be based around a time series of measures indicating how performance is changing in time, thus allowing one to predict what may lie in the future. It is thought that leading and lagging indicators, when used in a time series format, brings organisations one step closer to having predictive performance measurement systems (Bourne *et al.*, 2000; Neely *et al.*, 1995).

Meilan (2010) agrees that there is a wholistic approach and Balanced Scorecard approach to performance evaluation for SMEs. Financial performance continues to be one of the most significant challenges for the creation, survival and growth of SMEs especially innovative ones. Generally, SME owners are the main decision makers in the business, this determines the probability of success or otherwise of the business as their judgments are the keys determinants of success or failure of the business. Legally, Cassar (2004) notes that incorporation may be perceived by banks and other finance suppliers as an encouraging sign of the firm's formality and creditability. Consequently, incorporated firms appear to be in a very favoured position in receiving external funding in comparison with unincorporated firms such as family and single ownership businesses, incorporated firms are more organised and

possess accurate financial data (books of account) along with good loan proposals. For many SMEs in Nigeria, access to finance and capital appear to be difficult. This comes as a consequence of weak banking institutions, lack of capital market and inefficient legal framework regarding credit and collateral assessment. Financing of SMEs and access to finance plays a crucial role in the growth process and development of the enterprises (WB, 2011).

According to Fatoki and Garwe (2010), the lack of capital seems to be the primary reason for business failure and is considered to be the greatest problem facing the survival of small and medium businesses. This was supported by Shafeek (2009) who said that, from a business viewpoint without adequate financing, the business will be unable to maintain and acquire facilities, attract and retain capable staff, produce and market a product, or do any of the other things necessary to run a successful operation

Stokes and Wilson (2006) also added on to say that financial difficulties of SMEs arise, either because of an inability to raise sufficient funds to properly capitalise the business, or a mismanagement of the funds that do exist or a combination of both. He explained that, access to external funds may be difficult to achieve for new or young, small and micro businesses with no track record, especially for owners without personal assets to offer as security. Also, it is widely accepted that the size of an organization in terms of its assets is a proxy for financial robustness considerations. Therefore, the importance of these variables (survival, asset size and access to credit) makes it necessary to serve as proxies for the measurement of SMEs performance in this study. According to Okolo and Obidigbo (2014), small and medium enterprises depend on loan for survival and performance. Therefore, they proposed the following performance measures which the study adopted. Survival of SMEs was measured by the number of registered small businesses for the period under study (2003 – 2014) Asset Size

of SMEs was measured by startup capital of small businesses. Access to Credit was measured by Bank Lending to Small businesses.

A good measurement of SMEs performance should be able to consider the goal of the owner or a policy designed to promote the sector in the areas of some specific results such as output and profitability (Marr & Schiuma, 2003). Performance can be measured in terms of its output especially when the population consists of manufacturing firms only (Adebayo, (2013), Luper, (2012), & Obokoh, 2008), but to Christopher (2012): increase in branches, capital, number of employees and profit. In a study of SMEs key failure factors in Nigeria by Ihua (2009), the result revealed that improper and poor planning, poor accounting and book-keeping, management inability (incompetence) and fierce market competition were key factors influencing SMEs failure in Nigeria. Another study by Ayande and Laraba (2011) established high level of technical inefficiency in the areas of supply of inputs, markets, and credit facilities, which reduce the potential output levels significantly, characterize the Nigerian SMEs. Other studies that established positive relationship between managerial skills and SMEs performance are Agbim (2013) in Benue north central of Nigeria and Shehu, Aminu, Kamariah, Mat and Nasiru (2013) in Kano north in Northern Nigeria

### **SMEs Survival**

Access to financing continues to be one of the most significant challenges for the creation, survival and growth of SMEs especially innovative ones. Generally, SME owners are the main decision makers in the business. This increases the probability of success or otherwise of the business as their judgments is the key determinants of success or failure of the business. Legally, Cassar (2004) notes that incorporation may be perceived by banks and other finance suppliers as an encouraging sign of the firm's formality and creditability. Consequently,

incorporated firms appear to be in a favored position in receiving external funding in comparison with unincorporated firms such as family and single ownership businesses, incorporated firms are more organized and possess accurate financial data (books of account) along with good loan proposals. Other studies (Storey, 1994) concluded that very limited number of private companies are more likely to be reliant on formal financing.

Indeed, Abor and Biekpe (2007) found that the Ghanaian firms involved in agricultural or manufacturing sectors have higher capital and asset structures than those operating in wholesale and retail sectors. Subsequently, these assets can be used as potential collateral values for banks and encourage them to issue bank loans. However, the firms using rentable assets or having low assets structures, as is the case with service businesses, are subject to low financial access due to scarcity of collateral values.

Aryeetey Eea (1994). In terms of size, banks tend to issue more credit to larger firms as compared to smaller firms. Additionally, young ventures at start-up levels may not have the level of expertise and success history required.

Klapper Laeven, L. and Rajan, (2010) found that young firms (less than four years) rely more on internal financing than bank financing. Similarly, Woldie, et al. (2012) in Tanzania observed that firms at start-ups and less than five years depended more on informal financing sources. It is generally expensive and difficult for new firms to acquire bank financing, mainly due to the information asymmetry problem and high collateral requirements (Ngoc et al 2009). Similarly, Bougheas et al (2005) in their studies found that young SMEs are generally more susceptible to a potential business failure than older firms. This increases the reluctance of banks to provide them with adequate loans. It also makes sense as older firms demonstrate more expertise, credit and success history than younger firms. Similarly, In China, Honhyan (2009) found that the investment portfolios of larger firms were more diversified, which

lessen the probability of failure and makes banks more confident to issue loans based on their expertise and large assets structures.

### **Asset size**

Large holdings of tangible assets may mean that the firm uses a stable source of return which provides more internally generated funds thereby leading firms to use less debt, under the pecking order financing theory. As a matter of fact, Klapper et al. (2002), Hall et al. (2004) and Sogorb-Mira (2005) find a negative relationship between short-term debt and the relative size of tangible assets and a positive relationship between long-term debt and the relative size of tangible assets.

It is widely accepted that the size of an organization in terms of its assets is a proxy for financial robustness considerations. Warner (1977) and Petit and Singer (1985) denote that larger firms tend to be more diversified and go bankrupt less often than smaller ones. Furthermore, information costs are lower for larger firms because of better quality (accuracy and transparency) of financial information. Psillaki and Daskalakis (2009) find a positive relationship between size and leverage for Greek, French, Italian and Portuguese SMEs. Panno (2003) and Ojah and Manrique (2003) also find a positive relationship between size and financial leverage for English and Spanish firms respectively.

However, Rajan and Zingales (1995) note that firms size could serve as a proxy for the information to outside investors, leading to a higher preference for equity for larger firms.

### **Access to Bank credit**

Several literature has focused on whether SMEs shortage of external finance arises from firm related factors, which literature relates as demand-side studies (Woldie, Mwita, & Saidimu, 2012), and from banks related factors, known in the literature as the supply-side studies

(Deakins, et al., 2010; Iorpev, 2012). It is important to note that most of the literatures focus on the constraints encountered at the supply side and very few at the demand side.

Demand side issues involve factors such as inadequate flow of information, inadequacy of collateral, SMEs-banks relationships, business and entrepreneurial factors are considered as constraints. Among them, limited information is acknowledged as a foremost bottleneck in the banks' credit supply (Leland & Pyle, 1997). Therefore, the information asymmetry issue discussed by Stiglitz and Weiss (1981) is at the core of SMEs limitations when attempting to access credit from banks.

Apire (2002), Olomi (2009) and Griffiths (2002) confirmed that information asymmetry results mainly from poor or non-existent financial and accounting records. Ruffing (2002) suggested that the information asymmetry issue between bankers and SMEs borrowers limits the loan officers in the borrower's creditworthiness evaluation which hints at two major problems (Nott, 2003). First, is an adverse selection when banks are unable to differentiate between genuine and bad borrowers and may choose the wrong borrowers or ignore both of them (Stiglitz & Weiss; 1981).

Second, even if the loan is allocated, banks may not be able to assess whether the money lent is used in an appropriate manner as intended within the loan contract.

Otherwise, the problem of information asymmetry reflects a risk of imbalance in favor of the firms. It is linked to the inadequate business experience and financial illiteracy of SMEs promoters as well as insufficient risk-based credit assessment of the credit application. Often, banks tend to increase the loans' interest rates in order to compensate for this issue. However, they cannot increase the interest rate up to a certain level for fear of attracting bad borrowers or unsound projects (adverse selection). This leads banks to focus on alternative criteria in order to select profitable and reliable clients. These are excessive collateral requirements,

characteristics of the business and bank-lending relationship, the existence of the information asymmetry issue between banks and the potential SME borrowers has severe implications in the lending methodologies used by loan officers.

In the absence of sufficient financial information, banks generally rely on high collateral values which according to banks reduce the risks associated with the problems of adverse selection and moral hazards resulting from imperfect information (Nott, 2003). According to this argument, it is clear that banks try to mitigate the lending risks through a capital gearing approach instead of focusing on the future income potential of SMEs. Therefore, collateral or “loan securitizations” have become essential prerequisites to access bank loans (AfricaPractice, 2005). For example, Azende (2012) study in Nigeria shows that SMEs struggle to access finance from banks due to stringent collateral requirements and inefficient guarantees schemes. In developing countries such as Cote d’Ivoire, the issue of collateral requirements is much more severe due to high uncertainties IEF (2013). And these uncertainties constitute one of the major obstacles in SME financing.

Alternatively, a good lender–borrower relationship is acknowledged as a way to overcome asymmetry of information and inadequacy of collateral issues. But it may constitute a major constraint in the provision of debt financing to SMEs (Bhati, 2006; Holmes, et al, 2007 & Ferrary, 2003). For instance, when there is imperfect information which is recurrent in most SMEs cases; a lender-borrower relationship becomes the main source of information and vital for loan approval. Assessing whether the borrower possesses an account with the bank, then the duration of the account and previous credit history can be viable for the loan officers in the evaluation of loan application. Mills et al. (2006) show a positive correlation between a positive lender-borrower relationship and the approval of loan. Preference can be given to

firms which have established a strong and durable relationship with their banks and abide by all previous contractual arrangements.

Similarly, the location of the enterprises also plays an important role in their creditworthiness level. Berger and Udell (2006) found that the geographical proximity of SMEs to their respective banks affect positively the banks' decision-making. It enables the loan officers to obtain better environmental information about the borrowing enterprises. Generally, banks are established in high class urban areas which makes it difficult to assess businesses located in poor urban or rural areas. Gilbert (2008) points out that urban firm have better chances in accessing credits from banks than those who are in rural areas or poor urban areas.

Additionally, a study conducted in South Africa also revealed that businesses in poor urban and rural areas are exposed to a high crime rate which increases the risks, uncertainties in repayment of debt or bankruptcy. (Olawole&Asah, 2011). Subsequently banks are unenthusiastic to provide finance to business in those locations. The industry or sector in which the company operates may also impact on the decision of banks while appraising loan proposals. Myers (1984) argued that the industry may not determine the capital structure of SMEs but can indirectly influence the firm's asset structures.

On the other hand, the entrepreneurial characteristics of SMEs are more concerned with factors indirectly related to the business, such as managerial competency (business expertise, ownership structure, level of education) and gender of the owners.

BIS (2012) states that entrepreneurs' skills and abilities greatly influence the quality of their proposals. Low levels of managerial competence can lead SMEs to publish only the proposal strengths and hide what they estimate to be of any default in the loan process. This alteration of information aggregates the adverse perceptions of bankers about the SMEs informality. Also, Smith and Smith, (2004) argued that the lowest literacy level in Africa with 41% in Cote



d'Ivoire (IMF, 2012) reflects the lack of education and training, which accounts for the failure of SMEs. This reinforces the position of bankers by allocating their loans according to the managerial capacity of firms in order to avoid any adverse selection.

In addition, according to the “reputational effects,” many SMEs borrowers are discouraged due to poor previous experiences or other reasons. For example, some borrowers may be discouraged from applying for external finance due to a first refusal, the ethnicity minority, sex (female), requirements and bureaucracies Deakins et al (2010). Some firm owners do not even apply for loans because they think they will be rejected. A report in Scotland stated that 38% of SMEs reported to be poor in accessing finance and only 25% reported confidence (BIS, 2012). The problem of gender issues is mainly related to female applicants. Female owners are more restricted to loans than men Abor and Biekpe (2007).

A study conducted in the United States demonstrated that women are unlikely to repay debts (Mijid, 2009). This increases the “discouraged borrower effect”. Evidence also has been found in Australia and UK where women are discouraged to apply for loans as they think their applications would be rejected (Freel et al. 2010).

## **2.6 The Nigerian Financial System**

In Nigeria, the financial system is dualistic and consists of formal and informal subsystems. The Informal Financial System (IFS) comprises institutions such as moneylenders, rotating savings and credit associations and a host of others that are virtually outside the control of the established legal framework. The Formal Financial System (FFS) refers to an organized, registered and regulated sector of the financial system. The formal financial system comprises the banking sector, non-banking sector and the financial markets. Structurally, the financial system comprises the Central Bank of Nigeria (as the apex bank), Nigeria Deposit Insurance Corporation, deposit money banks, and other financial institutions such as development banks,

community banks, stock exchange, discount houses, primary mortgage banks, finance companies, and bureau de change. Although in Nigeria, the financial sector is dominated by commercial banks.

Atojoko, (2007) reported that in an attempt to make the banking sector sound, stable, reliable, dependable and internationally competitive, the Central Bank of Nigeria (CBN) announced on July 6, 2004, that with effect from January 1, 2006, the minimum paid up capital for commercial banks should be N25 billion. In a bid to meet the N25 billion capitalizations, banks used strategies such as mergers, acquisition, floating of new shares and so on, to consolidate. At the end of the consolidation exercise, out of the 89 existing commercial banks, 24 groups of banks emerged, while 14 banks that could not merge were set for liquidation. The rationale for the consolidation is to enable banks to mobilize a large amount of funds to provide loanable funds to the productive sector of the Nigerian economy in which the small and medium enterprises have dominated. Thus, the tendency is for the SMEs in Nigeria to grow into large and conglomerate firms. From this scenario, the big question asking for answer is to what extent has SMEs in Nigeria benefited from these financial package potentials of the formal financial system? Unfortunately, accessibility to formal financial system, especially by SMEs is very limited. On the supply side, banks are not expanding SMEs loans due to imperfect information, high transaction cost of dealing with small loans, geographical dispersion of the SMEs, large number of borrowers and low returns from investment. On the demand side, SMEs are reluctant to obtain loans because of the collateral security involved, high interest rate and untimely delivery of credits. However, International Finance Corporation (2014) noted that Access to finance for SMEs is hindered majorly because of their informal nature and poorly structured operations.

## **2.7 Financing of SMEs in Nigeria**

Every enterprise is financed either through debt or equity or a combination of both. Both types of financing are usually sourced from either the Informal Finance Sector (IFS) or the Formal Finance Sector (FFS). The two fundamental financing concepts of SMEs, the formal and informal forms of financing, have been identified by previous researchers, scholars and practitioners (Gelinas, 1998 & Aruwa, 2004). SMEs in Nigeria have not made the desired impact on the economy (Nwachukwu, 2012). This may not be unconnected to the numerous challenges facing the SMEs, among which is finance. Olorunshola (2001) rightly observed that the major gap in Nigeria's industrial development process is lack of long term and in some cases short term finance for the SMEs.

In most cases finance generated from informal sources fall short of the required capital for the SMEs (Okungwu & Saleh, 2004). To raise the balance of the required finance, entrepreneurs look up to the formal sources, which comprise banks, other financial institutions, cooperative societies and government loans agencies (Ango, 2011). There are a lot of challenges for SMEs in raising finance even through the formal sources, especially as it affects banks and other financial institutions (Lawal & Ijaiye, 2010). Most of the banks are not willing to advance loans to the SMEs mainly due to the absence of the so called collateral security. SMEs are in dire need of the loans for improvement in local technology, transfer of foreign technology, domestic capital formation, provision of more employment opportunities, as well as, earn more foreign exchange than oil export earns for the country (Oboh, 2002)

Considering the significant role SMEs play in the Economic development of the Nation and the challenges they face in raising finance, the Federal Government has over the years continued to play pioneering and active roles in raising finance for the SMEs

(Ayozie&Farayola, 2005). Ogunleye(2000), Tijani-Alawe in Ayozie andFarayola (2005) and Ango (2011) enumerated the roles as follows;

Provision of direct financial assistance through government owned financial institutions.

The institutions include the Nigerian Agricultural, Cooperative and Rural Development Bank, the Federal Mortgage Bank of Nigeria among others.

Provision of packages of subsidized or discounted loan portfolio through special schemes arranged between government and commercial banks. For instance, the small and medium industries investment scheme(SMIESIS), established in 2001, requires banks to set aside 10% of their profit before tax for equity investment in SMEs.

Provision of capital to SMEs through soft loans advanced by government owned financial institutions. Such institutions include the Nigerian Industrial Development Bank (NIDB) established, 1964, the Nigerian Bank for Commerce and Industry (NBCI) established, 1973, Peoples Bank (established, 1986) and National Economic Reconstruction Fund (established, 1989). All these institutions were merged to form the Bank of Industry.

Peoples Bank and some poverty alleviation agencies were merged to form the Nigerian Agricultural Cooperative and Rural Development Bank.

Funding of SMEs in liaison with Multilateral Financial Institutions such as the World Bank, the African Development Bank, the International Finance Corporation (IFC) etc. for instance, back in 1989, the World Bank gave Nigeria a facility of \$270million, out of which a total of \$267.7million was set aside for lending to SMEs through eligible participating banks

Issuance of directives on mandatory credit to SMEs through the Central Bank of Nigeria (CBN) credit guidelines to commercial banks. For instance in 1992, the Federal

Government through the CBN directed commercial banks to mandatorily allocate 20% of their total credits to SMEs. This scheme, Osa-Afiana (2004) argued, was only partially successful

mainly due to the reluctance of the banks to advance loans to SMEs without collateral security and appropriate credit guarantee scheme. It went to the extent that some banks were more comfortable paying the penalty for default than comply with the directive, as such the regulation was eventually abolished in 1996. The type of credit commercial banks usually extend to SMEs include overdraft, commercial or short term loans, short term or medium term loans, long term loans and bank guarantees. Other means of financing SMEs by commercial banks include trade credit, equipment leasing and hire purchase.

### **2.8 Financing SMEs by the Formal Financial Sector (FFS)**

Commercial banks, Microfinance banks, International development agencies, the CBN and some of its agencies are some of the institutions in the formal financial sector that have played very prominent roles in the financing of SMEs in Nigeria. Commercial banks remain the biggest source of finance for SMEs across the globe. However, many commercial banks are reluctant in financing SMEs because of perceived risks and uncertainties. In Nigeria, the difficult economic environment, absence of appropriate managerial skills and lack of access to modern technology by the SMEs have all contributed to the commercial banks reluctance to finance the sub-sector. The result of this reluctance is the steady decline in financing of SMEs in the country over the years. The CBN (2010) statistics show that commercial bank loans and advances to SMEs have been on the decline over the years. Commercial bank loans to SMEs as a percentage of total credits decreased from 48.79% in 1992 to 0.15% in 2010 (Luper, 2012).

Similarly, merchant banks loans to SMEs as a percentage of total credits reduced from 31.2% in 1992 to 9.0% in 2000 (Achua, 2011). Many credit institutions have been established over the years by the government and its agencies. The objectives of these credit institutions have always been to improve access to finance by SMEs. Some of these institutions are the

Nigerian Bank for Commerce and Industry (NBCI), National Economic Reconstruction Fund (NERFUND), the Peoples Bank of Nigeria (PBN) which has been referred to as government social lending, the Community Banks (CB) now microfinance banks, Nigerian Export and Import Bank (NEXIM), and the Nigerian Agricultural Credit Guarantee Scheme. Others are the Small and Medium Equity Investment Scheme (SMEEIS) which was actually a voluntary initiative in 1999 by the bankers' committee through CBNS' moral suasion, to assist in providing finance to the small enterprises, the Small and Medium Enterprises Credit Guarantee Scheme (SMECGS). In the 1980s, banks were mandated to set up branches in the rural areas. The objective of this policy was to improve access to financial services (Soludo, 2008).

## **2.9 Benefits of Bank Finance for SMEs**

A large body of the existing literature has documented that banks are the main external capital provider for SMEs sector in both developed and developing countries (Vera & Onji, 2010; Ono & Uesugi, 2009; Zhou, 2009; Wu et al., 2008; Carey & Flynn, 2005; Cole & Wolken 1995). De Bettignies & Brander (2007) assumed that bank loans are available for SMEs on competitive and fair basis. In order to optimize their capital structure, Moro, Lucas, Grimm, & Grassi (2010) suggested that SMEs should only focus on bank financing. Keasey and McGuinness (1990) argued that in spite of the fact that bank financing is more expensive in comparison to other sources of finance, it generates a higher rate of return for SMEs. They further concluded that bank finance can help SMEs accomplish better performance levels than other financing sources can do. The explanation given by them is that SMEs employ the funds more efficiently when they are monitored by, and answerable to banks.

From the perspective of banks, SMEs segment represents a strategic profitable part of bank business. In this regard, de la Torre, Martinez and Schmukler (2009) described the engagement

between SMEs and banks as integral. They explained that banks do not only provide the necessary capital for entrepreneurs to establish new SMEs or expand the existing ones they also offer a variety of services and financial products. The findings of Beck, Demirgüç-Kunt and Martinez (2008) have highlighted a number of factors perceived by banks as drivers to finance SMEs. The most important factor is the great potential of profitability associated with the involvement with SMEs as banks perceive this sector as unsaturated with good prospects. Another factor is the possibility to seek SMEs clients through their relations with their large clients. Banks involvement with SMEs is also driven by the intense competition in other sectors such as the large business and retail customers. The empirical literature on bank financing to SMEs emphasise some mechanisms, techniques and models developed and adopted by banks to lend to SMEs such as relationship lending (Petersen & Rajan, 1994), factoring (Soufani, 2002) and scoring (Frame, Srinivasan, & Woosley, 2001) just to mention some. Relationship lending is a powerful mechanism used to reduce problems related to opaqueness in firms especially SMEs. Under relationship lending, “soft” information is gathered by a financial institution (usually small local bank) through continuous contact with the firm (usually SME) in the provision of financial services (Berger & Udell, 1998, p. 645). The information will be then used to evaluate the creditworthiness of the entrepreneur as a part of the loan process to ensure that the potential loan will be repaid. The strength of the relationship lending, measured by its duration or the breadth of the relationship, was found positively correlated to the availability of funds for SMEs (Petersen & Rajan, 1994). In addition to this, the literature reports other benefits including; lower cost of credit, protection against credit crunches and the provision of implicit interest rate or credit risk insurance (Berger & Udell, 1998). Other studies suggested that in order to increase credit supply for

SMEs, trust-based relationship lending is more effective than the establishment of longer or more concentrated bank-borrower relationship (Hernández-Cánovas&Martínez-Solano, 2010). Based mainly on “hard” quantitative information, credit scoring is a lending technology used by financial institutions especially banks to evaluate informationally opaque loans applicants. Unlike the information in relationship lending which need long time to be acquired, the hard data required by credit scoring technology are readily gathered usually from consumer credit bureaus and commercial credit bureaus. It has been evidenced in the literature that credit scoring method increases the credit availability for SMEs. Berger, Frame & Miller (2002) concluded that implementing credit scoring leads to an increase in the supply of credit to SMEs. Additionally, Frame et al. (2001) found that for the banks included in their sample the portfolio share of SMEs increased by 8.4% as a result of adopting credit scoring technology. Moreover, according to Berger and Frame (2007) this increase can be split into;

- (1) Increasing the quantity of credit extended;
- (2) Increasing lending to relatively opaque, risky borrowers;
- (3) Increasing lending within low-income areas;
- (4) Lending over greater distances; and
- (5) Increasing loan maturity.

Another transaction technology employing hard information to lend to opaque SMEs is factoring. Factoring is a method to raise short-term finance whereby clients’ account receivables are purchased by a specialized firm or a bank for a pre-agreed fee plus interest (Soufani, 2002). Consequently, the specialized firm or the bank takes the responsibility to control and manage a debtor portfolio of a firm. In simple words, factoring is the process resulting in exchanging the account receivable of a firm for cash. And since SMEs usually lack the sufficient collateral to obtain finance, using accounts receivable as collateral, that is,



factoring, to raise finance is significantly an important decision to increase SMEs' liquidity (Soufani, 2002). It was found that factoring as an alternative source of finance can play a crucial role in alleviating financing gaps faced by SMEs (Soufani, 2002).

### **2.10 Mobile Money potential for Financial Accessibility**

Accessibility to finances is considered a key determinant to business success. One challenge posed by SMEs is the lack of securities to act as collateral to access finances especially from mainstream financial institutions such as the banking sector. Bank charges that are considerably higher are among the factors that have contributed to low enrolment rates amongst SMEs. Lack of an account with the bank to make savings is a contributory factor limiting the capability to access finances. All the factors have already been discussed elsewhere in the preceding topics.

Is it possible for mobile money services to provide potential financial services to SMEs? Since mobile money allows any subscriber to add credit to his or her mobile account and store it for later use, some of the features like storage, payments and transfers make it possible to build additional financial services within the mobile phone technology. Evidence shows that expanding access among the poor to financial services is effective in reducing poverty (Must & Ludewig, (2010). Poor individuals without access to banking services are forced to rely on the informal cash economy like borrowing and family savings, making them more susceptible to risks and lacking means to efficiently save or borrow money.

Mobile money services provide the benefits of financial accessibility through various ways. In addition to providing an inexpensive way to transfer funds, mobile money can improve access to savings mechanism, and facilitate the purchase of insurance (Must & Ludewig, (2010) among other uses. When savings are made to a bank via mobile money, it provides a further mechanism to borrow funds based on savings. (Must & Ludewig, 2010). Insurance on the

other hand can help SMEs owners access various benefits previously unavailable to them like retirement benefits such as the National Social Security Fund (NSSF), health insurance like the National Health Insurance Fund (NHIF), business insurance and many others already seen in Kenya.

### **2.11 Empirical Review of Relevant Literatures on Mobile Commerce and SMEs Performance**

Chogi (2006) did a study to investigate the impact of mobile phone technologies on SMEs in Nairobi. The data for the study was collected using a self-structured questionnaire. The results of the study revealed that most SMEs perceived that mobile phones had a positive impact on their revenues. Additionally, the result of the study indicated that majority of SMEs perceived that mobile banking enabled them to reduce their operating costs.

Bangens&Soderberg (2008) assessed the role of mobile banking and its potential to provide basic banking services to the vast majority of people in Sub-Saharan Africa. The data for the study was collected from both the primary and secondary sources. According to their findings, mobile banking had facilitated financial transactions and remittance of funds. Additionally, the results of their study indicated that mobile banking had enhanced the operations and competitiveness of SMEs. The scope of the study is too broad and so lacked specific reference as a result of geographical, political, economic and socio-cultural differences.

Huang (2008) conducted a study to determine the impact of mobile phones on SMEs performance in Auckland, New Zealand. He used a questionnaire to collect primary data. The results of his study indicated that most SMEs in Auckland used mobile technology to conduct their business activities. Additionally, the results of the study indicated that the use of mobile devices had enabled SMEs to increase their annual turnover as a result of additional business networking opportunities. Although the study was undertaken to determine the impact of

mobile phones on the operational performance but failed to examine its adoption to financial accessibility

Wambari (2009) conducted a case study in Kenya to determine the impact of mobile banking in developing countries. He used a semi-structured questionnaire to collect data from a sample of 20 SMEs. The results of his study indicated that mobile banking had a positive impact on financial transactions of SMEs. Furthermore, the results of the study indicated that the adoption of mobile banking had enabled SMEs to increase their sales thereby leading to improved financial performance. The study focused more on the aspect of mobile marketing than on other aspects like financial accessibility to mobile commerce services.

. Similarly, Donner & Escobari (2010) assessed the use of mobile phones by SMEs in developing countries. They used questionnaires to collect data from fourteen research studies that had examined mobile use by SMEs. According to their findings, mobile phones had helped SMEs to become more productive and to improve their sales thereby improving their financial performance. The study focused on the marketing aspect of SMEs and how it improves their financial performance and avoided the financial aspect on how it accesses its finances from commercial banks.

Likewise, Higgins, Kendall & Lyon (2012) conducted a study to determine mobile money usage patterns of Kenyan SMEs. They used a questionnaire to collect data from 865 SMEs owners. The results of their study showed that 99.5% of the SMEs used mobile money. Moreover, the study results indicated that the use of mobile money enabled SMEs to improve their performance. The rate of adoption of mobile commerce in Kenya is relatively higher than what is obtainable in Nigeria.

Okolo, Ani and Ofoegbu (2014) assessed the implications of mobile commerce on the economy of Nigeria. Ordinary least square correlation matrix test and Granger-causality test were employed to measure the extent to which telecommunication contribution impacted positively on Gross Domestic Product (GDP) of Nigeria. Mobile penetration had negative and statistically insignificant effect on gross domestic product, while mobile penetration aids mobile commerce in Nigeria, it negatively affect Nigeria's trade balance and economic growth due to huge import of mobile phones. However, mobile phones could not impact significantly on economic growth in Nigeria because of its inability to produce mobile phones locally. The study made use of mobile penetration, internet penetration which is part of the independent variable adopted for the study but did not make use of survival, asset size and access to credit, also the domain of the study is the Nigerian economy and not SMEs.

Okolo and Obidigbo (2014) examined the effect of mobile commerce on the performance of SMEs in Nigeria and how its performance can be boosted. He employed ordinary least square regression method of analysis to measure the performance of SMEs which was proxied by survival, asset size and access to credit. The study revealed that mobile penetration and asset size of SMEs showed an insignificant relationship while lending rates of deposit money banks significantly impacted on small and medium enterprises access to credit. However, performance would have best been measured using profitability. Although this study is a replicative study of the study carried out by Okolo and Obidigbo (2014) but their work is limited in the following areas: in terms of the scope of their study which is from 1996 to 2010 which does not reflect current picture of the actual reality. Also, no sufficient tests like heteroskedasticity test, cointegration test was conducted to validate the conclusion of the study thereby making their conclusion spurious. Also the use of Ordinary least square regression as a tool of data analysis used for their study is a serious methodological gap which this study has

tried to cover. In terms of theoretical underpinning Okolo and Obidigbo (2014) did not underpin their work with any theory to make logical sense of the relationship of the variables and the factors that have been deemed relevant to the problem. All these limitations and more the current study has adequately addressed.

### **2.13 Mobile Money Variables Attractive to SMEs**

The existing variables from research conducted by other scholars include increased accessibility, low cost, convenience, security, satisfaction and support efficiency and reliability.(Mbogo, 2010). With mobile money services achieving critical mass, it is likely that non-users are being encouraged to adopt by those already in the system.

The transaction cost is considered lower than any other alternative. As outlined by Zutt (2010), the clearest direct benefits of mobile money are greater convenience, faster speed, and lower cost of transferring funds. This becomes apparent when a comparison is made with traditional methods of sending and receiving money such as; through public transport, through friends, or through Posta Pay Services. All these traditional methods outlined have far more risks compared to mobile money systems which are generally cheaper than these alternatives and both the sender and the receiver are given instant information regarding the transaction. The uptake of mobile money services benefits SMEs in various ways primarily by moving toward cashless communities as outlined above (Wishart, 2006). Mobile money is particularly attractive to SMEs because the services are considered far cheaper than the current alternatives such as Western Union when transferring money from one person to another (Omwansa, 2009). This benefit can be extended to the transfer of money from the buyer to the seller during routine business transactions. This can be achieved in real time since mobile money services are almost instantaneous; similar to cash transactions. Therefore, transaction time is not affected while increasing convenience of not dealing with cash and maintaining

almost liquid value of cash within the mobile money service are enhanced. World Bank (2012) declares that mobile money is considered liquid enough to allow for easy, fast conversion. This is aided by convenient access to agents in various locations to aid in transactions.

The speed and safety of mobile money services has enabled quick and easy transfer of money. This has sparked the growth of various economic activities, especially in the rural areas, through increased money circulation boosting local consumption (Zutt 2010). It is likely that reduced costs and increased efficiency and reliability of the systems have enabled more people to send money to the rural areas increasing economic activities in those places. For example, it is possible for a farmer to receive money to purchase seeds without unnecessary travel during planting season. However, current data is lacking to support such flow. Data is, however, available to confirm an increase in movement of money from the rich to the poor when schools reopen, which is an indication of money being made available for school fees (Zutt, 2010).

The extensive coverage of mobile service providers as outlined above has not only resulted to high rates of convenience, but has made the service effective and reliable as a means to send money with the interface between agents and customers functioning with minimal complaints from customers.

## **2.14 Theoretical Framework**

The theoretical framework helps to make logical sense of the relationship of the variables and the factors that have been deemed relevant to the problem. It provides definitions of the relationship between all the variables so that the theorized relationship between them can be understood. The theoretical framework will therefore guide the research, determining what factors will be measured and what statistical relationship the research will look for.

## **Schumpeterian theory of Innovation**

Schumpeter first provided the most tangible theory on innovation in 1934 (Schumpeter, 2008). By considering consumers as passive players in the establishment of the unusual approaches to satisfaction of needs and wants, Schumpeter indicated that innovation is the foundation of profitability and competitive advantage. The Schumpeterian Theory of Innovation essentially explains economic change and the entrepreneur is the central innovator.

According to Piore (2007), Schumpeter identified that society thrives the ability to uphold contradictions and antagonistic tendencies. The existence of these contradictions provides the impetus for instrumental thought in the process of establishing solutions to bridge the divide. As a result, the qualitative and quantitative aspects of innovation were founded on establishment of new combinations of existing resources. Although the emergence of novel resources was still possible, Schumpeter identified the inverse relationship between resistance to change and innovation (Fagerberg, 2003). The static nature of innovation propagated the clustering of innovation in specific industries, albeit for a specific period.

## **Task-Technology Fit Theory**

This theory was postulated by Goodhue & Thompson (1995) argued that the fit between task characteristics and technology characteristics affected individual performance. Mobile commerce service usage is determined by both the characteristics of the technology and the needs of the users. The TTF model suggests that a better fit between technology functionalities, task requirements, and individual abilities will lead to better performance. Goodhue and Thompson (1995) propose the technology-to-performance chain model and assert that for an information technology to have a positive impact on individual performance, the technology must be utilized, and the technology must be a good fit with the tasks it supports. Goodhue (1995) further argues that task-technology fit determines the performance

of using information technology, and that users can reliably evaluate the task-technology fit. The theory had helped in proposing a framework for assessing performance.

In another development, Zigurs & Buckland (1998) expanded the scope of the theory from the individual level to group level when they applied the theory to explain the effectiveness of group support systems.

For mobile technology, the major characteristics are mobility and reachability. Turban & King (2003) identify five value-added attributes:

- a. **Ubiquity:** Available at any location at any time.
- b. **Convenience:** Convenient for users to operate.
- c. **Instant connectivity:** Easily connected to the target.
- d. **Personalization:** Allows for preparation of personalized information.
- e. **Localization:** Location-specific information and products.

These five attributes mentioned above addressed three major criteria: location-sensitive, time-critical, and personal. If a task's requirements meet these criteria, its fit with mobile technology would be high. If the requirements do not meet these criteria, the fit is low.

The decision to base the study on this theory was informed by the fact that Mobile commerce financial service usage is determined by the characteristics of the technology and the needs of the users. The independent variable which is mobile commerce relates more to the characteristic of the technology which are Ubiquity, Convenience, Instant connectivity, Personalization and Localization while the needs of the users include banking, money transfers and payments which SMEs in Nigeria may adopt to enhance its daily operations and in the long run, improve the overall organizational performance as it relates to the dependent variable which is organisational performance proxied by survival, asset size and access to



credit is the outcome of the mobile commerce service technology adopted. This theory was chosen because there is a fit between mobile commerce financial services, its functionalities, task requirements and the organizational abilities that will translate to better performance. This fit in the adoption of this mobile technology emanates from the digitalization and mobility of every sector of the nation's economy especially in Nigeria where the Small and Medium Scale Enterprise plays a very pivotal, significant and relevant role.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

The study adopted both correlational and explanatory research design for the study. Correlational research design was used to establish the relationship that exists between the dependent and independent variable while the explanatory design was used to explain in detail the actual and potential impact that the independent variables have on the dependent variables of the study.

#### **3.2 Population:**

The population for the study comprises of all the 17,284,678 registered Micro Small and Medium Enterprises in Nigeria, according to figures made available by the Survey Report on Micro Small and Medium Enterprises in Nigeria (MSMEs) 2013

#### **3.3 Source of Data Collection**

The study made use of secondary source of data collection. Data was sourced from Central Bank of Nigeria (CBN), Statistical Bulletin and United Nation (UN) Statistical Division bulletin. Data on internet penetration (Ipen) and Mobile penetration (Mpen) were extracted from the United Nations Statistical bulletin, data on credit to SMEs and lending rate (Lr) were extracted from the Central Bank statistical Bulletin and SMEs survival and SME Asset size were extracted from SMEDAN Annual Report.

#### **3.4 Tools of Data Analysis**

In analysing the data for this study, Vector Autoregressive tool of data analysis was used to assess the extent to which the dependent variables impacts on the explanatory variable.

The rationale for the choice of Vector Autoregressive technique is to first of all check if the variables are cointegrated and to avoid the use of data that will give a spurious result. In this case, it is a better tool to bring out clearly the effect or impact of mobile commerce services on the performance of SMEs in Nigeria.

### **3.5 Estimation Technique Procedure**

Performance of small and medium enterprises was measured by Survival (SMES), Asset size (SMEAS) and access to credit (BLSME). SMES the number of registered small businesses for the period under study (2003 – 2014), SMEAS was measured by startup capital of small businesses, and BLSME was proxied by small and medium enterprise access to credit. This is proposed to help examine the influence of mobile commerce on the performance of small and medium enterprise in Nigeria. The researcher's choice of the technique is based not only by its computational simplicity but also as a result of its optimal properties such as linearity, unbiasedness, minimum variance, zero mean value of the random terms (Gujarati 2004).

### **3.6 Model Specification**

In this study, hypothesis has been stated with the view of examining the impact of mobile commerce services on SMEs performance in Nigeria. In capturing the study, these variables mentioned above were adopted as proxy. Thus, the model is represented in a functional form as shown below:

$$SMES = f(Mpen, Ipen, BL_{SME})$$

$$SMEA = f(Mpen, Ipen, BL_{SME})$$

$$BLSME = f(Mpen, Ipen, Lr)$$

Where:

SMES= Survival of SMEs

SMEA= Asset size of SMEs

BLSME = Bank lending to SMEs

Mpen = mobile phone penetration/ usage

Ipen = internet penetration/ usage

Lr = Deposit money bank lending rate

In a linear function it is represented as follows,

$$SMES = \beta_0 + \beta_1 Mpen + \beta_2 Ipen + \beta_3 BL_{SME} + \varepsilon \dots\dots\dots (1)$$

$$SMEA = \beta_0 + \beta_1 Mpen + \beta_2 Ipen + \beta_3 BL_{SME} + \varepsilon \dots\dots\dots (2)$$

$$BLSME = \beta_0 + \beta_1 Mpen + \beta_2 Ipen + \beta_3 Lr + \varepsilon \dots\dots\dots (3)$$

Where:  $\beta_0$  = constant term

$\beta_1$  = regression coefficient of mobile penetration/ usage

$\beta_2$  = regression coefficient of internet penetration/usage

$\beta_3$  = regression coefficient of lending rate

$\varepsilon$  = error term

The variables run in the regression analyses include

1. -Mobile penetration – independent variable
2. Internet penetration – independent variable
3. Lending rate – independent variable
4. Asset size of SME – dependent variable
5. Survival of SME – dependent variable
6. Bank lending to SME – dependent variable

The model being:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon$$

## **CHAPTER FOUR**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.1 Introduction**

The chapter involves data presentation, analysis and interpretation of the outcomes of the research. The research findings of the study are based on the data collected from secondary sources. The data were analysed in the following sections: firstly, data presentation and analysis; hypothesis testing and finally, the research findings and discussion.

#### **4.3 Data Presentation**

The variables for the study comprised of SME survival, SME asset sizes and Bank lending to SMEs as proxies for organisational performance as the dependent variable while mobile penetration, internet penetration and lending rate are the independent variables. The study made use of time series data of all registered SMEs in Nigeria from 2003 to 2014

#### **Stationarity Tests**

Discussion and analysis of the results commenced with the establishment of the stationarity of the respective variables involved in the study. Conducting the test became necessary in order to avoid dealing with non-stationary variables that may give rise to spurious results. Table one provides a summary of the results for the unit root test conducted on the time series data utilized in the study using the Augmented Dickey-Fuller (ADF) test.

**Model 1: SME SURVIVAL**

$$SMES = \beta_0 + \beta_1 Mpen_t + \beta_2 Ipen_t + \beta_3 Lr_t + \varepsilon \dots\dots\dots (1)$$

**Model 2: SME ASSET SIZE**

$$SMEA = \beta_0 + \beta_1 Mpen_t + \beta_2 Ipen_t + \beta_3 BLSME_t + \varepsilon \dots\dots\dots (2)$$

**Model 3: BANK LENDING TO SMEs**

$$BLSME = \beta_0 + \beta_1 Mpen_t + \beta_2 Ipen_t + \beta_3 Lr_t + \varepsilon \dots\dots\dots (3)$$

**Table 4.1 ADF Test for Mobile Commerce services and the performance of SMEs**

<b>Variables</b>	<b>ADF Test Statistics</b>	<b>Order Integration</b>
SMES	-8.776945***	I(2)
SMEA	-44.00805***	I(2)
BLSME	-5.413018***	I(2)
MPEN	-7.345523***	I(2)
IPEN	-6.335727***	I(2)
LR	-5.940629***	I(2)

*Source: Eviews8.0 output, 2015*

*\*\*\*, \*\* and \* connote significance at the 1%, 5% and 10% levels respectively. NB: All ADF regressions contain an intercept and some contain one lagged difference. d(X) connotes first difference of a variable X. and dln(x) connotes first difference of natural logarithm.*

Table 4.1 shows the summary results obtained from the stationarity test conducted on the variables. It can be seen from the table that all the six variables of interest, SME Survival SME Asset Size, BLSME and MPEN, IPEN and LR were found to be stationary at 2<sup>nd</sup> difference. The evidence of this can be seen from the significance of the ADF statistics. Thus, the null

hypothesis of the existence of unit root in the SME Survival, SME Asset Size BLSME, MPEN IPEN and LR series were rejected at 1% per cent level of significance. However, the data series of SME SURVIVAL, SME Asset Size, BLSME, IPEN, LR and MPEN were found to be non-stationary at levels as indicated by the insignificance of the associated ADF statistic. To correct the anomaly, the test was repeated on the first difference of data series of these variables. None of the variables were found to be stationary at 1<sup>st</sup> difference to correct the anomaly, again the test was repeated on second difference. Finally, the variables were found to be stationary at second difference and thus considered to be integrated of the order 1(2)

### 4.2.3 Cointegration Tests

Following the establishment of stationarity of the variables requires the determination of existence of cointegration vectors supporting the existence of a relationship between the dependent and the explanatory variables. To do this the Johansen test is used. The result of the test is presented in table 4.2.3(i)

**Table 4.2. Co integration Test Result for the Model in Equation 1**

Date: 10/05/16 Time: 05:21  
 Sample (adjusted): 2004Q3 2014Q4  
 Included observations: 42 after adjustments  
 Trend assumption: Linear deterministic trend  
 Series: SMES MPEN IPEN LR  
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.552079	77.29434	47.85613	0.0000
At most 1 *	0.403190	43.56256	29.79707	0.0007
At most 2 *	0.336039	21.88400	15.49471	0.0047
At most 3 *	0.105523	4.683690	3.841466	0.0304

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Source: Eviews Version 8.0

Also, cointegration tests was carried out to test whether the variables are cointegrated or spuriously related for each of the three models. Each of the calculated Dickey-Fuller tests statistics were found to be less than 5% critical value. Therefore, the null hypothesis of no cointegration was rejected.

### 4.3 Johansen Cointegration Test For the Model in Equation 2

Date: 10/05/16 Time: 05:30  
 Sample (adjusted): 2004Q3 2014Q4  
 Included observations: 42 after adjustments  
 Trend assumption: Linear deterministic trend  
 Series: SMEA MPEN IPEN LR  
 Lags interval (in first differences): 1 to 1

#### Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.537708	74.28451	47.85613	0.0000
At most 1 *	0.369268	41.87908	29.79707	0.0013
At most 2 *	0.331531	22.52239	15.49471	0.0037
At most 3 *	0.124956	5.606228	3.841466	0.0179

Trace test indicates 4 cointegratingeqn(s) at the 0.05 level  
 \* denotes rejection of the hypothesis at the 0.05 level  
 \*\*MacKinnon-Haug-Michelis (1999) p-values

The result of the test indicates the presence of 4 co-integrating equations at 1% levels of significance respectively. This signifies the existence of a relationship between Mobile commerce and SMEs performance. This is an indication of longrun reliability which validates the conclusions of the result.

### Johansen Co-integration Test For the Model in Equation 3

Again the search for a cointegrating vector supporting the existence of a valid relationship between the dependent variables for the third model is ascertained by the Johansen Cointegration test, the result of the test is presented in table 4.2.3.(iii)



### Table 4.4 Johansen Cointegration Test for the Model in Equation 3

Date: 10/05/16 Time: 05:32

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Trend assumption: Linear deterministic trend

Series: BLSME MPEN IPEN LR

Lags interval (in first differences): 1 to 1

#### Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.463118	62.73038	47.85613	0.0011
At most 1 *	0.380980	36.60735	29.79707	0.0070
At most 2 *	0.219509	16.46339	15.49471	0.0356
At most 3 *	0.134245	6.054463	3.841466	0.0139

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

The result of the test show the presence of four (4) cointegrating equation at 1% and 5% levels of significance. This signifies the presence of a long run relationship between Mobile commerce and SMEs performance. This therefore validates the conclusions of the results.

#### 4.3.1 Descriptive Statistics of the Variables

The section presents the descriptive statistics of the main variables in the study. These variables include: Ipen, Mpen and Lr and organisational performance proxied by SME survival, SME asset sizes and BLsme

**Table 4.5 Descriptive Statistics of the Variables**

	SME survival	SME asset size	BLsme	Mpen	Ipen	Lr
Mean	7.124298	7.214221	5.417958	7.673586	7.165450	1.240397
Median	7.204464	7.076282	5.404822	7.833258	7.457123	1.235051
Maximum	7.489865	10.13153	6.069062	8.134366	7.825229	1.359456
Minimum	6.340212	6.490520	4.805845	6.498238	5.871153	1.183555
Std. dev.	0.328602	0.888285	0.444415	0.425625	0.537577	0.038609
Obs	44	44	44	44	44	44

**Source: Researcher's computation (See Appendix), 2016**

Table 4.5 reveals that the sampled listed SMEs in the study have an average performance of 7.124298 in terms of SMEs survival ( $S_{SME}$ ). This shows that the average rate of SMEs survival is about 71%. The average value of SMEs asset size ( $AS_{SME}$ ) and SMEs access to credit ( $BL_{SME}$ ) are 7.214221 and 5.417958 respectively. This reveals that  $AS_{SME}$  on average is 72% and  $BL_{SME}$  is 54%. Also, the results of the descriptive statistics from table 4.5 show that the sampled listed small and medium scale enterprise in Nigeria have an average performance of 7.673586 in terms of Mobile penetration (Mpen), 7.165450 in terms of Internet penetration (Ipen) and 1.240397 contribution in terms of Lending rate (Lr)

SMEs asset size has the highest standard deviation indicating its low contribution to the model while Lr has the lowest standard deviation. This signifies that Lr variable contributes most to the model. Furthermore, a Pearson correlation analysis was performed on all the variables to check for the degree of relationship between them. The result is presented in a correlation matrix in table 4.6. This implies that since internet usage and mobile usage contributes more in the model, it then connotes that the adoption of mobile commerce by SMEs in Nigeria will go a long way in facilitating access to mobile financial services by SMEs most especially for the fact that a good number of SMEs in Nigeria are rural dwellers who lack access to financial services, but have free access to internet facilities and mobile services.

## Correlation Matrix

A correlation analysis was performed to determine the direction and strength of the relationship between the independent and the dependent variables.

**Table 4.3:6 Correlation Matrix**

		SME Survival	SME Asset size	BLsme	Mpen	Ipen	Lr
SME Survival	Pearson Correlation	1					
	Sig. (2-tailed)						
SME Asset size	Pearson Correlation	.284	1				
	Sig. (2-tailed)	.059		.			
BLsme	Pearson Correlation	.701**	-.090	1			
	Sig. (2-tailed)	.000	.555				
Mpen	Pearson Correlation	.496**	-.491**	.836**	1	.	
	Sig. (2-tailed)	.001	.001	.000		.	
Ipen	Pearson Correlation	.530**	-.449**	.802**	.980**	1	
	Sig. (2-tailed)	.000	.002	.000	.000		
Lr	Pearson Correlation	-.032	.642**	-.433**	-.674**	-.597*	1
	Sig. (2-tailed)	.836	.000	.003	.000	.000	

\*. Correlation is significant at the 0.05 level (2-tailed).

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

### Source: Researcher's Computations, 2016

The inter-relationship between the variables was examined using Pearson correlation analysis.

Table 4.6 presents the correlation of the variables. It shows that internet penetration has a positive correlation with SMEs survival, Bank lending to SMEs and mobile penetration is significant at 1% respectively. Also, it shows that internet penetration has a negative correlation with SMEs asset size and is significant at 1%. On the other hand, SMEs survival has a positive correlation with Bank lending to SMEs, mobile penetration and internet penetration and are significant at 1% respectively, but negatively significant to SMEs asset sizes at 5% and negatively insignificant to lending rate The strongest positive correlation was the relationship between internet penetration and mobile penetration ( $r = .980$ ,  $p < 0.000$ ).

**Table 4.4 Summary of Regression Result on SME survival**  
*Mobile commerce has not significantly affected SMEs survival in Nigeria*

Vector Autoregression Estimates  
 Date: 10/05/16 Time: 05:35  
 Sample (adjusted): 2004Q3 2014Q4  
 Included observations: 42 after adjustments  
 Standard errors in ( ) & t-statistics in [ ]

	SMES
SMES(-1)	0.888907 (0.16499) [ 5.38776]
SMES(-2)	-0.130453 (0.14895) [-0.87579]
MPEN(-1)	2.027597 (1.46880) [ 1.38044]
MPEN(-2)	-1.567703 (1.35509) [-1.15690]
IPEN(-1)	-0.050544 (0.48547) [-0.10411]
IPEN(-2)	-0.159160 (0.47551) [-0.33472]
LR(-1)	1.907069 (1.43114) [ 1.33256]
LR(-2)	-3.605325 (1.55570) [-2.31749]
C	1.732354 (1.67992) [ 1.03121]
R-squared	0.925958
Adj. R-squared	0.908008
Sum sq. resids	0.333472
S.E. equation	0.100525
F-statistic	51.58633
Log likelihood	41.95776
Akaike AIC	-1.569417
Schwarz SC	-1.197059
Mean dependent	7.112306
S.D. dependent	0.331434
Determinant resid covariance (dof adj.)	1.59E-14
Determinant resid covariance	6.06E-15
Log likelihood	449.1089
Akaike information criterion	-19.67185
Schwarz criterion	-18.18242

**Source: Extracted from E-views 8.0. output**

The empirical findings revealed that  $R^2$ , the multiple coefficient of determination of the variables stood at 0.925958. This indicated that about 92.% of the total variation in dependent variable (SMESURV) is explained by variation in the independent variables (MPEN, IPEN and LR); whereas the remaining 8% of changes in SMESURV are caused by other variables not captured by the study. The F-statistic which measures the adequacy and fitness of the model used in the study stood at 51.58633 which is significant at one percent; shows that the model of the study is adequate and fit and the independent variables are appropriately selected.

The survival of SME impacts on SME after the first year indicated by lag (-1) indicates a t-statistics of 5.38776 which stood at one per cent level of significance. Also, after the second year indicated by SME(-2) showed that SMES impacts SURVIVAL with a beta coefficient of -0.130453 and a t-statistics of -0.87579 which indicates an insignificant relationship.

Mobile penetration MPEN(-1) indicates a beta coefficient of 2.027597 a t-statistics of 1.38044 which shows a weak significant relationship at 10%.

MPEN(-2) indicates a coefficient of -1.567703 a t-statistics of -1.15690 which also showed an insignificant relationship to SME survival.

IPEN (-1) indicates a coefficient of -0.050544 and a t-statistics of -0.10411 which shows an insignificant impact to SME survival.

IPEN (-2) Indicates a coefficient of -0.159160 and a t-statistics of -0.33472 which shows an insignificant relationship to SME survival.

LENR(-1) showed a coefficient of 1.907069 and a t-statistics of 1.33256 which shows an insignificant relationship.

LENR (-2) indicates a coefficient of -3.605325 and a t-statistics of -2.31749 which shows a 10% significant relationship.

C. showed a constant coefficient of 1.732354 a standard error of 1.67992 and a t-statistics of 1.03121 which indicates an insignificant relationship.

Based on the above analysis, mobile commerce has not significantly impacted on SMEs survival in Nigeria and therefore, we accept the null hypothesis

### Table 4.5 Summary of Regression Result on SMEs Asset Size

*Mobile commerce has not significantly affected SMEs asset size in Nigeria*

$$SMEAsset = \beta_0 + \beta_1 Mpen + \beta_2 Ipen + \beta_3 Lr + \square$$

Vector Autoregression Estimates

Date: 10/05/16 Time: 05:37

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	SMEA
SMEA(-1)	0.378121 (0.15649) [ 2.41625]
SMEA(-2)	-0.023171 (0.12733) [-0.18197]
MPEN(-1)	23.23051 (5.86053) [ 3.96389]
MPEN(-2)	-22.35142 (5.55273) [-4.02530]
IPEN(-1)	-3.059182 (1.76806) [-1.73025]
IPEN(-2)	3.642925 (1.74701) [ 2.08523]
LR(-1)	6.651826 (4.53946) [ 1.46533]
LR(-2)	-6.047421 (4.60012) [-1.31462]
C	-7.841736 (5.70872) [-1.37364]
R-squared	0.769983
Adj. R-squared	0.714221
Sum sq. resids	3.874590
S.E. equation	0.342654
F-statistic	13.80842
Log likelihood	-9.547596
Akaike AIC	0.883219
Schwarz SC	1.255577
Mean dependent	7.078275
S.D. dependent	0.640974
Determinant resid covariance (dof adj.)	
Determinant resid covariance	
Log likelihood	
Akaike information criterion	
Schwarz criterion	

**Source: Extracted from E-views 8.0. output**

The empirical findings revealed that  $R^2$ , the multiple coefficient of determination of the variables stood at 0.769983. This indicated that about 76% of the total variation in dependent variable (SMEASSET) is explained by variation in the independent variables (MPEN, IPEN and LR); whereas the remaining 24% of changes in SMEASSET are caused by other variables not captured by the study. the F-statistic which measures the adequacy and fitness of the model used in the study stood at 13.80842 which is significant at one percent; shows that the model of the study is adequate and fit and the independent variables are appropriately selected.

SME ASSET SIZE for the first year represented as SMEA (-1) impacts on SME ASSETS with a beta coefficient of 0.378121 and a t- statistics value of 2.41625 with a significant value of 10%. SMEA lag (-2) impacts on SMEA with a beta coefficient of -0.023171 and a t- statistics value of -0.18197 which is not significant

MPEN lag (-1) has a beta coefficient of 23.23051 and a t-statistics of 3.96389 showing a 5% significant impact on SME ASSET.

MPEN lag (-2) has a beta coefficient of -22.35142 and a t-statistics value of -4.02530 showing 5% significant relationship, indicating that MPEN has impact on SME asset size both after the first and second year.

IPEN lag (-1) has a beta coefficient of -3.059182 and a t- statistics value of -1.73025 which reveals a 10% significance

IPEN lag (-2) has a beta coefficient of 3.642925 and a t-statistics value of 2.08523 indicating a 10% level of significance. This indicates that at the end of the first year and at the end of the second year, IPEN has significant impact on SME survival

LENR lag (-1) has a beta coefficient of 6.651826 and a t-statistics value 1.46533 showing an 5% significant impact on SME ASSET SIZE



LENR lag (-2) has a beta coefficient of -6.047421 and a t-statistics value of -1.31462 showing an insignificant relationship at all the conventional levels. This result indicates that we do not have sufficient evidence to reject the null hypothesis

SME ASSET SIZE has constant beta coefficient of -7.841736 with a t- statistics value of -1.37364 which depicts a 5% significant relationship to SME ASSET SIZE. The result from this finding indicates that we have sufficient evidence to reject the null hypothesis Based on the above analysis, mobile commerce has significantly impacted on SMEs asset size in Nigeria and therefore, we reject the null hypothesis.

**Table 4.6 Summary of Regression Result on SMEs Access to credit**

*Mobile commerce has not significantly affected SMEs access to credit in Nigeria*

$$BLsme = \beta_0 + \beta_1 Mpen + \beta_2 Ipen + \beta_3 Lr + \epsilon$$

Vector Autoregression Estimates

Date: 10/05/16 Time: 05:40

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	BLSME
BLSME(-1)	1.321675 (0.16560) [ 7.98105]
BLSME(-2)	-0.481325 (0.16283) [-2.95603]
MPEN(-1)	1.363401 (1.09777) [ 1.24198]
MPEN(-2)	-0.962459 (0.94286) [-1.02078]
IPEN(-1)	-0.232985 (0.31783) [-0.73304]
IPEN(-2)	0.094851 (0.30683) [ 0.30913]
LR(-1)	-0.721858 (0.86646) [-0.83311]
LR(-2)	0.324465 (0.88057) [ 0.36847]
C	-0.755524 (1.36065) [-0.55527]
R-squared	0.984584
Adj. R-squared	0.980847
Sum sq. resids	0.124757
S.E. equation	0.061486
F-statistic	263.4534
Log likelihood	62.60471
Akaike AIC	-2.552605
Schwarz SC	-2.180248
Mean dependent	5.438745
S.D. dependent	0.444278
Determinant resid covariance (dof adj.)	
Determinant resid covariance	
Log likelihood	
Akaike information criterion	
Schwarz criterion	

**Source: Extracted from E-views 8.0. output**

The empirical findings revealed that  $R^2$ , the multiple coefficient of determination of the variables stood at 0.984584. This indicated that about 98% of the total variation in dependent variable (BLSME) is explained by variation in the independent variables (MPEN, IPEN and LR); whereas the remaining 2% of changes in BLSME are caused by other variables not captured by the study. the F-statistic which measures the adequacy and fitness of the model used in the study stood at 263.4534 which is significant at about one per cent; shows that the model of the study is adequate and fit and the independent variables are appropriately selected BLSME lag (-1) has a beta coefficient of 1.321675 and a t-statistics value of 7.98105 showing about 1% level of significance

BLSME lag (-2) has a beta coefficient of -0.481325 and a t-statistics value of -2.95603 and significant at about 10%, this implies that after the first year Bank Lending to SMEs impacts on SMEs access to credit by 1 per cent and the second year at 10%.

MPEN lag (-1) has a beta coefficient of 1.363401 and a t-statistics value of 1.24198 which has no significant impact on BLSME

MPEN lag (-2) has a beta coefficient of -0.962459 and a t-statistics value of -1.02078 which has no significant impact on BLSME. This reveals that mobile Penetration has not impacted on SMEs access to credit both after the first and second year.

IPEN lag (-1) has a beta coefficient of -0.232985 and a t-statistics value of -0.73304 which has no significant impact on BLSME.

IPEN lag (-2) has a beta coefficient of 0.094851 and a t-statistics value of 0.30913 has no significant impact on BLSME. This indicates that after the first year and second year internet penetration has no significant impact on SMEs access to credit,.

LENR lag (-1) has a beta coefficient of -0.721858 and a t-statistics value of -0.83311 which has no significant impact on BLSME

LENR lag (-2) has a beta coefficient of 0.324465 and a t-statistics of 0.36847 which reveals an insignificant impact on BLSME after the first year and the second year.

BLSME has a Constant beta coefficient of -0.755524 and a t-statistics value of -0.55527 which is not significant at all the conventional levels

Based on the above analysis, mobile commerce has not significantly impacted bank lending to SMEs in Nigeria and therefore, we fail to reject the null hypothesis.

#### **4.5 Research Findings and Discussion**

The objective of the research is to examine the impact of mobile commerce services on the performance of small and medium scale enterprises in Nigeria. The results indicate that about 59.8%, 91.6% and 50.9% of the total variation in SMEs survival, SMEs assets size and SMEs access to credit respectively is explained by variation in the independent variables (Mpen, Ipen and Lr). Mobile commerce was found to be statistically significant with one dependent variable i.e. SMEs access to credit while SMEs survival, SMEs asset size were found to have no significant relationship with mobile commerce. As such the findings were as follows

##### **1. Mobile Commerce Services and SMEs Survival**

The finding indicates that based on the analysis, mobile commerce does not significantly affect SMEs survival in Nigeria. This implies that SMEs in Nigeria patronizes internal rather than external sources of finance for their initial and startup capital. This is because there are majorly two sources of finance available to SMEs for their initial capital, survival and sustainable development, they are internal or equity and external or debt. Internal source comprised of retained profits, sales of existing asset, cut down stock level and lots more while external sources comprised of long term (such as shares, grants, private equity)

medium term(leasing, hire purchase) and short term(bank loan, trade credit, factoring). External source of finance in this study is majorly concerned with short term source of external debt serviced by commercial banks. This result is in line with the work of Okolo&Obidigbo (2014) which shows that there is an insignificant relationship between mobile commerce and SMEs Survival in Nigeria.

## **2. Mobile commerce services and SMEs asset size**

The finding indicates that mobile commerce has significant effect on SMEs asset size in Nigeria. This indicates that SMEs in Nigeria uses external source of financing to source for their fixed assets. This implies that SMEs in Nigeria patronizes bank loans to source for their fixed assets. This result is in contrasts with the findings of Okolo&Obidigbo (2014), which state that mobile commerce has no significant relationship with SMEs Asset size in Nigeria.

## **3. Mobile commerce services and SMEs access to credit Nigeria.**

The finding indicates that mobile commerce has no significant impact on SMEs access to credit in Nigeria. This implies that SMEs in Nigeria use internal sources of finance for expansionary purpose. This finding is consistent with the finding of Okolo&Obidigbo (2014) which revealed that mobile commerce has no significant relationship on bank lending to SMEs in Nigeria.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

#### **5.1 Summary of findings**

The study investigates the impact of mobile commerce services on the performance of small and medium scale enterprises in Nigeria. Specifically, the study tested three hypotheses in null form. The first hypothesis states that mobile commerce has no significant impact on SMEs survival in Nigeria. The second hypothesis states that mobile commerce has no significant impact on SMEs asset sizes in Nigeria. And the third hypothesis states that mobile commerce has no significant impact on SMEs access to credit in Nigeria

The population of the study comprises of all registered SMEs in Nigeria. The research used time series data, from 2003 to 2014, Correlational research design was employed. The data were further analysed using Vector autoregression which revealed that mobile commerce services has no significant impact on SMEs survival, SMEs asset size and bank lending to SMEs in Nigeria.

#### **5.2 Conclusion**

The study investigates the impact of mobile commerce services on the performance (survival, asset sizes and bank lending to SMEs) in Nigeria from 2003 to 2014. Based on the research hypotheses and the research objectives the conclusion was drawn.

The findings revealed that SMEs in Nigeria patronize internal rather than external sources of finance for their initial and startup capital as well as their assets,As such, the adoption of mobile commerce financial services has not improved on the performance of SMEs in Nigeria in terms of sourcing their start-up capital and fixed assets. Also the study revealed that

informal or internal source of financing are the major sources of financing SMEs patronizes for expansionary purposes.

### **5.3 Recommendations**

In line with the above conclusions, the study recommends that

Firstly, since Small and Medium Enterprises in Nigeria have not sufficiently adopted m-commerce in doing business most especially for sourcing its start-up capital and for the purchase of its fixed assets as well as for expansion purposes. It is therefore recommended that, commercial banks should make accessible, adequate and sufficient initial or start-up capital to its committed customers who are consistent in their transactions with the bank.

Secondly, organized bodies such as National Bureau of Statistics, SMEEDAN, in each of the state should work hand in hand with all the respective local governments in Nigeria in ensuring that small and medium scale enterprises in Nigeria at the local levels are adequately registered before they begin operations so that adequate data that relates to the contributions to SMEs either by donor agencies or by the government can be obtained at minimal or no cost at all.

Finally, government through the instrumentality of the Central Bank of Nigeria should capitalize on the success story of mobile and internet penetration surge, make friendly monetary and regulatory policies so as to create a secure haven for both small and medium enterprises and mobile commerce support providers, that is, telecoms and commercial banks to transact on a fair playing ground and to check some excesses of individuals or corporate bodies from using mobile commerce services to perpetrate corrupt practices.

#### **5.4 Suggestion for Future Study**

This study concentrated on mobile commerce financial services and SMEs performance in Nigeria which is a way of encouraging full adoption of mobile commerce services in Nigeria. Thus, there is need for more researches to be conducted in the area on the effect of mobile commerce marketing services on the performance of SMEs in Nigeria.



## REFERENCES

- Abor, J. & Biekpe, N. (2007). How do we explain the capital structure of SMEs in Sub-Saharan Africa? Evidence from Ghana. *Journal of Economics Studies*, 36(1), 83-97.
- Abusa, F. (2011). TQM Implementation and its impact on organisational performance in developing countries: A case study of Libya. *University of Wollongong thesis collection*.
- Achua, J.K. (2011). Corporate social responsibility in the Nigerian banking system: *Society and Business Review*, 3(1) 21.
- Adebayo, O.S., Balogun, O.J & Kareem T.S. (2013). An investigative study of the factors affecting the adoption of ICT in SMEs in Oyo State, Nigeria. *International Journal of Business and Management Invention*. 2(9), 13-18.
- Africa Practice (2005). *Access to finance: Profiles of African SMEs working paper prepared for Jetro London*. [Online] Available at: <http://www.africapractice.com/uploads/JETRO.pdf>. [Accessed 3 December 2012].
- Agboola A. A. (2006). Electronic payment systems and tele-banking services in Nigeria *Journal of Internet Banking and Commerce*, 11(3), retrieved from (<http://www.arraydev.com/commerce/jibc/>)
- Alalade, Y. S., Amusa, B. O. & Adekunle, O. A. (2013). Microfinance bank as a catalyst for entrepreneurship development in Nigeria: Evidence from Ogun State?" *International Journal of Business and Social Sciences*. 4(12), 286-303.
- Almajali, Y. A., Alamro, S.H. & Al-Soub, Y. Z. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research*, 4 (2), 266-289.
- Almeida, P. (1999). Semi-conductor startups and the exploration of new technological territory.
- Anderson K. & McAdam R. (2004). A critique of benchmarking and performance measurement, lead or lag?. *An International Journal*, 1: 465-483
- Ango, Y. I. (2011). The impact of banking sector reforms on growth and development of entrepreneurs in Nigeria. Retrieved January 30th, 2012, from [www.essex.ac.uk/conferences/ief/10th/documents/10EF\\_papers/pdf](http://www.essex.ac.uk/conferences/ief/10th/documents/10EF_papers/pdf).
- Anurag, S., Tyagi, R. & Raddi, S. (2009). Mobile payment: The next-generation model. HSBCs guide to cash, supply chain and treasury management in Asia Pacific. 178-183. Retrieved November 3, 2012, from [www.scribd.com/research/business&economics](http://www.scribd.com/research/business&economics)
- Aryeetey, E. (1994). Supply and demand for finance of small enterprises in Ghana. *World Bank Discussion paper 251*, The World Bank, Washington, D.C.
- Atojoko, S. (2007). CBN master plan for Nigeria. *Tell magazine* August special publication.
- Ayanda, A. M. & Iaraba, A.S. (2011). Small and medium scale enterprises as a survival strategy for employment generation in Nigeria. *Journal of Sustainable Development*, 4(1), 200.
- Ayo, C. K. (2006). The prospect of e-commerce implementation in Nigeria, *Journal of Internet Banking and Commerce*, December 2006, 11(3), (<http://www.arraydev.com/commerce/jibc/>)
- Ayo, C. K., Ekong, U. O. & Fatudimu, I. T. (2007). The prospects of m-commerce implementation: Issues and trends, in information management in the networked economy: Issues and solutions, proceedings of the 8th IBIMA conference, Ireland, 210-216.

- Ayo, C.K., Uyinomen, O.E., Fatudimu, I.T. & Adebisi, A.A. (2007). M-commerce implementation in Nigeria: Trends and issues, *JIBC* August 2007, 12(2), 1-15.
- Ayozie, D. O. & Farayola, S. (2005). The role of small scale industry in national development in Nigeria. *International Journal of Business and Common Market Studies*, 3(2), 171-175.
- Azende, T.(2012).Risk management and insurance of small and medium scale enterprises (SMEs) in Nigeria. *International Journal of Finance and Accounting*, 1(1), 8-17.
- Bangens, L.&Soderberg, B.(2008).*Mobile Banking-Financial Services for the Unbanked*, KISTA.The Swedish program for ICT in developing regions.
- Basil, A. N. O. (2005). Small and medium enterprises (SMES) in Nigeria: Problems and prospects. St. Clements University press.
- Beck, T., Demirgüç-Kunt, A. & Martinez P. M. S. (2008). *Bank financing for SMEs around the world: Drivers, obstacles, business models, and lending practices*. The world bank. <http://dx.doi.org/10.1596/1813-9450-4785>
- Berger, A. & Udell, G.(2006).A more conceptual framework for SME financing. *Journal of Banking and Finance*, 30 (11), 2945-2966.
- Berger, A. N. & Frame, W. S. (2007).Small business credit scoring and credit availability. *Journal of Small Business Management*, 45(1), 5-22. <http://dx.doi.org/10.1111/j.1540-627X.2007.00195.x>
- Berger, A. N. & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking and Finance*, 22, 613-673. [http://dx.doi.org/10.1016/S0378-4266\(98\)00038-7](http://dx.doi.org/10.1016/S0378-4266(98)00038-7)
- Berger, A. N., Frame, W. S. & Miller, N. H. (2002). Credit scoring and the availability, price, and risk of small business credit. *Journal of Money, Credit and Banking*, 37(2), 191-222. <http://dx.doi.org/10.1353/mcb.2005.0019>
- Bhasin, M.L. (2005). E-commerce and m-commerce revolution: Perspectives, problems and prospects, *The Chartered Accountant*. 824-840.
- Bhati, S. (2006). Trust between branch managers and loan officers of Indian banks. *International Review of Business Research Papers*, 2(4), 51-58.
- BIS [Business Innovation and Skills].(2012). SME external finance. BIS economics paper N16, January.
- Boateng, R. (2013). Introduction to mobile commerce. Retrieved from:<http://vivaafricamobile.files.wordpress.com/2012/09/ugbs609session4.pdf>
- Bougheas, S., Mizen, P. & Yalcin, C. (2005). Access to external finance: Theory and evidence on the impact of monetary policy and firm-specific characteristics. *Journal of Banking and Finance*, 30 (1), 199-227.
- Bourne M, Mills J, Wilcox M, et al. (2000) Designing, implementing and updating performance measurement systems. *International Journal of Operation & Production Management* 20: 754-771.
- Buse S., Tiwari R. (2006). Mobile banking stages a remarkable come back, *Press Release*, [Online], Retrieved Feb, 2007 [http://www1.uni-hamburg.de/m-commerce/banking/index\\_e.html](http://www1.uni-hamburg.de/m-commerce/banking/index_e.html).
- Buse, S. (2002). Der mobile Erfolg– Ergebnisse einer empirischen untersuchung in ausgewähltenbranchen, in *electronic business and mobile business- Ansätze, Konzepte und Geschäftsmodelle*, 91-116, F Keuper(Ed), Gabler Verlag, Wiesbaden.
- Carey, D. & Flynn, A. (2005). Is bank finance the achilles' heel of Irish SMEs?.. *Journal of European Industrial Training*, 29(8/9), 712. <http://dx.doi.org/10.1108/03090590510629849>

- Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, 19(2), 261-283.[http://dx.doi.org/10.1016/S0883-9026\(03\)00029-6](http://dx.doi.org/10.1016/S0883-9026(03)00029-6)
- CBN (2011).SMEs financing in Nigeria. Retrieved on the 11th of January, from <http://www.cenbank.org>
- Chakravarthy, B.S. (1986). Measuring Strategic Performance. *Strategic Management Journal*, 7, 437-458.
- Chiemeke, S. C., Ewwiekpaefe, A. &Chete, F. (2006). The adoption of internet banking in Nigeria: An empirical investigation, *Journal of Internet Banking and Commerce*, 11(3) (<http://www.arraydev.com/commerce/jibc/>)
- Chogi, B.(2006). *The impact of mobile phone technologies on small and medium enterprises*.Paper presented to communication policy research south on national regional innovation systems Nairobi 1 – 2.
- Chong, H.(2008). Measuring performance of small-and medium sized enterprises.The grounded theory approach.*Journal of Business and Public Affairs*, 2(1), 1- 10.
- Cole, R. A., &Wolken, J. D. (1995). Financial services used by small businesses: Evidence from the 1993 national survey of small business finances.*Federal Reserve Bulletin*,81(7), 629.
- Coursaris.C.,&Hassanein.K.(2002). Understanding m-commerce:A consumer –centric model.*Quarterly Journal of Electronic Commerce*, 3(3), 247-271.
- Da silva,A. P., Hall, G. & Hutchinson, P. (2007). Financial and strategic factors associated with the profitability and growth of small and medium – sized firms in Portugal. A paper presented at the international council for small business, 52<sup>nd</sup> world conference, 13<sup>th</sup> – 15<sup>th</sup> June, turku Finland developing countries. *Journal of International Development*, 22, 641-658.
- De Bettignies, J.& Brander, J. A. (2007).Financing entrepreneurship: Bank finance versus venture capital.*Journal of Business Venturing*, 22(6), 808-832. <http://dx.doi.org/10.1016/j.jbusvent.2006.07.005>
- De la Torre, A., Martinez P., M.&Schmukler, S. (2009).*Drivers and obstacles to banking SMEs: The Role of Competition and the Institutional Framework*. The world bank.
- Deakins, D., Whittamb, G. &Wyper, J. (2010). SMEs’ access to bank finance in Scotland: An analysis of bank manager decision making. *Venture Capital*, 12 (3), 193-209.
- Decker.M.,Schiefer.G. &Bulander, R. (2006).Specific challenges for small and medium-sized enterprises (SME) in m-business.A SME-suitable framework for mobile services. Appeared in: Proceedings of the international conference on e-business, Setúbal, Portugal, 169-174, INSTICC Press, <http://www.ice-b.org>
- Donner, J.&Escobari, M. (2010).A review of evidence on mobile use by small and micro enterprises in innovation, technology, governance and globalization,7, 67-81.
- Fagerberg, J. (2003). *Innovation: A guide to the literature*. Retrieved on 8th August 2014 [https://smartech.gatech.edu/bitstream/handle/1853/43180/JanFagerberg\\_1.pdf?sequence=1](https://smartech.gatech.edu/bitstream/handle/1853/43180/JanFagerberg_1.pdf?sequence=1).
- Fashola, B. R. (2013): “Structure of SMEs in Nigeria” A paper delivered by Mr. Ayo Gbeleyi while representing the executive governor of Lagos State, Governor BabatundeRajiFashola at the first bank of Nigeria limited SME connect conference titled: "*SMEs at the heart of national development : Creativity, capacity and capital*. Lagos.
- Fatoki, O.O.&Garwe, D. (2010). Obstacles to the growth of new SMEs in South Africa: A principal component analysis approach. *African Journal of Business Management*, 4: 729-738.

- Ferrary, M.(2003).Trust and social capital in the regulation of lending activities.*The Journal of Socio-Economics*,31, 673-699.
- Frame, W. S., Srinivasan, A. &Woosley, L. (2001).The effect of credit scoring on small business lending.*Journal of Money, Credit and Banking*, 33(3), 813-825. <http://dx.doi.org/10.2307/2673896>
- Freel, M., Carter, S., Tagg, S. & Mason, S. (2010). The latent demand for bank debt, characterising discouraged borrowers.*Small Business Economics*, 1 (1), 1-16.
- García-Teruel, P. J.&Martínez-Solano, P. (2010). Determinants of trade credit: A comparative study of European SMEs. *International Small Business Journal*, 28(3), 215-233. <http://dx.doi.org/10.1177/0266242609360603>
- Gilbert, B. (2008). *New venture performance: Does location matters?* [Online] Available at:<http://74.125.77.132/search/q=cache.DIZnExwD91tmw.jftp/ftp.zew.de/pub> [Accessed 3 December 2012].
- Goodhue, D.L. & Thompson, R.L. (1995).Task-technology fit and individual performance.*MIS Quarterly*, 19, 2, 213–236.
- Griffin, R. W. (2003). Measuring up: Appropriate metrics help HR prove its worth. *HR Magazine*, 45 (1), 28-35.
- Griffiths, F., (2002).*Financing of Small and medium enterprises: The banker's perspective”*. presentation at the symposium on modalities for financing small and medium-scale enterprises in Uganda, United Nations UNCTAD/ITE/TEB/Misc.8.
- Hall, G., Hutchinson, P. &Michealas, N. (2000).Industry effect on the determinants of unquoted SMEs capital structure. *International Journal of the Economic of Business*, 7(3): 297-312.
- Hansen, R., &Mowen, M. (2005). Management accounting, (7<sup>th</sup>ed.). Singapore: South-Western
- Harvie, C. & Lee, B. (2008). Small and medium enterprises in East Asia: Sectoral and regional dimensions, *Studies of Small and Medium Enterprises in East Asia, Volume IV*. Cheltenham, United Kingdom, Edward Edgar Publishing.
- Heng, B.T. & San, O.T. (2011). Capital structure and corporate performance of Malaysian construction sector. *International Journal of Humanities and Social Science*, 1, 29-35.
- Higgins, D., Kendall, J.& Lyon, B. (2012). Mobile money usage patterns of Kenyan small and medium
- Holmes, J., Isham, J., Petersen, R. &Sommers, P. M. (2007). Does relationship lending still matter in the consumer banking sector? Evidence from the automobile loan market.*Social Science Quarterly*, 88 (2), 585-597.
- Honhyan, Y. (2009). *The determinants of capital structure of the SMEs: An empirical Study of Chinese listed manufacturing companies*. Available from <http://www.seiofbluemontain.com/upload/product/200911/2009.pdf> html> (Retrieved September 10, 2010).
- Huang, H. (2008). The impact of mobile devices on SMEs in Auckland, New Zealand.*Unpublished Masters in computing project*, Unic New Zealand).
- Hudson, M. Smart, A. &Buurne, M. (2001). Theory and practice in SME performance systems. *International Journal of Operations and Production Management*, 21(8): 1096-1115.
- IEF [Index of Economic Freedom] (2013). Cote d’Ivoire [Online] Available at: <http://www.heritage.org/index/country/cotedivoire> [Accessed 17 July 2013].
- Iloh, J.V.C., Okolo, V.C. &Ani, W. U. (2013). The effect of bank consolidation on lending to small and medium scale enterprises in Nigeria, 3<sup>rd</sup> international conference on

- management, hydro hotel, Penang, Malaysia. Retrieved from (<http://www.internationalconference.com>)
- IMF [International Monetary fund] (2012). Rapport du services du FMI sur les politiques communes des pays membres N 12. *Union Economique et Monetaire Ouest-Africaine*, March.
- Investorwords (2011). Performance. From <http://www.investorwords.com/3665/performance>.
- Iorpev, L. (2012). Does bank size matter to small and medium scale enterprises (SMEs) financing in Nigeria? *International Journal of Business and Management Tomorrow*, 2 (3), 19.
- Iravo, M. A. (2011). *Effect of conflict management in performance of public secondary schools in Machakos County, Kenya*, Published Doctoral Dissertation, University of Agriculture and Technology, Kenya.
- Jahanshahi, A. A., Reraei, M., Nawaser, K., Ranjbar, V. & Pitamber, B. K. (2012). Analysing the effects of electronic commerce on organisational performance: Evidence from small and medium enterprises. *African Journal of Business Management*, 6 (15), 6486-6496, DOI: 10.5897/AJBM11.1768.
- Jenkins, B. (2008). Developing mobile money ecosystems. Washington DC. *IFC and the Harvard Kennedy School*.
- Kabucho, K., Sander, C. & Mukwana, P. (2003). Passing the buck; Money transfer systems: *The practice and potential for products in Kenya* May. MicroSave-Africa. Retrieved January 6, 2012 from [www.dai.com](http://www.dai.com).
- Kaplan, R. & Norton, D. (2001). Transforming the balanced scorecard from performance measurement to strategic management: Part 1. *Accounting Horizons*. 15(1), 87-104.
- Kaplan, R., Norton, D. (2001). *The strategy-focused organisation: How balanced scorecard companies thrive in the new business environment*. Cambridge, MA: Harvard Business School.
- Keasey, K. & McGuinness, P. (1990). Small new firms and the return to alternative sources of finance. *Small Business Economics*, 2(3), 213-222. <http://dx.doi.org/10.1007/BF00389529>
- Klapper, L., Laeven, L. & Rajan, R. (2010). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82 (3), 591-623.
- Lawal, A. W. (2010). Small and medium scale enterprises' access to commercial banks' credit and their contribution to GDP in Nigeria. *Journal of Banking*, 4(1), 143-144.
- Leland, H. & Pyle, D. (1997). Information asymmetries, Financial structure and financial intermediation. *Journal of Finance*, 32 (2), 371-387.
- Lennart, B. & Björn, S. (2010). Mobile money transfers and usage among micro and small businesses in Tanzania: Implications for practice, 1-29.
- Lumpkin, G., Dess, G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21: 135-172.
- Luper, I. (2012). Does bank size matter to SMEs financing in Nigeria? *International Journal of Business and management tomorrow*, 2(3) 2-5.

- Madishetti, S.&kibona, D. (2013).Impact of receivables and payables management on the profitability of SMEs in Tanzania.*A Journal Of Economics And Management* , 2 issue, ISSN 2278-0629 Retrieved from: <http://pinaclejournals.com>.
- Mbiti, I.& Weil, D. (2011). Mobile banking: The impact of m-pesa in Kenya. NBER working paper, 1-53.
- Mbogo, M. (2010). The impact of mobile payments on the success and growth of micro-business: The case of m-peas in Kenya. *The Journal of Language, Technology & Entrepreneurship in Africa*, 2(1), 182-203. ISSN 1998-1279: Accessed 14th July 2015 [www2012www.ajol.info/index.php/jolte/article/viewFile/51998/40633](http://www2012www.ajol.info/index.php/jolte/article/viewFile/51998/40633).
- Meilan, A. (2010). Performance evaluation of SMEs in Bahawalpur.From<<http://www.atlanticlots.com/tag/advantages-and-disadvantages-of-system-approach-to-the-management>> (Retrieved May 1, 2010).
- Mijid, N. (2009).*Gender, Race and Credit Rationing of Small Businesses Evidence from the 2003 Survey of Small Business Finance*. [Online] Available at: <http://www.kauffman.org/research-and-policy/kdfp/fellows.aspx> [Accessed 4 December 2012].
- Mills, J., Bonner, A. & Francis, K. (2006). The development of constructivist grounded theory. *International Journal of Qualitative Methods*, March, 5 (1), 1-10.
- Moro, A., Lucas, M., Grimm, U.&Grassi, E. (2010).*Financing SMEs: A Model for optimising the capital structure*.Paper presented at *the 17th annual global finance conference*, Poznan, Poland.
- Mubaraq, S. (2005). *Advanced financial accounting*, (1<sup>st</sup>ed). Ilorin. Olad publishers Limited.
- Myers, S., (1984).The capital structure puzzle. *Journal of Finance* , 34 (3), 575-592.
- National MSME collaborative study (2013). Survey report on micro, small and medium enterprises MSME in Nigeria: a collaboration between national bureau of statistics (NBS) and small and medium enterprise development agency of Nigeria (SMEDAN)
- Neely, A. (1999). The performance measurement revolution: why now and what next?*International Journal of Operations and Production Management*, 19, 205-228.
- Neely, A., Gregory, M. &Platts, K. (1995). Performance measurement system design, a literature review and research agenda. *International Journal of Operations & Productions Management* 15: 80-116.
- Ngoc, T., Le, T. & Nguyen, T. (2009). The impact of networking on bank financing: The case of small and medium enterprises in Vietnam. *Entrepreneurship Theory and Practice*, 33 (4), 867-887.
- Nott, L., (2003). The role of information in lending: The cost of privacy, congressional Research Report, *The library of congress*.
- Nwachukwu, A. (2012). The role of entrepreneurship in economic development: The Nigerian perspective. *European Journal of Business and Management*, 4(8),96.
- Nwosa, P. I. &Oseni, I. O. (2012): “The impact of banks loan to SMEs on manufacturing output in Nigeria” *Journal of Social and Development Sciences*. 4(5), 212-217.
- Nyagori, R. (2012). Factors influencing performance of micro and small enterprises: A case of Kisumu city bus park-Kenya. Unpublished masters in planning and management project, Nairobi.

- Oboh, G. A. (2002). Banks' participation in the promotion of small scale enterprises in the developing Nigerian economy. Lagos: *Chartered Institute of Bankers of Nigeria*.
- Oduyoye, O.O, Adebola, S.O and Binuyo, A.O (2013) Services of small and medium enterprises development agency of nigeria (smedan) and small business survival in ogun state, Nigeria. *Singaporean Journal of business economics, and management Studies* 1(11)
- Ogunleye, G. A. (2000). Small and medium scale enterprises as foundation for rapid economic development in Nigeria. *NDIC Quarterly*, 10(4), 25.
- Okolo, V.C. & Obidigbo, C. (2014). Boosting small and medium enterprise performance in Nigeria through mobile commerce. *European Journal of Business Management*, 6(9).
- Okongwu, D. & Saleh, U. (2004). Fundamental issues in entrepreneurship. Lagos: *Apex Books Limited*.
- Olaitan, M. A. (2006). Finance for small and medium scale enterprises in Nigeria. *Journal of International Farm Management*, 3(2)21-422
- Olawale, F. & Asah, F. (2011). The impact of firm and entrepreneurial characteristics on access to debt finance by SMEs in King Williams' town, South Africa. *International Journal of Business and Management*, 6 (8), 170.
- Olomi, R ( 2009). *African entrepreneurship and small business development*, Dar er Salam: Otme company ltd.
- Olutunla, T. G & Obamuyi, T.M. (2008). An empirical analysis of factors associated with the profitability of small and medium-enterprises in Nigeria, *African Journal of Business Management* (2), 195-200 available online at <http://www.academicjournals.org/AJBM>
- Omwansa, T. (2009). M-PESA progress and prospects. *Innovations case discussion*. <http://www.strathmore.edu/pdf/innov-gsma-omwansa.pdf> > accessed 14th July. 2015.
- Ondiege, P. (2010). Mobile banking in Africa: Taking the bank to the people. *Africa Economic Brief*. African development bank
- Ono, A. & Uesugi, I. (2009). Role of collateral and personal guarantees in relationship lending: Evidence from Japan's SME loan market. *Journal of Money, Credit and Banking*, 41(5), 935-960. <http://dx.doi.org/10.1111/j.1538-4616.2009.00239.x>
- +
- Orunshola, J. (2001). Industrial financing in Nigeria: Some institutional arrangements. Abuja: *CBN Economic and Financial Review*.
- Oyelaran, O. (2012). FSS 2020 international conference, SME: Issues, challenges and prospects, retrieved from [http://www.cenbank.org/fss/wed/sme\\_isses](http://www.cenbank.org/fss/wed/sme_isses),
- Petersen, M. A. & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. *Journal of Finance*, 49(1), 3-37. <http://dx.doi.org/10.2307/2329133>
- Phillips, B. Wee, T. T. T. & Shanka, T. (2003). The use of performance measures in small to medium enterprises. An exploratory study. From <http://smib.vuw.ac.nz> (Retrieved March 4, 2009).
- Richard P, Devinney T, Yip G, & Johnson G (2008). Measuring organizational performance as a dependent Variable: Towards methodological best practice. from <<http://ssrn.com/abstract=814285>> (Retrieved May 10, 2010).
- Ruffing, L., (2002). SME finance: *Missing middle. presentation at the symposium on "Modalities for financing small and medium-scale enterprises in*. Uganda, United Nations.
- Sadana, M, Mugweru G, Murithi J, Cracknell D & Wright G.A.N (2011). Innovation and adaptation on the m-pesa rails. *MicroSave Briefing Note # 93*.

- Schumpeter, J. A., (2008). *The Theory of Economic Development: An Inquiry into profits, capital, credit, interest and the business cycle*. New Brunswick (U.S.A) and London(U.K.): Transaction Publishers.
- Shafeek, S. (2009).Enhancing the strategy for developing small growth potential firms in the Eastern Cape.From <http://www.academicjournals.org/AJBM> (Retrieved 22 September 2010).
- Siyanbola, T. T. (2013) The effect of cashless banking on Nigeria economy, *eCanadian Journal of Accounting and Finance*, 1(2) 9-19, retrieved from <http://www.ecanadianjournals.com/journal/vol1issue2/jaf/THE%EFECT%20OF%20CASHLESS%20BANKING%20ON%20NIGERIAN%20ECONOMY.pdf>
- Smith, R. and Smith, J., (2004).*Entrepreneurial Finance*. 2nd ed. New York: John Wiley and Sons.
- Soludo, C. C. (2008). Making finance work for the poor.A convocation paper.retrieved from <http://www.cenbank.org/documents/speeches>
- Soufani, K. (2002). On the Determinants of factoring as a financing choice: Evidence from the UK. *Journal of Economics and Business*, 54(2), 239-252. [http://dx.doi.org/10.1016/S0148-6195\(01\)00064-9](http://dx.doi.org/10.1016/S0148-6195(01)00064-9)
- Stiglitz, J. and Weiss, A., (1981). Credits rationing in markets with imperfect information.*American Business Review* 71, 393-410.
- Stokes, D.,& Wilson, N. (2006).Small business management and entrepreneurship. South-Western Cengage Learning: *DP Publications Ltd*
- Storey, D. J. (1994).*Understanding the small business sector*.Thomson Learning Emea.
- Telcompare (2011)*Mobile money-banking on your mobile phone*Nairaland forum (retrieved by 12:28pm On Sep 09)
- Tiwari R. &Buse S. (2006b), Mobile banking as business strategy: impact of mobile technologies on customer behaviour and its implications for banks. *Working paper TUHHr*, Germany. Retrieved Feb. 2007
- Turban, E., and King, D.(2003) *Introduction to e-commerce*. Upper Saddle River, NJ: Prentice Hall,
- United Nation Industrial Development Organization: UNIDO (2012): “Corporate social responsibility: implications for small and medium enterprises in developing countries”. Vienna. Retrieved from the internet on 1st June 2014 at [www.unido.org/fileadmin/user\\_media/](http://www.unido.org/fileadmin/user_media/)
- Vera, D., &Onji, K. (2010).Changes in the banking system and small business lending.*small business economics*, 34(3), 293-308. <http://dx.doi.org/10.1007/s11187-008-9119-9>
- Wambari, A.(2009). Mobile banking in developing countries-A case study on Kenya.*Information Technology, University of Applied Sciences*
- Wanyonyi P.W &Bwisa H.M. (2013) Influence of mobile money transfer services on the performance of micro enterprises in Kitale Municipality.*International Journal of Academic Research in Business and Social Sciences*. 3(5) ISSN: 2222-6990 5
- Wishart, N. (2006). Micro-payment systems and their application to mobile networks. Washington, DC: infoDev / World Bank. Available at: <http://www.infodev.org/en/Publication.43.html>.
- Woldie, A., Mwita, J. I. &Saidimu, J., (2012). Challenges of microfinance accessibility by SMEs in Tanzania.*Thunderbird International Business Review*, July-August.54 (4).
- World Bank (2011).*Anticorruption in transition: A contribution to the policy debate*. Washington, D.C.



- World Bank (2012) *Information and communications for development 2012: Maximizing mobile*. Washington, DC: World Bank. DOI: 10.1596/978-0-8213-8991-1; website: <http://www.worldbank.org/ict/IC4D2012>. License: Creative Commons Attribution CC BY 3.0.
- Wu, J., Song, J., & Zeng, C. (2008). An empirical evidence of small business financing in China. *Management Research News*, 31(12), 959-975. <http://dx.doi.org/10.1108/01409170810920666>
- Yakub, J.O., Bello, H.T. & Adenuga I.A. (2013), Mobile money services in Nigeria: An inquiry of existing models, *International Journal of Economics And Management Sciences*, 2(9), 94-105.
- Zahra S (1993). Environment, corporate entrepreneurship, and financial performance: A taxonomic approach. *Journal of Business Venturing*, 8: 319–340.
- Zeitun, R. & Tian, G. G. (2007). Capital structure and performance: Evidence from Jordan. *The Australian Accounting, Business and Finance Journal*, 1 (4).40-61.
- Zhou, W. (2009). Bank financing in China's private sector: The payoffs of political capital. *World Development*, 37(4), 787-799. <http://dx.doi.org/10.1016/j.worlddev.2008.07.011>
- Zigurs, I. & Buckland B.K. (1998). A theory of task-technology fit and group support systems effectiveness. *MIS Quarterly*. 22(3) 313-334.
- Zutt, J., (2010). Kenya economic update: Poverty reduction and economic management unit Africa region 3rd Edition. *World Bank*

#### APPENDIX A: QUARTERLY DATA FROM 2003 -2014 USED FOR THE ANALYSIS

YEAR	SMES	SMEA	BLSM	MPEN	IPEN	LR
2003:01:00	7.432841	10.13153	5.00057	6.498238	5.871153	1.359456

2003:02:00	7.319444	10.00662	4.962285	6.691306	5.998273	1.340196
2003:03:00	7.165553	9.830597	4.920296	6.82449	6.096487	1.320042
2003:04:00	6.925035	9.529765	4.873809	6.926274	6.176535	1.298908
2004:01:00	6.340212	6.49052	4.821743	7.008674	6.2441	1.276692
2004:02:00	6.421154	6.50843	4.84227	7.097989	6.40762	1.270155
2004:03:00	6.489354	6.52563	4.86187	7.172032	6.526134	1.263518
2004:04:00	6.548283	6.542175	4.880624	7.235271	6.619144	1.256778
2005:01:00	6.600164	6.558113	4.898601	7.290461	6.695705	1.249932
2005:02:00	6.704768	6.579597	4.877203	7.361329	6.756557	1.247175
2005:03:00	6.789004	6.600068	4.854695	7.422238	6.809921	1.244401
2005:04:00	6.859526	6.619618	4.830956	7.475647	6.85744	1.241609
2006:01:00	6.92018	6.638325	4.805845	7.5232	6.900269	1.238799
2006:02:00	6.978021	6.682609	4.985805	7.550379	6.926769	1.233313
2006:03:00	7.029057	6.722792	5.112665	7.575957	6.951746	1.227758
2006:04:00	7.07472	6.75957	5.210724	7.600112	6.975363	1.222131
2007:01:00	7.116036	6.793475	5.290669	7.622994	6.997763	1.21643
2007:02:00	7.215113	6.836817	5.427351	7.677201	7.128249	1.208441
2007:03:00	7.295733	6.876223	5.531158	7.725386	7.228454	1.200303
2007:04:00	7.363705	6.912349	5.614877	7.768756	7.309818	1.19201
2008:01:00	7.422464	6.9457	5.685036	7.808185	7.378318	1.183555
2008:02:00	7.44032	6.975353	5.6268	7.825112	7.460927	1.213053
2008:03:00	7.457471	7.00311	5.559527	7.841404	7.530306	1.240674
2008:04:00	7.47397	7.029199	5.479889	7.857108	7.590113	1.266643
2009:01:00	7.489865	7.05381	5.382293	7.872263	7.642672	1.291147
2009:02:00	7.388144	7.068962	5.351975	7.891959	7.645429	1.269455
2009:03:00	7.255067	7.083603	5.319381	7.910801	7.648168	1.246622
2009:04:00	7.062226	7.097766	5.284141	7.92886	7.65089	1.222521
2010:01:00	6.706683	7.111483	5.245786	7.946197	7.653596	1.197005
2010:02:00	6.834533	7.15449	5.540075	7.955364	7.611509	1.202216
2010:03:00	6.933181	7.193619	5.713896	7.964342	7.564901	1.207365
2010:04:00	7.013516	7.229513	5.837696	7.973137	7.512683	1.212454
2011:01:00	7.081286	7.262665	5.93392	7.981758	7.453318	1.217484
2011:02:00	7.193814	7.240263	5.937889	8.000928	7.469822	1.224015
2011:03:00	7.283104	7.216643	5.941821	8.019288	7.485721	1.230449
2011:04:00	7.35713	7.191663	5.945718	8.036903	7.501059	1.236789
2012:01:00	7.420356	7.165159	5.949581	8.053831	7.515874	1.243038
2012:02:00	7.420128	7.168843	5.9615	8.067438	7.532754	1.22981
2012:03:00	7.4199	7.172496	5.973101	8.080631	7.549003	1.216166
2012:04:00	7.419672	7.176118	5.9844	8.093436	7.564666	1.202079
2013:01:00	7.419443	7.17971	5.995413	8.105873	7.579784	1.187521
2013:02:00	7.441933	7.183329	6.021375	8.11558	7.677819	1.216496
2013:03:00	7.463315	7.186918	6.045873	8.125075	7.757748	1.243658
2013:04:00	7.483694	7.190478	6.069062	8.134366	7.825229	1.269221
2014:01:00	7.503159	7.194009	6.091075	8.143463	7.883621	1.293363

## APPENDIX B

**I. DESCRIPTIVES**

	SMES	SMEA	BLSME	MPEN	IPEN	LR	C
Mean	7.124298	7.214221	5.417958	7.673586	7.165450	1.240397	1.000000
Median	7.204464	7.076282	5.404822	7.833258	7.457123	1.235051	1.000000
Maximum	7.489865	10.13153	6.069062	8.134366	7.825229	1.359456	1.000000
Minimum	6.340212	6.490520	4.805845	6.498238	5.871153	1.183555	1.000000
Std. Dev.	0.328602	0.888285	0.444415	0.425625	0.537577	0.038609	0.000000
Skewness	-0.762469	2.476226	0.024448	-1.063205	-0.898223	1.139802	NA
Kurtosis	2.503403	8.056465	1.519964	3.241615	2.646035	4.311958	NA
Jarque-Bera Probability	4.715420 0.094637	91.84011 0.000000	4.020310 0.133968	8.396669 0.015021	6.146262 0.046276	12.68268 0.001762	NA NA
Sum	313.4691	317.4257	238.3902	337.6378	315.2798	54.57748	44.00000
Sum Sq. Dev.	4.643121	33.92916	8.492698	7.789728	12.42653	0.064099	0.000000
Observations	44	44	44	44	44	44	44

**II. CORRELATIONS**

		SMES	SMEA	BLSME	MPEN	IPEN	LR
SMES	Pearson Correlation	1	.284	.701**	.496**	.530**	-.032
	Sig. (2-tailed)		.059	.000	.001	.000	.836
	N	45	45	45	45	45	45
SMEA	Pearson Correlation	.284	1	-.090	-.491**	-.449**	.642**
	Sig. (2-tailed)	.059		.555	.001	.002	.000
	N	45	45	45	45	45	45
BLSME	Pearson Correlation	.701**	-.090	1	.836**	.802**	-.433**
	Sig. (2-tailed)	.000	.555		.000	.000	.003
	N	45	45	45	45	45	45
MPEN	Pearson Correlation	.496**	-.491**	.836**	1	.980**	-.674**
	Sig. (2-tailed)	.001	.001	.000		.000	.000
	N	45	45	45	45	45	45
IPEN	Pearson Correlation	.530**	-.449**	.802**	.980**	1	-.597**
	Sig. (2-tailed)	.000	.002	.000	.000		.000
	N	45	45	45	45	45	45
LR	Pearson Correlation	-.032	.642**	-.433**	-.674**	-.597**	1
	Sig. (2-tailed)	.836	.000	.003	.000	.000	
	N	45	45	45	45	45	45

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

**APPENDIX C: AUGMENTED DICKEY-FULLER (ADF) STATIONARITY TEST**

**SMES Stationary at 2<sup>nd</sup> Difference**

Null Hypothesis: D(SMES,2) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.776945	0.0000
Test critical values:		
1% level	-3.600987	
5% level	-2.935001	
10% level	-2.605836	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(SMES,3)  
 Method: Least Squares  
 Date: 10/05/16 Time: 05:04  
 Sample (adjusted): 2004Q4 2014Q4  
 Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMES(-1),2)	-1.326670	0.151154	-8.776945	0.0000
C	0.005324	0.021990	0.242129	0.8099
R-squared	0.663894	Mean dependent var		0.000963
Adjusted R-squared	0.655276	S.D. dependent var		0.239752
S.E. of regression	0.140766	Akaike info criterion		-1.035882
Sum squared resid	0.772790	Schwarz criterion		-0.952293
Log likelihood	23.23558	Hannan-Quinn criter.		-1.005443
F-statistic	77.03477	Durbin-Watson stat		2.133267
Prob(F-statistic)	0.000000			

## SMEA at 2<sup>nd</sup> Difference

Null Hypothesis: D(SMEA,2) has a unit root  
 Exogenous: Constant  
 Lag Length: 3 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-44.00805	0.0001
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(SMEA,3)  
 Method: Least Squares  
 Date: 10/05/16 Time: 05:07  
 Sample (adjusted): 2005Q3 2014Q4  
 Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMEA(-1),2)	-0.994422	0.022596	-44.00805	0.0000

D(SMEA(-1),3)	-0.004397	0.015655	-0.280875	0.7806
D(SMEA(-2),3)	-0.003091	0.009546	-0.323830	0.7481
D(SMEA(-3),3)	-0.001647	0.004405	-0.373881	0.7109
C	-0.000495	0.002275	-0.217574	0.8291
<hr/>				
R-squared	0.999361	Mean dependent var		-0.080452
Adjusted R-squared	0.999284	S.D. dependent var		0.496375
S.E. of regression	0.013285	Akaike info criterion		-5.682208
Sum squared resid	0.005825	Schwarz criterion		-5.466737
Log likelihood	112.9620	Hannan-Quinn criter.		-5.605545
F-statistic	12904.12	Durbin-Watson stat		2.014222
Prob(F-statistic)	0.000000			

**BLSM at 2<sup>nd</sup> Difference**

Null Hypothesis: D(BLSM,2) has a unit root  
 Exogenous: Constant  
 Lag Length: 7 (Automatic based on SIC, MAXLAG=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.413018	0.0001
Test critical values:		
1% level	-3.639407	
5% level	-2.951125	
10% level	-2.614300	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(BLSM,3)  
 Method: Least Squares  
 Date: 03/17/16 Time: 14:20  
 Sample (adjusted): 2005Q3 2013Q4  
 Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BLSM(-1),2)	-2.476078	0.457430	-5.413018	0.0000
D(BLSM(-1),3)	1.473273	0.419205	3.514446	0.0017
D(BLSM(-2),3)	1.470555	0.377234	3.898258	0.0006
D(BLSM(-3),3)	1.467836	0.330082	4.446877	0.0002
D(BLSM(-4),3)	0.752447	0.273099	2.755217	0.0108
D(BLSM(-5),3)	0.750608	0.236507	3.173722	0.0040
D(BLSM(-6),3)	0.748428	0.193215	3.873546	0.0007
D(BLSM(-7),3)	0.746248	0.137032	5.445790	0.0000
C	2737.025	6229.779	0.439345	0.6642
<hr/>				
R-squared	0.808827	Mean dependent var		-2.94E-05
Adjusted R-squared	0.747651	S.D. dependent var		72031.84
S.E. of regression	36184.70	Akaike info criterion		24.05259
Sum squared resid	3.27E+10	Schwarz criterion		24.45662
Log likelihood	-399.8940	Hannan-Quinn criter.		24.19038
F-statistic	13.22144	Durbin-Watson stat		2.009823
Prob(F-statistic)	0.000000			

## MPEN at 2<sup>nd</sup> Difference

Null Hypothesis: D(MPEN,2) has a unit root  
 Exogenous: Constant  
 Lag Length: 3 (Automatic based on SIC, MAXLAG=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.345523	0.0000
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(MPEN,3)  
 Method: Least Squares  
 Date: 03/17/16 Time: 14:28  
 Sample (adjusted): 2004Q3 2013Q4  
 Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPEN(-1),2)	-1.740112	0.236894	-7.345523	0.0000
D(MPEN(-1),3)	0.739294	0.205061	3.605249	0.0010
D(MPEN(-2),3)	0.737658	0.167567	4.402159	0.0001
D(MPEN(-3),3)	0.736021	0.118888	6.190850	0.0000
C	50342.13	112523.2	0.447393	0.6575
R-squared	0.768725	Mean dependent var		-0.002632
Adjusted R-squared	0.740691	S.D. dependent var		1358894.
S.E. of regression	691980.7	Akaike info criterion		29.85458
Sum squared resid	1.58E+13	Schwarz criterion		30.07005
Log likelihood	-562.2371	Hannan-Quinn criter.		29.93125
F-statistic	27.42179	Durbin-Watson stat		2.010514
Prob(F-statistic)	0.000000			

## IPEN at 2<sup>nd</sup> Difference

Null Hypothesis: D(IPEN,2) has a unit root  
 Exogenous: Constant  
 Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.335727	0.0000

Test critical values:	1% level	-3.600987
	5% level	-2.935001
	10% level	-2.605836

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(IPEN,3)  
 Method: Least Squares  
 Date: 03/17/16 Time: 14:31  
 Sample (adjusted): 2003Q4 2013Q4  
 Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IPEN(-1),2)	-1.014423	0.160111	-6.335727	0.0000
C	231844.2	306891.5	0.755460	0.4545
R-squared	0.507211	Mean dependent var		0.000000
Adjusted R-squared	0.494576	S.D. dependent var		2744348.
S.E. of regression	1951045.	Akaike info criterion		31.85318
Sum squared resid	1.48E+14	Schwarz criterion		31.93677
Log likelihood	-650.9902	Hannan-Quinn criter.		31.88362
F-statistic	40.14144	Durbin-Watson stat		2.000422
Prob(F-statistic)	0.000000			

### LENR at 2<sup>nd</sup> Difference

Null Hypothesis: D(LENR,2) has a unit root  
 Exogenous: Constant  
 Lag Length: 7 (Automatic based on SIC, MAXLAG=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.940629	0.0000
Test critical values:	1% level	-3.639407
	5% level	-2.951125
	10% level	-2.614300

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(LENR,3)  
 Method: Least Squares  
 Date: 03/17/16 Time: 14:33  
 Sample (adjusted): 2005Q3 2013Q4  
 Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LENR(-1),2)	-3.166038	0.532947	-5.940629	0.0000
D(LENR(-1),3)	2.155495	0.482156	4.470539	0.0001
D(LENR(-2),3)	2.139061	0.432074	4.950678	0.0000
D(LENR(-3),3)	2.122627	0.376075	5.644161	0.0000
D(LENR(-4),3)	0.812197	0.302548	2.684523	0.0127
D(LENR(-5),3)	0.805364	0.257091	3.132601	0.0044

D(LENR(-6),3)	0.789975	0.208995	3.779884	0.0009
D(LENR(-7),3)	0.774586	0.147398	5.255077	0.0000
C	0.056074	0.055532	1.009768	0.3223
R-squared	0.882411	Mean dependent var		8.13E-16
Adjusted R-squared	0.844783	S.D. dependent var		0.803496
S.E. of regression	0.316558	Akaike info criterion		0.759309
Sum squared resid	2.505231	Schwarz criterion		1.163346
Log likelihood	-3.908256	Hannan-Quinn criter.		0.897097
F-statistic	23.45065	Durbin-Watson stat		2.060915
Prob(F-statistic)	0.000000			

**APPENDIX D: CO-INTEGRATION TEST**

**Model 1 SME Survival**

Date: 10/05/16 Time: 05:21  
Sample (adjusted): 2004Q3 2014Q4  
Included observations: 42 after adjustments  
Trend assumption: Linear deterministic trend  
Series: SMES MPEN IPEN LR  
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.552079	77.29434	47.85613	0.0000
At most 1 *	0.403190	43.56256	29.79707	0.0007
At most 2 *	0.336039	21.88400	15.49471	0.0047
At most 3 *	0.105523	4.683690	3.841466	0.0304

Trace test indicates 4 cointegratingeqn(s) at the 0.05 level  
\* denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.552079	33.73178	27.58434	0.0071
At most 1 *	0.403190	21.67856	21.13162	0.0419
At most 2 *	0.336039	17.20031	14.26460	0.0167
At most 3 *	0.105523	4.683690	3.841466	0.0304

Max-eigenvalue test indicates 4 cointegratingeqn(s) at the 0.05 level  
\* denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b\*S11\*b=I):

SMES	MPEN	IPEN	LR
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-2.924270	1.203005	0.206183	-30.07701
-1.967398	-4.791448	2.769296	29.57026
-2.281430	-2.451072	7.303239	5.404194
2.992969	-16.05236	7.120635	-33.78318

Unrestricted Adjustment Coefficients (alpha):

D(SMES)	0.072422	-0.005286	-0.008989	-0.020272
D(MPEN)	0.001426	0.003223	-0.003876	-5.90E-05
D(IPEN)	0.003064	-0.006737	-0.015769	-6.06E-05
D(LR)	0.005576	-0.004834	-0.000147	0.001452

1 Cointegrating Equation(s):                      Log likelihood                      427.3276

Normalized cointegrating coefficients (standard error in parentheses)

SMES	MPEN	IPEN	LR
1.000000	-0.411386	-0.070507	10.28531
	(0.79176)	(0.54252)	(2.66075)

Adjustment coefficients (standard error in parentheses)

D(SMES)	-0.211780
	(0.04483)
D(MPEN)	-0.004169
	(0.00414)
D(IPEN)	-0.008961
	(0.01429)
D(LR)	-0.016307
	(0.00495)

2 Cointegrating Equation(s):                      Log likelihood                      438.1669

Normalized cointegrating coefficients (standard error in parentheses)

SMES	MPEN	IPEN	LR
1.000000	0.000000	-0.263727	6.627026
		(0.21071)	(2.29627)
0.000000	1.000000	-0.469678	-8.892565
		(0.18377)	(2.00272)

Adjustment coefficients (standard error in parentheses)

D(SMES)	-0.201381	0.112450
	(0.05394)	(0.07560)
D(MPEN)	-0.010510	-0.013728
	(0.00462)	(0.00647)
D(IPEN)	0.004293	0.035966
	(0.01677)	(0.02350)
D(LR)	-0.006796	0.029871
	(0.00525)	(0.00736)

3 Cointegrating Equation(s):                      Log likelihood                      446.7670

Normalized cointegrating coefficients (standard error in parentheses)

SMES	MPEN	IPEN	LR
1.000000	0.000000	0.000000	6.566538
			(2.57704)
0.000000	1.000000	0.000000	-9.000290
			(2.58519)

0.000000      0.000000      1.000000      -0.229359  
 (2.40532)

Adjustment coefficients (standard error in parentheses)

D(SMES)	-0.180873 (0.06394)	0.134483 (0.08399)	-0.065356 (0.11900)
D(MPEN)	-0.001667 (0.00478)	-0.004227 (0.00628)	-0.019089 (0.00890)
D(IPEN)	0.040270 (0.01665)	0.074618 (0.02187)	-0.133193 (0.03099)
D(LR)	-0.006461 (0.00625)	0.030231 (0.00821)	-0.013310 (0.01164)

## SME Asset size

Date: 10/05/16 Time: 05:30

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Trend assumption: Linear deterministic trend

Series: SMEA MPEN IPEN LR

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.537708	74.28451	47.85613	0.0000
At most 1 *	0.369268	41.87908	29.79707	0.0013
At most 2 *	0.331531	22.52239	15.49471	0.0037
At most 3 *	0.124956	5.606228	3.841466	0.0179

Trace test indicates 4 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.537708	32.40543	27.58434	0.0111
At most 1	0.369268	19.35669	21.13162	0.0870
At most 2 *	0.331531	16.91616	14.26460	0.0186
At most 3 *	0.124956	5.606228	3.841466	0.0179

Max-eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b\*S11\*b=I):

SMEA	MPEN	IPEN	LR
1.949611	-1.995656	-2.830505	-0.597968
-0.733795	3.175985	-1.283144	51.13472
-0.556134	-6.034378	0.424667	-7.851908
0.494400	-13.99616	9.932798	-11.78440

Unrestricted Adjustment Coefficients (alpha):

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D(SMEA)	-0.311793	0.005975	0.031701	-0.030665
D(MPEN)	0.001237	0.001081	0.003980	-0.001094
D(IPEN)	0.002903	-0.005836	0.002266	-0.008234
D(LR)	-0.000928	-0.006968	-0.000378	2.62E-06

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1 Cointegrating Equation(s):                      Log likelihood                      370.3135

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Normalized cointegrating coefficients (standard error in parentheses)

SMEA	MPEN	IPEN	LR
1.000000	-1.023618	-1.451830	-0.306712
	(1.19376)	(0.82565)	(3.95236)

Adjustment coefficients (standard error in parentheses)

D(SMEA)	-0.607875
	(0.09975)
D(MPEN)	0.002412
	(0.00256)
D(IPEN)	0.005660
	(0.00833)
D(LR)	-0.001810
	(0.00374)

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2 Cointegrating Equation(s):                      Log likelihood                      379.9918

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Normalized cointegrating coefficients (standard error in parentheses)

SMEA	MPEN	IPEN	LR
1.000000	0.000000	-2.443210	21.18403
		(0.65504)	(6.35666)
0.000000	1.000000	-0.968506	20.99489
		(0.43915)	(4.26161)

Adjustment coefficients (standard error in parentheses)

D(SMEA)	-0.612259	0.641207
	(0.10656)	(0.19187)
D(MPEN)	0.001619	0.000963
	(0.00270)	(0.00487)
D(IPEN)	0.009943	-0.024329
	(0.00867)	(0.01561)
D(LR)	0.003304	-0.020279
	(0.00318)	(0.00573)

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3 Cointegrating Equation(s):                      Log likelihood                      388.4499

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Normalized cointegrating coefficients (standard error in parentheses)

SMEA	MPEN	IPEN	LR
1.000000	0.000000	0.000000	-25.89673
			(6.96289)
0.000000	1.000000	0.000000	2.331742
			(1.58351)
0.000000	0.000000	1.000000	-19.27004

Adjustment coefficients (standard error in parentheses)

D(SMEA)	-0.629889	0.449910	0.888327
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	(0.10970)	(0.36150)	(0.15959)
D(MPEN)	-0.000594	-0.023053	-0.003199
	(0.00241)	(0.00793)	(0.00350)
D(IPEN)	0.008683	-0.038001	0.000233
	(0.00894)	(0.02945)	(0.01300)
D(LR)	0.003513	-0.018000	0.011408
	(0.00329)	(0.01085)	(0.00479)

## Bank Lending to SME

Date: 10/05/16 Time: 05:32

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Trend assumption: Linear deterministic trend

Series: BLSME MPEN IPEN LR

Lags interval (in first differences): 1 to 1

### Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.463118	62.73038	47.85613	0.0011
At most 1 *	0.380980	36.60735	29.79707	0.0070
At most 2 *	0.219509	16.46339	15.49471	0.0356
At most 3 *	0.134245	6.054463	3.841466	0.0139

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

### Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.463118	26.12303	27.58434	0.0760
At most 1	0.380980	20.14396	21.13162	0.0683
At most 2	0.219509	10.40893	14.26460	0.1864
At most 3 *	0.134245	6.054463	3.841466	0.0139

Max-eigenvalue test indicates no cointegration at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

### Unrestricted Cointegrating Coefficients (normalized by b\*S11\*b=l):

BLSME	MPEN	IPEN	LR
-3.743415	13.01253	-1.384759	41.81243
-0.109862	1.091933	2.044452	-38.04315
4.480212	-2.770443	-1.104909	21.19167
3.601778	-21.26884	11.71121	-3.326059

### Unrestricted Adjustment Coefficients (alpha):

D(BLSME)	0.003062	0.002916	-0.021754	-0.013995
D(MPEN)	-0.003391	-0.004367	-8.90E-05	-0.000214
D(IPEN)	-0.015209	-0.002347	0.007103	-0.004667

D(LR)	-0.005243	0.005313	-0.000301	0.000139
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1 Cointegrating Equation(s):                      Log likelihood                      445.2695

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Normalized cointegrating coefficients (standard error in parentheses)

BLSME	MPEN	IPEN	LR
1.000000	-3.476112	0.369919	-11.16959
	(0.72202)	(0.49507)	(2.85759)

Adjustment coefficients (standard error in parentheses)

D(BLSME)	-0.011461		
	(0.03768)		
D(MPEN)	0.012695		
	(0.00498)		
D(IPEN)	0.056935		
	(0.01621)		
D(LR)	0.019625		
	(0.00644)		

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2 Cointegrating Equation(s):                      Log likelihood                      455.3415

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Normalized cointegrating coefficients (standard error in parentheses)

BLSME	MPEN	IPEN	LR
1.000000	0.000000	10.57781	-203.4233
		(4.93477)	(58.2967)
0.000000	1.000000	2.936584	-55.30710
		(1.41651)	(16.7338)

Adjustment coefficients (standard error in parentheses)

D(BLSME)	-0.011782	0.043025	
	(0.03766)	(0.13130)	
D(MPEN)	0.013174	-0.048897	
	(0.00417)	(0.01455)	
D(IPEN)	0.057192	-0.200473	
	(0.01615)	(0.05630)	
D(LR)	0.019041	-0.062418	
	(0.00552)	(0.01926)	

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3 Cointegrating Equation(s):                      Log likelihood                      460.5459

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Normalized cointegrating coefficients (standard error in parentheses)

BLSME	MPEN	IPEN	LR
1.000000	0.000000	0.000000	0.832211
			(4.93884)
0.000000	1.000000	0.000000	1.397753
			(1.87294)
0.000000	0.000000	1.000000	-19.30980
			(5.22981)

Adjustment coefficients (standard error in parentheses)

D(BLSME)	-0.109246	0.103294	0.025759
	(0.05476)	(0.12519)	(0.02537)
D(MPEN)	0.012776	-0.048650	-0.004134
	(0.00651)	(0.01487)	(0.00301)
D(IPEN)	0.089016	-0.220152	0.008415
	(0.02421)	(0.05534)	(0.01122)

D(LR)	0.017693 (0.00861)	-0.061584 (0.01967)	0.018454 (0.00399)
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## APPENDIX E: VECTOR AUTOREGRESSIVE RESULT FOR HYPOTHESIS TESTING

### VAR Results: SME SURVIVAL

Vector Autoregression Estimates

Date: 10/05/16 Time: 05:35

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	SMES	MPEN	IPEN	LR
SMES(-1)	0.888907 (0.16499) [ 5.38776]	-0.010450 (0.01266) [-0.82552]	-0.067967 (0.04406) [-1.54270]	-0.040261 (0.01632) [-2.46631]
SMES(-2)	-0.130453 (0.14895) [-0.87579]	0.008606 (0.01143) [ 0.75307]	0.108056 (0.03978) [ 2.71661]	0.038145 (0.01474) [ 2.58819]
MPEN(-1)	2.027597 (1.46880) [ 1.38044]	1.415550 (0.11269) [ 12.5610]	-0.380435 (0.39222) [-0.96994]	0.232133 (0.14533) [ 1.59730]
MPEN(-2)	-1.567703 (1.35509) [-1.15690]	-0.418830 (0.10397) [-4.02841]	0.456027 (0.36186) [ 1.26023]	-0.225205 (0.13408) [-1.67967]
IPEN(-1)	-0.050544 (0.48547) [-0.10411]	0.006947 (0.03725) [ 0.18651]	1.560009 (0.12964) [ 12.0337]	-0.010745 (0.04803) [-0.22369]
IPEN(-2)	-0.159160 (0.47551) [-0.33472]	-0.026455 (0.03648) [-0.72514]	-0.693633 (0.12698) [-5.46265]	0.007772 (0.04705) [ 0.16519]
LR(-1)	1.907069 (1.43114) [ 1.33256]	0.021517 (0.10980) [ 0.19596]	-0.036613 (0.38217) [-0.09580]	1.601639 (0.14160) [ 11.3109]
LR(-2)	-3.605325 (1.55570) [-2.31749]	0.011954 (0.11936) [ 0.10015]	-0.337938 (0.41543) [-0.81347]	-0.962148 (0.15393) [-6.25070]
C	1.732354 (1.67992) [ 1.03121]	0.153935 (0.12889) [ 1.19430]	0.587477 (0.44860) [ 1.30958]	0.421634 (0.16622) [ 2.53666]
R-squared	0.925958	0.999632	0.997428	0.915913
Adj. R-squared	0.908008	0.999543	0.996804	0.895528
Sum sq. resids	0.333472	0.001963	0.023779	0.003265
S.E. equation	0.100525	0.007713	0.026844	0.009946
F-statistic	51.58633	11201.28	1599.554	44.93125

Log likelihood	41.95776	149.7939	97.41323	139.1126
Akaike AIC	-1.569417	-6.704473	-4.210154	-6.195836
Schwarz SC	-1.197059	-6.332116	-3.837796	-5.823479
Mean dependent	7.112306	7.724958	7.224057	1.235186
S.D. dependent	0.331434	0.360642	0.474849	0.030772

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Determinant resid covariance (dof adj.)	1.59E-14
Determinant resid covariance	6.06E-15
Log likelihood	449.1089
Akaike information criterion	-19.67185
Schwarz criterion	-18.18242

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## VAR result for SME ASSET SIZE

Vector Autoregression Estimates

Date: 10/05/16 Time: 05:37

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Standard errors in ( ) & t-statistics in [ ]

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	SMEA	MPEN	IPEN	LR
SMEA(-1)	0.378121 (0.15649) [ 2.41625]	-0.005537 (0.00340) [-1.62706]	-0.028854 (0.01209) [-2.38682]	-0.003633 (0.00472) [-0.76944]
SMEA(-2)	-0.023171 (0.12733) [-0.18197]	0.004402 (0.00277) [ 1.58972]	0.033466 (0.00984) [ 3.40217]	0.007147 (0.00384) [ 1.86055]
MPEN(-1)	23.23051 (5.86053) [ 3.96389]	1.449386 (0.12745) [ 11.3720]	-0.165753 (0.45273) [-0.36612]	0.067785 (0.17681) [ 0.38338]
MPEN(-2)	-22.35142 (5.55273) [-4.02530]	-0.457126 (0.12076) [-3.78547]	0.242994 (0.42895) [ 0.56648]	-0.085822 (0.16752) [-0.51231]
IPEN(-1)	-3.059182 (1.76806) [-1.73025]	0.004157 (0.03845) [ 0.10810]	1.707946 (0.13658) [ 12.5048]	0.029286 (0.05334) [ 0.54904]
IPEN(-2)	3.642925 (1.74701) [ 2.08523]	-0.018223 (0.03799) [-0.47964]	-0.789497 (0.13496) [-5.84997]	-0.017852 (0.05271) [-0.33871]
LR(-1)	6.651826 (4.53946) [ 1.46533]	0.003530 (0.09872) [ 0.03575]	-0.222831 (0.35068) [-0.63543]	1.426508 (0.13695) [ 10.4161]
LR(-2)	-6.047421 (4.60012) [-1.31462]	0.032633 (0.10004) [ 0.32620]	0.001910 (0.35536) [ 0.00538]	-0.779339 (0.13878) [-5.61557]
C	-7.841736 (5.70872)	0.139343 (0.12415)	0.246953 (0.44100)	0.463737 (0.17223)

	[-1.37364]	[ 1.12237]	[ 0.55998]	[ 2.69258]
R-squared	0.769983	0.999656	0.997499	0.909165
Adj. R-squared	0.714221	0.999573	0.996893	0.887145
Sum sq. resids	3.874590	0.001833	0.023122	0.003527
S.E. equation	0.342654	0.007452	0.026470	0.010338
F-statistic	13.80842	11999.57	1645.149	41.28718
Log likelihood	-9.547596	151.2391	98.00195	137.4916
Akaike AIC	0.883219	-6.773292	-4.238188	-6.118649
Schwarz SC	1.255577	-6.400934	-3.865831	-5.746292
Mean dependent	7.078275	7.724958	7.224057	1.235186
S.D. dependent	0.640974	0.360642	0.474849	0.030772
Determinant resid covariance (dof adj.)		2.50E-13		
Determinant resid covariance		9.52E-14		
Log likelihood		391.2530		
Akaike information criterion		-16.91681		
Schwarz criterion		-15.42738		

## VAR Result for Bank Lending to SME

Vector Autoregression Estimates

Date: 10/05/16 Time: 05:40

Sample (adjusted): 2004Q3 2014Q4

Included observations: 42 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	BLSME	MPEN	IPEN	LR
BLSME(-1)	1.321675 (0.16560) [ 7.98105]	0.006411 (0.02030) [ 0.31578]	-0.057926 (0.07424) [-0.78024]	-0.038986 (0.02686) [-1.45123]
BLSME(-2)	-0.481325 (0.16283) [-2.95603]	0.005593 (0.01996) [ 0.28020]	0.130130 (0.07300) [ 1.78267]	0.057179 (0.02641) [ 2.16473]
MPEN(-1)	1.363401 (1.09777) [ 1.24198]	1.241293 (0.13458) [ 9.22319]	-1.010917 (0.49214) [-2.05413]	-0.043078 (0.17808) [-0.24190]
MPEN(-2)	-0.962459 (0.94286) [-1.02078]	-0.285391 (0.11559) [-2.46893]	0.890036 (0.42269) [ 2.10562]	-0.021459 (0.15295) [-0.14030]
IPEN(-1)	-0.232985 (0.31783) [-0.73304]	0.016866 (0.03897) [ 0.43283]	1.632753 (0.14249) [ 11.4589]	-0.022528 (0.05156) [-0.43694]
IPEN(-2)	0.094851 (0.30683) [ 0.30913]	-0.023507 (0.03762) [-0.62490]	-0.678998 (0.13755) [-4.93625]	0.042608 (0.04977) [ 0.85604]
LR(-1)	-0.721858 (0.86646) [-0.83311]	-0.086139 (0.10623) [-0.81090]	-0.713988 (0.38844) [-1.83808]	1.315409 (0.14056) [ 9.35851]
LR(-2)	0.324465 (0.88057)	0.109316 (0.10796)	0.333376 (0.39477)	-0.743562 (0.14285)



	[ 0.36847]	[ 1.01259]	[ 0.84448]	[-5.20531]
C	-0.755524 (1.36065) [-0.55527]	0.315270 (0.16681) [ 1.88997]	1.391486 (0.60999) [ 2.28116]	0.786116 (0.22072) [ 3.56152]
R-squared	0.984584	0.999648	0.997288	0.915438
Adj. R-squared	0.980847	0.999563	0.996630	0.894938
Sum sq. resids	0.124757	0.001875	0.025074	0.003283
S.E. equation	0.061486	0.007538	0.027565	0.009974
F-statistic	263.4534	11726.68	1516.770	44.65572
Log likelihood	62.60471	150.7562	96.30019	138.9943
Akaike AIC	-2.552605	-6.750296	-4.157152	-6.190204
Schwarz SC	-2.180248	-6.377938	-3.784794	-5.817846
Mean dependent	5.438745	7.724958	7.224057	1.235186
S.D. dependent	0.444278	0.360642	0.474849	0.030772
Determinant resid covariance (dof adj.)		7.98E-15		
Determinant resid covariance		3.04E-15		
Log likelihood		463.5732		
Akaike information criterion		-20.36063		
Schwarz criterion		-18.87120		