THE EFFECTS OF THE KIAMBU TRADE DEVELOPMENT JOINT LOAN BOARD LOANS ON MICRO AND SMALL ENTERPRISES PERFORMANCE IN KIAMBU COUNTY

BY

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DISCLAIMER

The findings, interpretations and conclusions expressed in this paper are entirely those of the author.

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This work is dedicated to my family and especially my wife Roselyn Mumo, lovely daughter, Gloria Mwende and son Prince Ephraim Katsuro.

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ABSTRACT

Small and Micro Enterprises have an important part to play in the growth and development of the economy of Kiambu County and the Kenyan Economy in general. The growth and development of these enterprises is really explained by their plans for business expansion through financial base expansion which is as a result of access to micro credit loans. This study analyses the effects of the Kiambu Trade Development Trade Development Joint Loans Board Loans on Small and Micro Enterprises performance in Kiambu County. In the Paper, Performance is proxied by increases in Sales, Profits, Return on investments, Retained Earnings and Stock Levels. The Motivation of this area of study was due to the existing knowledge gap on the effects of the Kiambu Trade Development Joint Loan Board scheme in Kiambu County on SMEs. Primary and secondary qualitative and quantitative data was used and it was collected though structured questionnaires, to ascertain the contribution of Kiambu Trade Development Joint Loan Board Loans to SMEs performance. The use of Simple Random Sampling was employed to arrive at 223 SMEs that formed the sample size of the research. The Heckman Probit Model was used for the data analysis. The key finding of the study was that the loans advanced by the Kiambu Trade Development Joint Loan Board positively contributed to SMEs performance. The study recommends that the Kiambu County Government should uphold and increase the Trade Loan fund, expand the facility to the Sub-regions of the County while creating its awareness. Further areas of study were recommended key among them being carrying out studies on the affordability and sustainability of the Fund.

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LIST OF ACRONYMS

SDGs	Sustainable development goals
DTDB	District Trade Development Board
EAC	East African Community
ERS	Economic Recovery Strategy
KTDJLB	Kiambu Trade Development Joint Loan Board
MDGs	Millennium Development Goals
MFIs	Micro-finance Institutions
SMEs	Small and Micro Enterprises
UN	United Nations

EXPLANATION OF TERMINOLOGIES

1. Small and Micro Enterprises- for purposes of this paper, SMEs are businesses with one to fifty employees and an annual revenue of below Ksh. 50 Million as adopted from Kessy and Urio (2006).

2. SMEs Performance- with regards to this Paper, SMEs performance was taken to be positive and was supposed to be increase in Sales, Profits, Stock levels, Retained Earnings, and Returns on Investment. This was adopted from Neely et al (2001)

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

Microcredit Financing is an important tool for easing poverty levels, and as such it has in the recent past and present been, taken serious by Governments and all development conscious organizations all over the World and Kenya is no exception as argued by Dichter (1999). In view of the foregoing, the latter period of 1960s actually gave rise to Micro-Credit programmes in rural set ups as postulated by Dichter (1999).

In the development of research, different Theories were referred to in order to inform the focus area. From the onset reference was made to the Micro-Credit in Theory and Practise used by Karlan and Zinman (2011). By evaluating influence by the use of Credit Scores randomly, , the theory confirmed the important attachment of Micro-credit to fight poverty as studied by Karlan and Zinman (2011).

Loans from Microcredit establishments both in the Government setups and private setups is known to minimise market imperfections, spruces up Small and Micro-Enterprise performance in growth terms and in the long run it leads to improved living standards as postulated by Karlan (2011) in his study on SMEs in the Philippines.

Additionally, reference was made on the Micro credit theory as coined from the Economic theory by Adam smith in 1936/7 which formed the basis of business credit in the non-communist set-ups of the 18th Century. From this thinking, it was actually believed that humans use their skills and manpower to benefit the society. This theory as later on advanced by the capitalists led by Marx brought the idea of quantifiable progress of the Non-Communist society. From this, different components of Micro credit and specifically the psychological part were used by the re-known champion of Micro credit/ Finance Dr. Muhammad Yunus (1994) to develop the model used by the Grameen Bank. Reference was also made on the Contingency theory which is used to project the future through series of already build theoretical and empirical developments. It is this theory which was further used later in this research to develop the conceptual Framework.

Earlier on, and especially in the period before and after independence there was the creation of government credit schemes to aid businesses access finance for their business expansion in Kenya. Among the schemes developed by then, was the Trade development Boards which were piloted before independence and rolled out to the then Districts under the African District Councils. Over time, there was need to anchor the schemes on responsible management structures and the day to day operations were to be regularized by Different Boards (*CAP 265 Local government Act-now repealed*) This saw the development of District Trade Development Joint Loan Boards a venture between the then Central Government and Local Governments which currently the National and County Governments. Since then, not much information is known on the joint Loan Boards except a shallow assessment of the services of the JLB to

traders in the then Malindi District (Otieno S) and the Causes of Default in Government Microcredit Programmes.

1.1 District Trade Development Joint Loan Boards

Cognizant of the fact that Provision of Micro-credit to SMEs has a positive influence on their growth as confirmed by Evans (1996) in his study on SMEs and financing commissioned by the Asian Development Bank, the Government of Kenya embarked on Micro-credit provision before independence as a rural intervention programme. It was envisaged that this would stimulate growth of entrepreneurial spirit thereby shifting focus from societal inclination to individual inclination to development as argued by Onyuma (2000).

It is this line of thinking that led to the establishment of the Trade Development Joint Loan Board schemes in Kenya as argued by Bwonya Rose (2007), which was established in all regions of Kenya commonly referred to as the District Trade Development Joint Loan Boards as argued by Bwonya Rose (2007) in her study on the Scheme in Uasin Gishu area Kenya for the Joint Japan World Bank Graduate Program.

According to Bwonya Rose (2007), the scheme was started by the administration of the British colonialists in the years before Kenya Independence in 1954. The formalization of the institutional structure was done in 1963 through the legal notice number 265 of 1963 Local Government and Regulation 104 according to the Government of Kenya (Ministry of Local Government 1965). Cap 265 of the Local Government Act which established this Micro-Credit

scheme stood repealed after the 2013 general elections under the current constitution of Kenya (2010).

Currently, the scheme is anchored in the Ministry of EAC, Commerce and Tourism in the Department of Commerce and is spread in all the 47 counties in Kenya. The main aim of the Trade Development Micro-Credit scheme was to provide cheaper credit small Traders in order to boost their businesses, acquire experience and be able expand their firms to graduate to bigger firms which could then get bigger financing from Commercial Banks according to Kenya Government Ministry of Local Government (1965).. Further the scheme was and is intended to enhance entrepreneurship culture for income generation and nation building both in the urban areas and in the rural set-ups.

The scheme adopted rotating funding model popularly referred as revolving method funding where present beneficiaries settle their payment dues to enable others gain access to the Loans.. Before and immediately after Kenya's independence, the Scheme loans advanced ranged between Ksh. 2,000.00 and Kshs. 30,000.00 at 6.5% rate of interest per year, on a reducing balance repayable within a period of 48 months. From the year 1994, the loan ceiling was revised to kshs.100,000.00 at 12% per year interest rate repayable within 24 months. In the year 2013, the Principle secretary in the Ministry of EAC, Commerce and Tourism revised the terms of the loans to a ceiling of Ksh. 300,000.00 and the interest rates were reduced to 8% per year on a reducing balance repayable within 24 months.

The Method of repayment was modelled to include principal and interests paid at the same time by equal instalments in a given period not exceeding 48 months previously and a period not exceeding 24 months currently. To be issued with the loans, the borrower who can either be an individual, cooperative or a partnership must avail security for the loan in terms of tangible Assets.

In the year 2005 the then Ministry of Trade and Industry carried out a monitoring and Evaluation of all the Trade Development Joint Boards in the Republic of Kenya and found out that disbursements of Loans and Recovery of the same loans between the years 2000 to 2005, over Ksh. 90Million was successfully disbursed and over Ksh. 73 Million recovered as shown in table 1 below (GOK Ministry of Trade and Industry 2005).

Table 1 JLB Performance in Kenya

Year	Amount disbursed in Kshs.	Amount recovered in Kshs.
2000/1	23,684,000.00	17,438,003.83
2001/2	5,385,000.00	14,717,455.65
2002/3	21,336,557.00	14,215,918.22
2003/4	18,585,000.00	15,431,083.18
2004/5	21,227,000.00	11,543,646.59
Total	90,217,577.00	73,345,107.47

Source Ministry of Trade and Industry Report of 2005

1.2 The Kiambu Trade Development Joint Loan Board

The Kiambu Board became operational in Kiambu in the year 1961 and the first loans were issued to 10 applicants (GOK Ministry of Trade and Industry Archives). The above archives records show that repayment has been poor and hence this has over time questioned the issues of the sustainability of the Loan Scheme while at the same time casting a dark shadow on its influence on businesses of beneficiaries.

From these records it was noted that, the Kiambu Loan Board Loan facility underwent a period of dormancy in the period between 1999 and 2007 with a portion of the monies loaned out being nonperforming loans according to Kiambu County Trade office annual financial report (2008). Despite this, the Kiambu Board has continued to receive grants from both National and county Government as shown in table 2 below and has disbursed an amount of Ksh. 38.6 million to 1961 SMEs by the year 2013 (GOK-Ministry of EAC Commerce and Tourism Annual Final Accounts report of 2013). This is as shown in table 2.

Table 2: Grants given to Kiambu Joint Loan Board

YEARS	AMOUNTS		
	NATIONAL GOV.	COUNTY GOV.	TOTAL
2012-2013	2,118,400.00		2,118,400.00
2010-2011	2,045,952.00		2,045,952.00
2005-2007	612,000.00		204,000.00
2003-2004	364,000.00		182,000.00
1994-1999	329,540.00		29,300.00
1991-1993	219,000.00		79,000.00
1983-1988	792,000.00		92,000.00
1978-1982	820,000.00	60,000.00	215,000.00
1973-1977	695,000.00	11,000.00	181,000.00
1967-1972	630,000.00		250,000.00
TOTAL	8,625,892.00	71,000.00	8,696,892.00

Source Kiambu trade office final accounts 2014

Table 3: Number of beneficiaries from Kiambu Trade Development Joint Board

Years	Amount	Beneficiaries
2013	2,920,000.00	33
2012	3,740,000.00	44
2011	4,885,000.00	58
2009-2010	1,460,000.00	25
2004-2007	2,025,000.00	71
2000	2,965,000.00	100
1996	1,570,000.00	65
1995	3,805,000.00	137
1989-1991	3,694,000.00	235
1984-1986	2,991,000.00	186
1981-1982	2,494,000.00	191
1977-1979	2,218,000.00	202
1974-1976	2,304,000.00	293

Years	Amount	Beneficiaries
1970-1973	1,010,000.00	204
1968-1969	571,000.00	117
TOTALS	38,652,000.00	1,961

Source Kiambu Trade Development office 2014

From the table (Table 3) above, a total of Ksh. 38.7 Million has so far been loaned out to traders in Kiambu County through the Kiambu Trade Development Joint Board Loans, benefiting over 1,961 traders as at December 2014. The expectation thereof is that over 1,900 businesses would experience improved businesses which would in turn spur economic growth of the region as studied elsewhere by Beck, Kunt and Levine, 2007) who believed in the positive impact of loans to growth of the businesses of the beneficiaries.

1.3 Statement of the Problem

From the foregoing Micro-credit loan interventions is the smart way to improve the livelihoods of business operators as well as being a strategy to the attainment of key developmental goals as argued by Simanowitz and Brody (2004). This postulation was also given by Littlefield, Murduch and Hashemi (2003) who believed that microcredit is a key strategy in the achievement of the Millennium Development Goals (MDGs) by the year 2015 and later the Sustainable Development Goals.

According to Samuel et al (2014), the position of Small and Micro-Enterprises (SMEs) in the growth and development of any economy cannot be ignored as they contribute immensely to the general wellbeing of the citizenry and a country's economic growth as confirmed by Mullei (2003). Any intervention therefore to improve Small and Microenterprises performance and

especially credit is worth venturing as is the case with the Kiambu Trade Development Loans which has benefited over 1,900 traders with over Ksh. 38 million pumped into the Kiambu County Economy. With this funds being injected into the Kiambu County Economy, it is expected that it would positively influence SMEs, assets Stock levels, employment, and further business expansion as argued by Gobezie, (2004) and Maulana and Rahmat (2006).

Despite the long period that the KTDJLB has been in operation, no empirical study has ever been done to ascertain its effect on businesses thereof. This study is therefore designed to be one of the pioneering attempts to empirically analyse the effects of the Kiambu Trade Development Joint Loan Board Loans on the SMEs performance in Kiambu County. For purposes of this paper, performance is taken to mean Increase in Profits, Sales, Return on Investment, Stock levels and increase in Retained Earnings.

The results of the study will add in to the already available little literature on the Trade Development Board Scheme in Kenya, while proposing a more robust method that the Devolved units in Kenya could adopt to meet growth oriented requirements of SMEs. The only literature on the JLB an assessment of JLB's Impact on Traders in Malindi done by Otieno S. 2004) and the Causes of Default in Government Microcredit schemes like JLB done Bwonya Rose (2007) through the Joint Japan/World Bank graduate Programme of 2007.

1.4 Objectives of the Study

This major objective of this study is to find out the effects of the Kiambu Trade Development Joint Loan Board Loans on Small and Micro Enterprises performance in Kiambu County.

The specific objectives

1. To find out if the Kiambu Trade Development Joint Loan Board Loans has any positive effect on SMEs Stock Levels, Sales, Profits, Returns on Investment and SMEs Retained Earnings in Kiambu County.
2. To find out what motivates SMEs to get Loans from the Kiambu Trade Development Joint Loan Board.
3. To determine factors that determines access of Loans from the Kiambu Trade Development Joint Loan Board.
4. To generate policy recommendations on SMEs financing based on the outcome of this study.

1.5 Research Questions

To help determine whether the loans from the Kiambu Trade Development Joint Loan Board have any effects on SMEs performance, this study was designed to attempt to answer the below listed questions;

1. What is the level of SME's awareness of the availability of loans from the KTDJLB?

2. Does the KTDJLB Loans influence SMEs performance in terms of Sales, profits, returns on investment, retained earnings and stock levels?
3. What motivates Businesses in Kiambu County to access the KTDJLB Loans?
4. What are the factors that determine access of Loans from the KTDJLB?

1.6 Research Hypothesis

H_0: There is a significant relationship between the loans offered by the Kiambu Trade Development Joint Board Loans and SMEs Performance in terms of increase in Profits, Sales, Stock levels, retained earnings and returns to investment in Kiambu County

1.7 Justification of the study

Many studies done so far in developing countries like Kenya have come up with varied conclusions on the impact and/or effect of microcredit lending on the performance of SMEs despite the strong justification linking lending to improved performance of Small businesses. Preceding studies on this subject including one such study done by Mkazi (2007) did not quite and fully justify the linkage between micro-credit lending and SMEs performance in the developing countries, thus calling for further research on such a linkage.

Despite the fact that the government scheme on Micro-credit lending in Kenya through the Trade Development Joint Loan Board loaning started in 1954, it has not benefited many people as was envisaged in the conceptualization stage. The first loans in Kiambu County under the Trade scheme were issued in 1961, and since then, no empirical study has been done on its effect on

Micro and Small Enterprises (SMEs) in Kiambu or its impact thereof. This study therefore is believed to provide additional literature source as it would also come in handy to fill this gap, and form the fundamental basis for improvements of the facility in addition to being a resource for policy recommendations. This therefore necessitates the interrogation of this area of study.

1.8 Scope of the Study

The study dwelled on SMEs operating in Kiambu County consisting of two categories which include those directly accessing credit from the Kiambu Trade Development Joint Loan Board and those not directly benefiting from this government Micro-credit scheme. This was designed in a manner that would determine the effects of the Trade loan facility on SMEs Business performance among other factors explaining the business performance.

1.9. Limitations of the Study

Since not much of studying has been done on this area, much primary data was collected which took a lot of time and was very expensive since data was collected in a vast area. Since much of the data was collected and analysed by the researcher, it could have led to slight deviations in interpretation. However, since this was envisaged, efforts were put in place to ensure that the study went on well.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

Chapter two focuses on the relevant literature gathered in relation to this research. it is organized into three sections with the first one the first providing theoretical literature micro-credit and SMEs performance while the second part presents various empirical studies done so far and the last part giving the summary of literature review.

THEORETICAL LITERATURE REVIEW

2.1.1. Micro Credit Theory

According to Hulme and Mosley (1996), Microcredit means the small loans given out to small scale traders operating or planning to operate Small scale businesses to earn a living. This paper looked at the Theory of Microcredit which was developed from the Economic theory of Adam Smith in 1936/7. From this theory by Adam Smith, it is believed that the foundation of business credit was born, advanced by Karl Marx and later by Muhammad Yunus (1994). From the theory it is worth noting that the concept of profit making was developed in the new world order of capitalism.

Sebstad et al. (1995) identified four domains of microcredit and/or microfinance interventions which included individuals, households, enterprises and community. In his model, he suggested that households be the focus of impact assessments with a further proposal that there existed three impact domains at the household level, including income, expenditure and assets. Further, Sebstad et al. (1995) argued that, SMEs are embedded in households for they provide income for households, though their performance is largely dependent on the characteristics of the households. This study was done on the Enterprise domain as earlier on studied by Sebstad et al (1995) in his four domains.

According to Chittenden, et al, (1996) much and indeed most of the theoretical work on Micro-credit and Small and Micro-Enterprise performance has been undertaken in and on the developed countries like England, Japan and USA among others leaving a knowledge gap on developing countries like Kenya. Much of the literature however has dwelled on financial structures in different Lending institutions and their behaviour thereof as givers of credit rather than the credit advances and business performance.

In modern times and especially from the developing Nation's point of view, Micro-credit issuance can be seen to have taken ground around 1976, when Dr. Mohammed Yunus while taking the version of Micro-financing module, pioneered a Micro credit and Microfinance scheme in Bangladesh. To his amazement, the idea was a success and would later grow into a Bank, popularly known as the 'Grameen Bank'. It is on the basis of this idea that micro-credit lending was taken up by the rest of the world and increased studies done on the impact of such

loans on businesses with among such studies establishing a positive relationship between Micro-credit loans and SMEs performance as confirmed by Habibulla (2010).

According to Al Shami et al (2014), the analysis of influence on business performance from a business establishment performance point of view could be done on sales performance and the acquisition of more assets though experience and also knowledge of business operations. According to the United Nations Secretary-General (UN 1997), this knowledge has most recently seen increased desire to focus more energies on Microcredit loans for the starting and the expansion of Small and Micro enterprise businesses all over the world.

2.1.2. Small and Micro Enterprises theory

In this paper, Small and Micro enterprises were the focus of study and were acronymed SMEs. These are productive and distributive units in goods and services mostly regarded to be practiced in the informal sector according to Kessy and Urio (2006). In a broad categorization SMEs can be defined through a criterion composing of number of workers and the sales turnover levels (MSMEs Bill 2009). In this format, the number of workers range between 1 and 10 and 10-50 with an annual turnover of Ksh. 500,000.00 and between annual turnover of Ksh 500,000.00- Ks. 5,000,000.00 for the Micro and Small Enterprises respectively. Many small businesses in Kenya do not have clear demarcations of the owners or individuals and the businesses themselves. This study therefore adopted the work of Sebstad et al. (1995) third Domain of Enterprise to be the focus of ascertaining effects of the Kiambu Loan facility on the SMEs business performance in Kiambu County.

2.1.3 Small and Micro-Enterprises Performance theory

The main reason of every business venture anywhere in the world is to operate for a gain or it is profits oriented or is performance improvement oriented. In modern times, enterprises performance was firstly brought out clearly by Neely et al (2001) and was then premised on survival and prosperity in the long run, integration of strategies to deliver real value or the worth of Business as well as improving wellbeing of the business operators.

Since then, different ideas have been put forward to explain performance of SMEs which has continued to differ significantly across nations. In business, Harash et al (2014) believes that the main reason of venturing into trading is to see good and positive engagements and reap the gains thereof. On the others hand, Sabanci O (2012), Thrikawala (2011) and Watson (2007) believe that enterprise performance is a mix of how businesses put into use financial resources to generate revenues. SMEs business performance can also be viewed as the achievement of the set goals like profits of the businesses given set conditions in the operating environment according to Davis and Cobb (2010).

2.2 EMPIRICAL LITERATURE REVIEW

The review of literature on the growth of MSEs indicated that many micro and small enterprises (SMEs) fail to expand due to limited financial resources, poor managements, use of outdated technologies, stiff competitions from bigger firms, poor management of account receivables and unfavourable government policies as argued by Idowu (2010).

According to Yaron (1997), Micro-credit is a catalyst for the growth of SMEs across nations and therefore the need to pay a keener attention to its development.

A study by Grameen Bank (1983) found that many MSEs had limited financial capital and lacked relevant skills which in turn constrained their growth and general business performance. According to Sonfield and Barbato (1999) the Microcredit loans are the known sources of the financial credit needed to start and expand SMEs due to their affordability.

According to a study by UNDP (2002) it was found out that SMEs in Kenya were able to acquire more assets and improved technologies using Micro-Credit loans and also it established a positive link between loan amounts given and improved businesses as later confirmed by Makokha (2006. This argument is supported by Otto, Muli and Ong'ayo (2010) in their study that indicated that those SMEs that received large loans frequently had larger labour force than those SMEs that received smaller loans.

While studying a typical scenario of operating without loans from Banks, Ferrando et al (2014) found out that to experience a significant increase in the capacity for production would necessitate an increase in the desire for Micro-credit trade finance. A study done independently in Bangladesh and Zimbabwe by Habibulla (2010) and John (2011) found out that Microcredit increased the revenue of SMEs through increased sales, acquisition of assets and technology.

According to Maulana and Rahmat (2006) while focusing their research on SMEs in Indonesia, Micro credit loans positively influence SMEs Sales and value of Assets. Additionally, a research work by Karlan and Zinman(2010) in Philippines found out that expanding access to credit was

actually linked to increased profits for SMEs operators but not necessarily increased business investment. Additionally, a study done by Grandon and Pearson (2004) found out that access to finance by SMEs was among the most important factors that determine effectiveness and competitiveness in business among different operators. According to World Bank (2014), SMEs development agenda has over time been slowed down or constrained by scarcity of credit financing in an effort to build capacity for business expansion for amassing of wealth for posterity.

Lastly, a study done in Malawi by Diagne and Zellar(2001) concluded that investing in SMEs in terms of credit injection will have improved business performance if in addition to the credit facility, the infrastructure of the operation areas including the markets is properly developed.

2.3 SUMMARY OF LITERATURE REVIEW

From these previous studies, it was summarized that, there exists a gap of information on the effectiveness of government micro credit services like the JLB Loan facility interventions on the performance of enterprises. Specifically studies done earlier have focussed on MFIs and Micro, Small and Medium Enterprises. Besides the Trade Development Loan Scheme is shallowly researched and as such there exists little literature thereof. The approach used in this study therefore is in the right direction to the Provision of a clear answer to the question whether Micro credit interventions through government initiatives and especially the JLB loans is a worthy

venture for the government on the one hand, and whether SMEs actually can benefit from such interventions.

CHAPTER THREE

METHODOLOGY

3.1 Conceptual framework

The framework for this study was developed by mixing all the important features that are key in clarifying and explaining SMEs business performance as conceptualized earlier on by Sidik et al (2012). In this paper, focus of performance is from a financial and Non-Financial perspective as postulated by Dowling and Helm (2006) and Watson (2007). From the Financial perspective, this study was conceptualized to include increase in Sales volumes, Increase in Profits, Increase in retained earnings, Return on investments and increase in stock levels as has been simplified into by Huyghebaert (2008) into profitability and growth in earnings. Additionally, profitability has been seen as a determinant of firm progress by the application and use of retained earnings as postulated by Watson (2007).

In order to fully measure performance, non-Financial measures were also factored in as they very important when taken in conjunction with the financial ones as argued by Juhl et al (2002) and Peterson and Schoeman (2008). This is used to supplement financial performance through generating of information on progress which is explained by other factors as postulated by Henri (2004) and Kaplan (2001). The combination thereof is as explained here below.

Figure 1 presents the study conceptual framework showing relationship between credit and non-credit factors and performance of SMEs. The four key expanded factors considered that influence the enterprise performances include: (1) Entrepreneurial factors; (2) Institutional factors; (3) Government; and (4) Social-demographic factors (Kumar and Rao, 2015; Thampy, 2010; Berger and Udell, 2006).From the examination of the literature e above, these factors are generally 2 fold;, the demand side aspects and supply side aspects. The demand side aspects refer to the entrepreneur's and SMEs-specific characteristics while the supply side aspects encompass the issues related to the availability of capital.

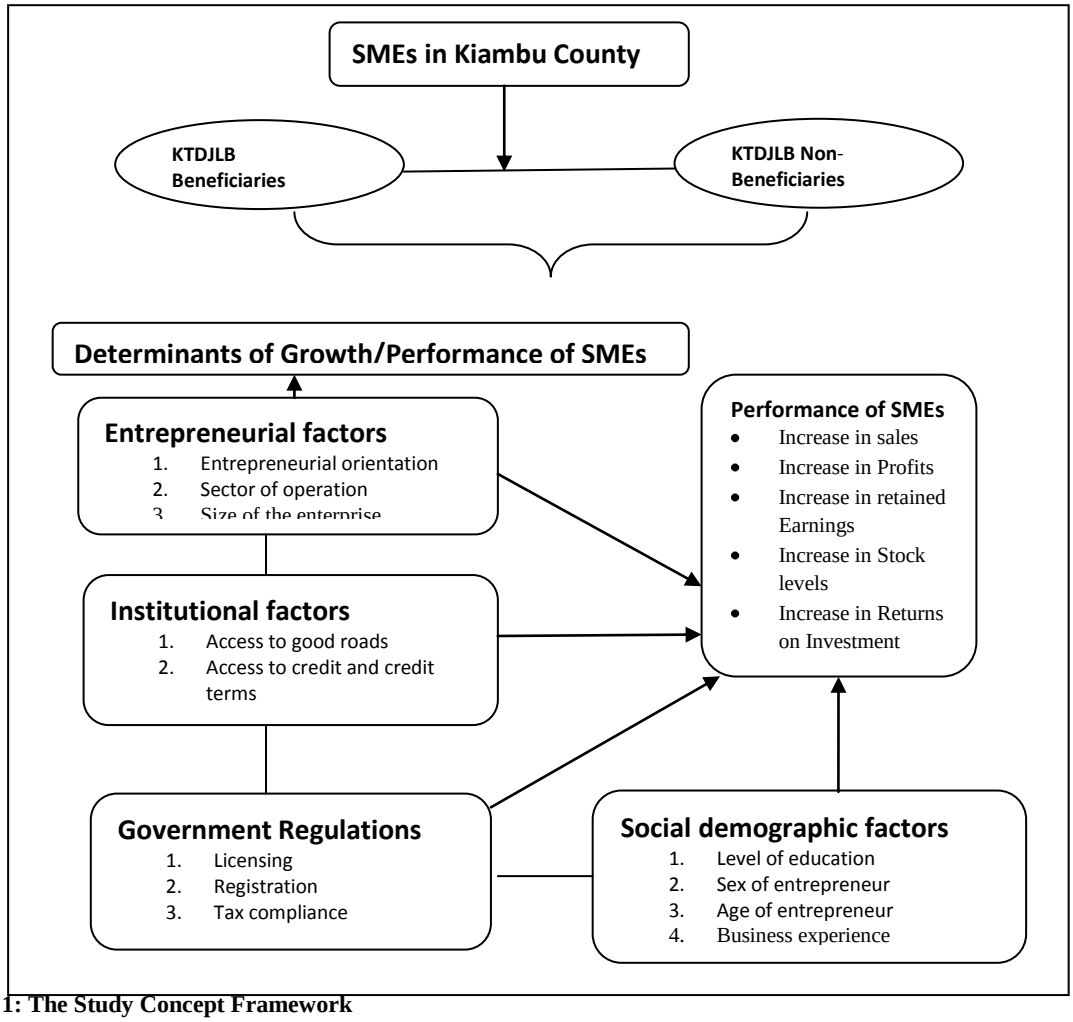

Figure 1: The Study Concept Framework

Source: Author, 2015

3.2 MODEL SPECIFICATION

To assess whether receipt of a loan from KTDJLB has any effect on SMEs performance (Sales, Stock, and Returns on Investment, Retained Earnings and Profits), Heckman Probit Model with sample selection (Heckman 1976) was used. The rationale underlying its use is that it controls for self-selection or selection bias within the model. Selection bias often occurs due to estimating participation of individuals in a program. This occurs due to a number of factors such as; missing data, model specification errors, self-selectivity and /or data analysis errors (Wooldridge, 2002; Green, 2000; Madalla, 1992).

The two stages estimation which corrects the bias from non-random samples was developed by Heckman (1979. This approach actually estimates expected value of error with its inclusion as an explanatory variable in the second stage of regression according to Wooldridge, (2002), Green (2000), Kennedy (1998), Madalla (1992) and Berndt, (1991). the Heckman Probit model coefficients in this case are firstly estimated by use of Maximum likelihood method and after observation they then are used as exogenous variable to allow for consistent estimation by OLS as argued by Hoffmann and Kassouf(2006).

In the past this method was used by the University of Berkeley USA to study Innovation behaviour at the Firm level in 2009 to investigate factors for adoption of Automatic milking technologies with results suggesting positive impact of innovation experience and the importance of farmers risk perception and significance effects of peer group behaviour.

The Heckman Probit Model was also used by Zhenyu Wu et al (2005) to estimate coaching on the performance effects of high school students and the relationship between family ownership and management on SME financing.

The theoretical exposition of the Heckman procedure is as follows:

Let the regression model be given by; $\mathbf{Y_i = \beta' x_i + \varepsilon_i}$……(1) while the selection model will be given by; $\boldsymbol{y*_i = \alpha' z_i + u_i}$ ... ... $(\mathbf{2})$

$y*_i$is a latent variable indicating participation in the Kiambu Trade Development Joint Loan Board or lack of it, and z_i being a vector of variables that determine variable, y_i

$y*_i$in the selection model is not observed and therefore the observation of whether an enterprise participates in the KTDJLB or not is such that; y_i=1 given $y*_i$>0 and y_i =0 given$\boldsymbol{y*_i \leq 0}$

On the other hand, Y_i represented the SME Business performance in terms of increase in Profits, Sales, Retained Earnings, Return on Investment and Increase in stock Levels. This is explained by different factors including access to Credit/Loan from the KTDJLB and other sources as given by equation 1 above. In the equation, x_i is the vector of variables affecting SME's Performance as adopted from Rodolfo Hoffmann (2005).

From equation one and two as adopted from Rodolfo Hoffmann (2005), it will be assumed that u_i and ε_i have a bivariate normal distribution with zero (0) means, standard deviation σ_u and σ_ε

respectfully and correlation ρ, and that $y_i$and z_i can be observed for the given random sample of SMEs, and Y_i can only be detected when $y_i = 1$, that is to mean at that time when the SMEs have participated in the KTDJLB loan facility. From this narrative therefore equation 3 can be given as below as adopted from Blattberg (2008) and internet source www.aisberg.unibg.it

$$E(Y_i \backslash y_i = 1) = E(Y_i \backslash y_i^* = >0) = E(Y_i \backslash u_i > -\alpha' z_i) = \beta' x_i + E(\varepsilon_i \backslash u_i > -\alpha' z_i) = \beta' x_i + \rho\, \sigma_\varepsilon\, \lambda_i(\Upsilon_u) \ldots (3)$$

Where,

$$\lambda_i \, \square u = \frac{\emptyset \, \square u}{1-\Phi(\square u)} = \frac{\emptyset(-\square u)}{\Phi(-\square u)} = \frac{\emptyset(\alpha' z_i/\sigma_u)}{\Phi(\alpha' z_i/\sigma_u)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \textbf{(4)}$$

and ø and Φ are respectively, the normal density function and the normal distribution function according to internet source www.aisberg.unibg.it. The function in equation 4 above (λi (ϒu)) is the inverse of Mill's ratio according to Rodolfo Hoffmann (2005).

Due to the correlation between x_i and $\lambda_i(\Upsilon_u)$, a least squares regression of Y_i on x_i, omitting the term in $\lambda_i(\Upsilon_u)$, would produce an inconsistent estimator of β according to Rodolfo Hoffmann (2005). Assuming that the expected value of the error term is known, and then it is factored extra explanatory variable, for consistency

For this study it was theorized that there existed a relationship between SME Business Performance and various determinants. In the study, these determinants were grouped into four main categories which included;

1. Entrepreneurial factors,
2. Government regulations,

3. Institutional factors
4. Social demographic factors.

On the one hand, the Entrepreneurial related variables in this study included size of the SME, Sector of operation whether in Retail, wholesale or otherwise, and entrepreneurial orientation. Government regulations factors included licensing, tax matters and registration. Social demographic factors included age of the Entrepreneur, Gender, level of Education; Business related training, Experience in business and marital status. The institutional related variables included access roads, access to credit from JLB and other sources, location of business.

By letting the Performance of the Small and Micro Enterprises be proxied by sales, Profits, Returns on investment, Retained earnings and Stock levels and be explained by the above, the relationship function will be given as;

$SMEP_a = f (EnRV, GovRV, SDRV, IRV)$…….(5)

Whereby, $SMEP_a$ is SME performance in terms of increased sales, returns on investment, retained earnings, stock levels and Profits. EnRV is a representation of Entrepreneur related variables, GovRV is a representation of Government Regulations related variables, SDRV is a representation of Social Demographic related variables and IRV being a representation of institutional related variables.

A relationship of these variables is as shown in equation 6with the explanation of variables being in Table 4

$SMEP_a = \beta_0 + \beta_1 EnRV + \beta_2 GovRV + \beta_3 SDRV + \beta_4 IRV + \varepsilon_{.pa}$ .....(6)

EXPLANATION OF VARIABLES

Table 4: Specification of variables and their expected signs

Variables	Explanation	Expected Sign	Reason
Age	The age of the Entrepreneur or the business manager	+/-	Age determines if one could own a business and access credit (Nguyen 2003)
Gender	This is the sex of the entrepreneur- (dummy value '1' for male and '0' for female)	+	Men in Kenya own more properties and can access credit for business purposes and from formal setups than women (Tran 1998)
Edu	Level of education of entrepreneur ('1'=education, '0' = no education)	+/-	Level of education is vital for a arriving at decisions impacting on business. If no education, then there will be negative impact (Nguyen 2001)
Business Training-Formal	Business training-formal business training offered to the management of the SME)	+/-	Training equips the management with skills to run a business and therefore a positive effect on performance. If no business training then there will be a negative impact (Otieno et al 2011)
Business experience-Years	Experience in business of the entrepreneur	+	The period taken by an entrepreneur in business would indicate that the entrepreneur acquires on the job skills

			for effective management hence a positive relationship (Nguyen 2003)
Size-Firm	Size of Business in terms of employees	+	Employees form human capital necessary for business expansion
Biz	sector or the of business	-	This is assumed not to affect performance of the business but rather depends on the manager or the entrepreneurial skills in Business.
Strategic Location	Strategic location of enterprise-accessible, ideal location within reach of many clients, Distance to Kiambu, status of Roads (Dummy: 1' for Tarmacked roads, 0' for otherwise	+	Performance of a business depends on customer and supplier base thus a positive impact on performance.
Finance – KTDJLB	The Kiambu Trade Development Joint Board Loan offered in Ksh. ('1' = Access to JLB loan and '0' for otherwise)	+	the relationship should be positive according to Maulana and Rahmat (2006)
Finance-Others	Credit from other sources other than the JLBL-('1' for participation and '0' for non-participation on other sources of credit otherwise censored for non-participation	+/-	In this study it is assumed that credit from other sources is expensive and only a few can afford. This therefore means it can have negative effect for a small business and a positive effect for a bigger business.(Saito and Villanueva, 1981)
Collateral	Collateral requirement-dummy with '1' for Yes and '0' for No	+/-	Non usage of collateral encourage desire to access credit otherwise and collateral discourages with positive and negative impacts on performance (Otto, Muli and Ong'ayo 2010)

3.3 Population and Sampling Design

The study covered Kiambu County which is one of the 47 counties in Kenya in central Region. The main factor influencing the choice of this area was the fact that there are many business establishments and the growth of many micro-credit players, and again the fact that the author of this study is an employee of the government managing the operations of the said Board.

In terms of sampling, the study employed survey research design for businesses operating in Kiambu County as the population whereby an estimate of total number of businesses was drawn from the records of the county government from the sub-county level using the businesses which are registered for business permits which is a requirement to operate a business in the County.

The enterprises were randomly selected from 12sub-counties in the study area.

Table 5: Number of SMEs operating in Kiambu County as at December 2014

Sub-County	No. of SMEs.		Sub-County	No. of SMEs.
Kiambu	2,325		Juja	4,992
Kiambaa	1,906		Lari	2,240
Kikuyu	6,464		Thika	5,935
Kabete	1,705		Gatundu South	2,320
Gatundu North	857		Limuru	3,604
Ruiru	5,450		Githunguri	4,178
TOTAL				**41,976**

Source-Kiambu County Register of Traders registered for Single Business Permit 2014

3.4 Sample Size

for this study as adoption of the method by Cochran (1977) was used to arrive at the appropriate sample size in each sub-county of Kiambu County which is given here under

$$n = \frac{(Z^2 pq)}{e^2}$$

from this expression,

n denotes the Sample size

Z denotes the standard normal deviation at the given confidence and significance level; the value for this study is 1.96 for the 95% confidence interval or 5% level of significance

P denotes that proportion in the targeted population which is for purposes of this study estimated to possess the characteristics being analysed.

q is equivalent to 1 – p while on the other hand e = the desired level of precision given to be at 10%

For this study, p is determined as the proportion of SMEs in targeted for analysis. This was determined during the review of register of records and consultations with stakeholders.

$n = (1.96)^2 * 0.047 * 0.953 / (0.1)^2 = 17.108 * 12 = 205.30$

A total of 223 SMEs enterprises operating with Kiambu and its environs in various sectors were sampled out of the over 41,900 SMEs operating within the County as at December 2014, and a structured questionnaire administered to each firm as randomly selected and by trained enumerators.

3.5 Method for data collection

The primary data for this research was collected using semi-structured questionnaires which were administered to SMEs owners and operators randomly drawn from a list of all SMEs obtained from the Kiambu County offices.

The data type used was primary and quantitative and with complimenting data being secondary as sourced from the State department of Commerce Kiambu County, Statistical abstracts, Kenya economic surveys and questionnaires for the primary data. Questionnaires were designed in a manner to elicit adequate responses on business performance and access to credit (KTDJLB) other sources of credit and other factors that might influence business performance. Respondents included both SME operators participating in the Trade Loan Facility and the non-participants.

3.6 Data analysis methods

Data entry was done on Excel spread sheets while cleaning, coding, computation of descriptive statistics and data analysis were done on STATA version 12 (StatCorpLp, TX, USA with supporting software sourced from the internet through www.stata.com). The main descriptive analyses used were the frequencies; cross tabulations, and Chi-square tests. Before regression analysis, preliminary tests were done on the data and appropriate corrections employed to control for selection bias.

CHAPTER FOUR

EMPIRICAL RESULTS

4.1 INTRODUCTION

This is the chapter where all the outcomes of this research were presented. Firstly, descriptive statistics on the factors determining of access to credit by SMEs is presented and discussed with the Heckman probit with sample selection model estimation results being discussed in the latter part of the chapter.

4.2 THE DESCRIPTIVE ANALYSIS

4.2.1 Characteristics of the SMEs

The descriptive statistics presents a comparison of borrowers and non-borrowers SMEs operating within the County. Chi square tests in combination with the t-test and are employed to determine whether there are any significant differences between the borrowers and non borrowers. Table 6 present the overall distribution of the SMEs based on their participation in credit service. Out of the 223 enterprises only 46.12% had received credit from KTDJLB while 19.82% accessed credit from commercial/micro finance institutions and the rest accessing financing from informal institutions.

The results indicate that there are more male (54.71%) entrepreneurs participating in the operation of SMEs as compared to female entrepreneurs (45.29%), although there are no

significant differences in gender and age of the entrepreneurs. The overall mean age was 46.92 years, with the mean age of non-borrowers and borrowers being 45.43 and 48.65 years respectively.

Table 6: Selected SME Characteristics, by participation in KTDJLB Loan service

Entrepreneur and firm characteristics		Non Borrower (n=122)		Borrower (n=101)		Pooled (n=223)		T test
		Mean	Std. Err.	Mean	Std. Err.	Mean	Std. Err.	
Age of the entrepreneur		45.43	1.10	48.65	1.06	46.92	0.78	-2.09**
Gender of the entrepreneur	Male	0.53	0.05	0.57	0.05	0.55	0.03	0.472
	Female	0.47	0.05	0.43	0.05	0.45	0.03	0.472
Average education years		2.33	0.10	2.89	0.11	2.59	0.08	-3.72***
Marital status		0.65	0.04	0.75	0.04	0.70	0.03	-1.61
Having a business permit		0.99	0.01	1.00	0.00	1.00	0.00	-0.92
No. of employees		2.20	0.20	3.03	0.25	2.59	0.16	-2.591***
Business registered with KRA		0.45	0.05	0.54	0.05	0.49	0.03	-1.407

Note: *, **, ***indicates significance levels at 10%, 5% and 1%, respectively

Figure 2 shows that majority of the entrepreneurs (27%) were aged between 56 and 65 years. Followed by those aged 36 and 45 years(25%) while those aged 66 years and above and from 18 years to 25 were presented by (3%) and (0.9 %) respectively.

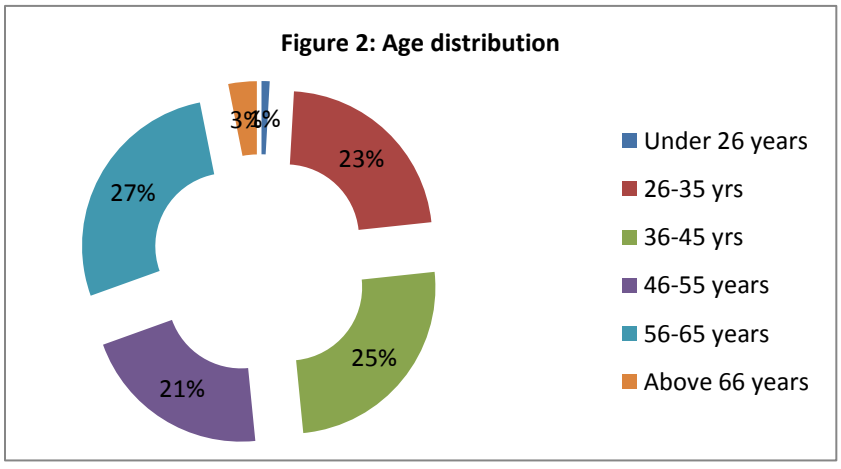

Figure 2: Distribution by age categories

4.2.2 Distribution of the SMEs

With regard to the distribution of SMEs (see Finger 3) based on their sectors of operation, majority (48.43%) of the enterprises were operating in the retail sector and (34.98%) engaged in other small business such as restaurants, agriculture food supply and various informal sectors.

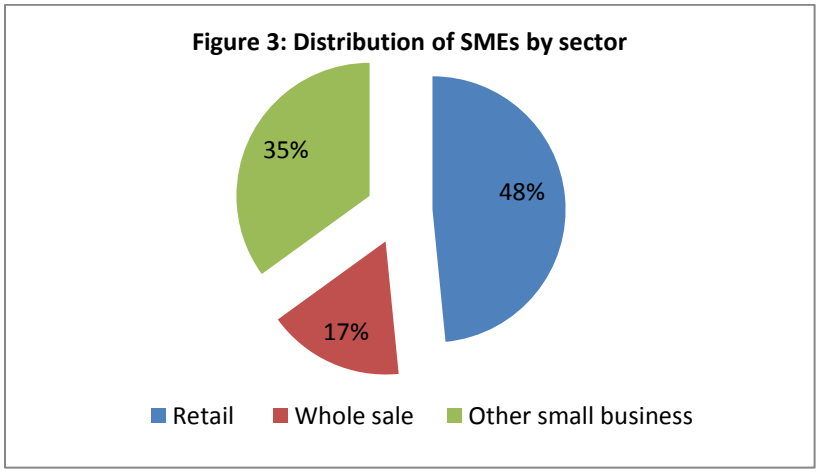

Figure 3: Distribution of SMEs

According to Figure 4 majority of the women were engaged in the retail sector 63% while as majority of the men were engaged in the other informal businesses given by 42%.

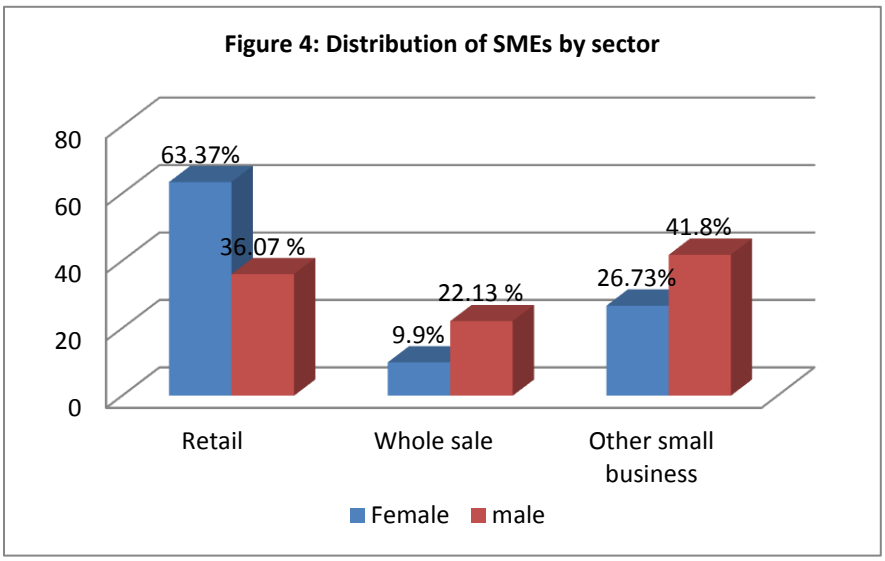

Figure 4: Distribution of SMEs by Gender

4.2.3 Demand for Credit

The study findings reveal that all the loans issued to SMEs from formal lending institution, were pegged on collaterals such as physical assets such as land tittles (55.24%), property/other share titles (9.96%) and vehicle logbook (1%).

Although the assets of both the categories of respondents increased over time, the result (Figure 5) show that value of assets owned is significantly higher among SMEs benefiting from KTDJLB loan facility, and was significantly lower among non-borrowers. Further it was found out that there existed no serious difference between the initial value of business assets between borrowers and non-borrower enterprises. The above analysis shows that the loan facility could have played a role in increasing the value of assets.

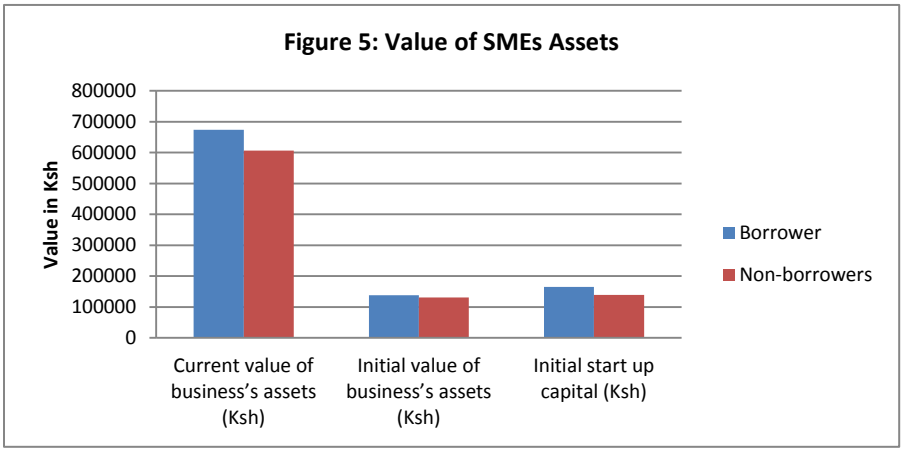

Figure 5: Value of Business assets

A one-way ANOVA was conducted to determine if significant difference in receipt of credit from KTDJLB among the retail, whole sale and other small business (Table 7). The mean of the dependent variable (ever received a loan) differs significantly (F (2.77), p = 0.065) among the

three sectors of operation. A pair-wise comparison of means, to determine which sector differed from each other as presented showed that there was a probable significant difference (p = 0.059) between the whole sale and other informal sectors. However, the difference was insignificant between the whole sale and retail sector and the retail and other small businesses which was consistent with findings on the same as captured in the International Journal of productivity and performance management (2012).

Table 7: Analysis of Variance SMEs credit sources

	SS	Df	Prob> F
Between groups	1.36	2	0.065
Within groups	53.06	221	
Total	54.42	223	

The study findings further reveal that majorities (66.21%) of the respondents were aware of the KTDJLB loan facility and that 69.66% had received credit, while 30.34% of those aware of the KTDJLB had not received financing.

Respondents were asked what motivated them to apply for credit through KTDJLB Figure 6.

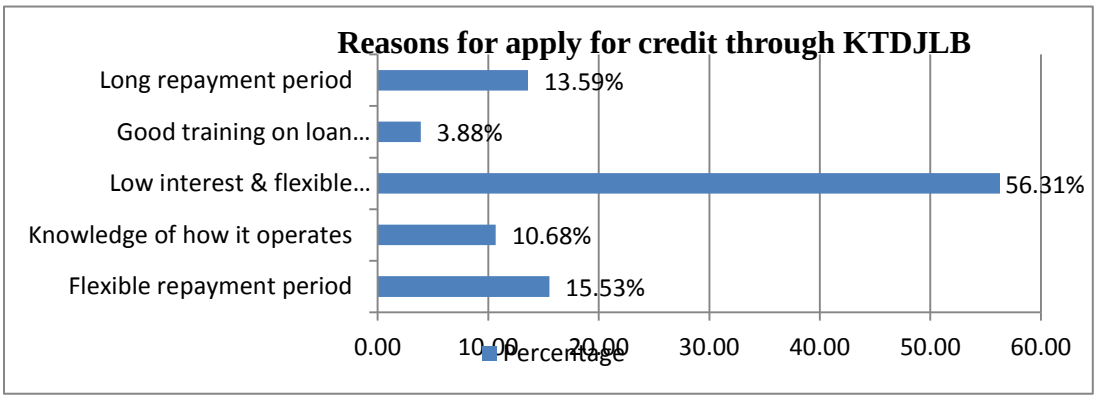

Figure 6 Loan Motivation

The combined low interest rates and flexible repayment terms (56.31%) were reported as being very important factors influencing loan application. The associated cost aspect are therefore of importance to SMEs operating in Kiambu. A sizeable number (15.5%) of the respondents indicated that they were motivated to apply for Trade Loans due to flexibility of repayment period, and also the long repayment period giving them ample time to repay as was indicated by 13.6% of the respondents. Others (10.7%) were motivated to apply for the loan due to knowledge of how the loan facility operates meaning they understood all the requirements for accessing the loans.

The respondents were further asked about some of the measures that should be taken to enhance access to credit. The study revealed that, 23.29% (Figure 7) of the respondents suggested the need to increase the loan amount, processing period (22.60%) and awareness of the loan facility (22.60%) in order to improve its performance. Additionally, 6.2% of the respondents believed that it was important to reduce interest rates and others (4.1%) thought that there was need to relax the need for a title deed as collateral for granting of the loans.

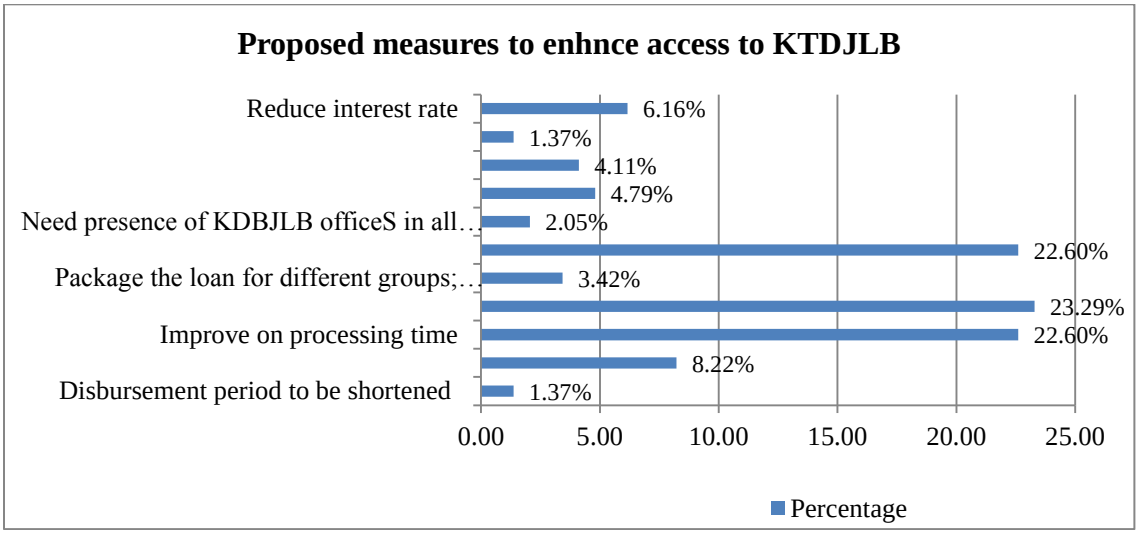

Figure 7 Proposed Measures to Improve KTDJLB Performance

4.3 ESTIMATION RESULTS

Diagnostic tests were undertaken to check the suitability of the Heckman Probit model. There is no specification error (_hatsq = 0.249) is insignificant and with a 73.49%, the classification tests indicates that the variables are correctly classified and fit the model perfectly. Multi-collinearity was checked using Variance Inflation Factor (VIF) and condition index (CI) to exclude highly correlated explanatory variables as studied by Cechin and Andrei et al (2013). Some explanatory variables like collateral requirement were omitted from the model as they were highly correlated to other variables used in the regression. The mean VIF was 1.40 indicating there is no serious multi-collinearity problem (Gujarati, 2003).

The analysis reveals that the model does not suffer from omitted variable bias, serial correlation and multi-collinearity problems which are consistent with the International Political science review (2011) on institutions and growth volatility from a theory and evidence perspective. There is a normal distribution of residuals and the *rho* of the Heckman probit model statistically significantly differs from zero for the three outcome variables; increase in stock levels (Wald X^2 = 19.09, with P= 0.0590); increase in return on investments (Wald X^2 = 40.58, with P= 0.0000), and increase in retained earnings (Wald X^2 = 20.18, with P= 0.0429), however it is insignificant for the other outcome variables indicating a strong explanatory power of the model.

4.3.1 PROBABILITY OF PARTICIPATION IN KTDJLB LOAN SERVICE

Table 8 is a presentation of the outcome from the Heckman Probit Model analysis estimating the determinants of motivation necessitating the application to for a loan. From the results, it can be

seen that owner characteristic of and the natures of the SMEs are significant determinants of demand for loan. The variables are education, entrepreneur's financial training, and years of experience, road infrastructure and nature of business.

Table 8: Probit regression analysis of SMEs access to KTDJLB Loans

Explanatory Variable	Coefficient	Std. Error	Z	P>|z|
Gender	0.224	0.215	1.05	0.293
Age	0.008	0.011	0.76	0.446
Years spent in school	0.270	0.095	2.86	0.004
Received financial training (dummy:1" yes "0" if not)	1.014	0.231	4.38	0.000
Business experience (years)	0.065	0.019	3.50	0.000
Distance to Kiambu (Kms)	-0.006	0.006	-1.01	0.313
State of access roads (dummy:1tarmacked roads, 0=otherwise)	0.645	0.311	2.08	0.038
Wholesale service sector	-1.023	0.320	-3.19	0.001
Retail service sector	-0.082	0.241	-0.34	0.732
Size of firm (No. of employees >2<5)	0.223	0.220	1.01	0.311
Registration of business with KRA	-0.089	0.229	-0.39	0.697
Constant	-3.078	0.707	-4.35	0.000

From table 8 above, it can be deduced that Entrepreneurs with a high level of education given by the period spend in schooling were more likely to access a Loan from the Kiambu Trade Development Joint Loan Board and therefore high education was a statistical and significant determinant of increasing the probability of accessing loans from KTDJLB(0.270, P =0.004).

Additionally, the results show that entrepreneurs who had received Financial training and had more years of Business Experience had a higher probability (P = 0.000 for both) of applying a loan and/or getting a loan from the KTDJLB. the findings are consistent with results of other studies by Dobbs and Hamilton (2007) and Mwania (2011) who argued that entrepreneurs who have stayed long in business are better placed to increase their sales revenue due to their experience and their connections to more clients. The same entrepreneurs also are the ones who require more credit for expansion.

On the other hand the status of access roads was key in determining the need to seek loans of KTDJLB. From Table 8, it can be interpreted that entrepreneurs who had access to Tarmacked roads had a higher probability (p=0.038) of accessing loans from KTDJLB. This can be explained by the fact that inadequacy of physical infrastructure such as roads, electricity and utilities are an impediment to growth and development of SMEs. The estimates of the coefficient for access to Tarmacked roads (0.645, p = 0.038) were statistically significant at 5% level of significance. This could be explained by the fact that inaccessibility to essential services hampers growth and development. It may also result to increased costs and lower the competitiveness of SMEs. These findings are confirm the finding by Yildirim et al (2013)who believed that infrastructure plays an important role in increasing productivity activities.

4.3.2 EFFECTS OF KTDJLB LOANS ON SMALL AND MICRO ENTERPRISES

Table 9 provides the second stage regression estimates from Heckman Probit model analysis (Eq. (6). The estimates provided relate SME in participation in KTDJLB outcomes. The results are provided for the five outcome categories Equation (5): Sales, Profits, Stock levels, Earnings and Return on Investments.

Return on Investments.

Overall, the results show that The Heckman Probit model *rho* are statistically significant on outcome on stock levels (P= 0.006), retained earnings (P= 0.009) and return on investments (P= 0.071). On the other hand, the Heckman Probit model *rho* are not statistically significant on outcome on sales (*P*= 0.9508) and profits (*P*= 0.9528).

Increased profits

The results (Table 9) indicate that the higher the Loan amount from KTDJLB, the more likely it is for Enterprises to experience Increased Profits (p=0.022) as compared to loans from other sources which did not have a likelihood of Increasing Profits of the Enterprises (0.293). From the table also, it was also found out that the highly educated the Enterprise owner, the more likely it was for the enterprise to experience increased profits (p=0.080). SMEs size (employees between 2 and 5) had a positive and significant (4.387, p=0.040) possibility of influencing an increase in profits of SMEs in Kiambu County. Business experience in years of the Enterprise owner, Distance to Kiambu County and being in the Retail Sector all had a positive and significant (p=0.018, p=0.092 and p=0.017 respectfully) possibility of influencing performance in terms of increased profits. Being in the wholesale sector had a negative and significant (p=0.026).

Increased Stock levels

From table 9, the Loan amounts Coefficients had a positive and significant probability (p=0.063) of increasing Stock levels. Additionally, the results indicate that more years of Business Experience by the Enterprise owner had statistical and significant (10 percent significance level) possibility of increasing Stock levels(p= 0.078. Also, operating in the wholesale sector had negative and significant (p=0.008) possibility of impacting on stock levels (P = 0.032) but had no impact on the rest of the performance indicators.

All the other exogenous variables did not have a significant probability of increasing stock levels.

Increase in return on Investments

As it can be got from Table 9, the Loan Amounts Coefficient had a positive and significant likelihood (p=0.007) of positively impacting on return on Investments. This was also true for those enterprises that accessed credit from other sources (p=0.075). It was also noted that gender had a positive and significant possibility of increasing return on investments but had no influence on all the other performance indicators. Therefore, female entrepreneurs' access to finance through the KTDJLB is essential for improving SMEs Return on Investments. The findings are in line with other studies (Stupnytska*et.al*, 2014; Ernst&Young 2012; Heilbrunn 2004) that argue that women entrepreneurs in all sectors have greater potential to expand their businesses. This differs with other studies (Fafchamps & Gabre-Madhin 2001) who concluded that men's enterprises perform better and grow faster. The coefficient for SMEs with less than 5 employees were negatively and statistically significant possibility in determining effect of KTDJLB loans on the return on investment (P = 0.092). The findings are in line with results of other studies (Dinh*et.al.*, 2010; IFC 2010; World Bank 2008) which report that lack of financing limits growth of small and medium enterprises to their full potential.

Increase in sales

From table 9, it was found out that the coefficients for both Loans from KTDJLB and other sources did not statistically and significantly have the likelihood of influencing Enterprise performance in terms of increased Sales. Both accesses to loans from other Sources and Loans amounts from the KTDJLB did not have a probability of increasing sales of enterprises. Only distance to Kiambu had a positive and significant (p=0.011) probability of increasing sales. This

could be interpreted to mean the further an SME it was from Kiambu the likely it was to be stocking more and therefore increased sales.

Increase in Retained Earnings

From table 9, the coefficient for SMEs with less than 5 employees had a negative and statistically significant possibility of increasing Retained Earnings (P = 0.015). Additionally, business experience coefficient of enterprise managers were positive and significant (p=0.037) in determining the likelihood of increasing retained earnings while being in the wholesale business negatively and significantly (p=0.008) influenced the possibility of increased retained Earnings.

The effects of the KTDJLB are as shown in Table 9 in the next page.

Table 9 Effect of KTDJLB Loans on Sales, Profits, Stock levels, Earnings and Investments

Outcome Variables	(=1 increased in sales, otherwise zero)			(= 1 increased in profits, otherwise zero)			(=1 increased in stock levels, otherwise zero)			(= 1 increased in retained earnings, otherwise zero)			(= 1 increased in return on investments, otherwise zero)		
Explanatory Variable	Coefficient	Std. Error	P>|z|	Coefficient	Std. Error	P>|z|	Coefficient	Std. Error	P>|z|	Coefficient	Std. Error	P>|z|	Coefficient	Std. Error	P>|z|
Loan amount received (Ksh)	1.04e-06	6.e-06	0.868	0.0001	0.00	0.022	9.2e-06	4.9.e-06	0.063	8.15e-06	5.2.e-06	0.119	8.5e-06	3.14e-06	0.007
Access credit from other sources	0.375	0.391	0.338	1.022	0.972	0.293	0.146	0.293	0.617	-0.385	0.335	0.250	0.293	0.165	0.075
Age of MSME owner	-0.017	0.019	0.369	-0.017	0.026	0.520	0.021	0.013	0.102	-0.003	0.014	0.820	-0.003	0.014	0.835
Gender (1 male , 0female)	-0.214	0.421	0.611	-0.017	0.027	0.520	0.052	0.318	0.870	0.373	0.363	0.304	0.882	0.298	0.003
Education (years)	0.089	0.327	0.785	-0.867	0.496	0.080	0.068	0.147	0.645	-0.005	0.150	0.975	-0.292	0.114	0.010
Size of firm (No. of employees >2<5)	-0.208	0.439	0.635	4.387	2.139	0.040	0.207	0.316	0.512	-0.900	0.370	0.015	-0.415	0.246	0.092
Business experience (years)	0.038	0.048	0.427	0.659	0.279	0.018	0.038	0.021	0.078	0.051	0.024	0.037	0.006	0.023	0.767
Distance to Kiambu (Kms)	0.026	0.010	0.011	0.049	0.029	0.092	-0.002	0.007	0.794	0.001	0.007	0.213	0.019	0.008	0.032
Retail service sector	0.582	0.389	0.134	4.270	1.789	0.017	-0.191	0.307	0.534	-0.407	0.348	0.242	0.410	0.306	0.181
Wholesale service sector	-0.192	0.867	0.824	-12.187	5.458	0.026	-1.069	0.404	0.008	-1.062	0.495	0.032	-0.075	0.437	0.864
State of access roads (dummy: (dummy:1tarmacked roads, 0=otherwise)	0.305	0.970	0.753	2.799	2.540	0.270	0.211	0.505	0.676	-0.101	0.556	0.856	-0.109	0.382	0.776
Constant	-0.878	3.565	0.806	-20.7	10.5	0.042	-2.872	1.305	0.028	-1.34	1.272	0.290	0.074	0.940	0.937
Summary statistics	rho 0.068	1.117		rho -0.052		0.880	rho1.0	2.e-06		rho1.0	3.e-08		rho -11.64	0.816	
LR test of indep. P >chi2	0.9508			0.9528				0.0061			0.0093			0.0711	

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATIONS

5.1 SUMMARY AND CONCLUSION

The major objective of my study was to determine the effects of the Kiambu Trade Development Joint Loan Board Loans on Small and Micro Enterprises' performance in Kiambu County. The research questions answered by the study are as follows; what is the level of SME's awareness of the availability of loans from the KTDJLB? Does the KTDJLB Loans influence SMEs performance in terms of Sales, profits, returns on investment, retained earnings and stock levels? What motivates Businesses in Kiambu County to access the KTDJLB Loans? What are the factors that determine access of Loans from KTDJLB?

The Heckman Probit Model was used for the analysis. Emanating from these results is a number of conclusions that have implications for future micro-credit initiatives; research, development and policy were made.

The characteristics of owner and nature of the SMEs influence participation in the KTDJLB loan facility. Entrepreneurs with a high level of education and especially with training in record keeping and financial management significantly influenced the likelihood of application of credit from the Kiambu Trade Development Joint Loan Board with coefficient signs consistent with expectations. This positive relationship could be attributed to the owners gained education and

skills to provide the requisite information required by the lender to evaluate their credit worthiness.

Additionally, the results showed that entrepreneurs who had more years of Business Experience had a higher probability of applying a loan and/or getting a loan from the KTDJLB. The results also showed the status of infrastructure and in particular status of access roads was key in influencing the possibility of seeking loans of KTDJLB. SMEs which had access to Tarmacked roads had a higher probability of accessing loans from KTDJLB. This could be explained by the fact that inadequacy of physical infrastructure such as roads, electricity and utilities are an impediment to growth and development of SMEs. Also this could be explained by the fact that inaccessibility to essential services hampers growth and development and may also result to increased costs and lower the competitiveness of SMEs.

From the study it was found out that the sign of *rho* and the likelihood function of the Heckman probit model indicated strong presence of sample selection bias significantly showing strong explanatory power of the model. Results were provided for the five outcome categories: sales, profits, stock levels, earnings and investments.

Among all the exogenous variables considered, amount of loan received from KTDJLB, Business Experience of Enterprise owner in years of and business sector (wholesale in this case) had a statistically significant effect on the performance of SMEs through enhanced stock levels.

SME's size, years of Business Experience of Enterprise owner and sector of operation (whole sale in this case) significantly influenced the level of Retained Earnings. While, amount of loan received from KTDJLB, receipt of financing from other sources, gender, education level, size of the Enterprise and Distance to Kiambu County Headquarters had a significant effect on return on investments.

From the Study, it was found out that Female gender of the SMEs owner there was indeed a positive and significant relationship between female gender and firm's Return on Investments. This implied that female entrepreneurs' access to finance through the KTDJLB improved their SMEs competitiveness and enhanced access to other productive resources and resulting in expansion.

With regard to effect of firm size, the results show that there was a negatively and significant effect of the loan on enterprises operating with less than five employees. This implies that some SMEs experienced a boost both in employment and overhead costs after obtaining the KTDJLB loan.

SMEs business sector (Retail for this case) positively and significantly had an effect on SMEs profitability but had no significant effect on stock levels, level of retained earnings and return on investments. SMEs operating as wholesales had negative and significant influence on level of Profits, Retained Earnings and Stock levels but had no significant effect on other performance indicators.

An interesting result of this the study was that the number of years of Business Experience of the Enterprise owner positively and significantly influenced on Profits, Stock levels and level of Retained Earnings. All variables except distance to Kiambu County Headquarters had no significant influence on level of sales meaning that there could be other key factors influencing on sales which need to be studied.

In summary it can be concluded that the results show that we fail to Reject the Null Hypothesis of this research on Stock levels, Profits, Return on investments and Reject it on Retained Earnings and Sales. Access to Kiambu Trade Loans thus significantly influences performance of SMEs in Kiambu County by considering Stock, retained earnings and Return on Investments

5.2 POLICY RECOMMENDATIONS

Based on the findings in the previous chapter and consequent conclusion presented above, the study makes a number of recommendations.

1. The KTDJLB fills a gap left by formal lending institutions as it provides a forum for access to credit to various SMEs. The results showed the importance of Training in book keeping and records management, Experience and Financial management in increasing the likelihood of accessing loans and positively influencing performance. There is therefore a need for policy aimed at providing various supplementary services which enable the beneficiaries to improve on their Financial and Managerial skills and hence to impact on performance.

2. The county government can tap into areas aimed at promoting SMEs through training and skill acquisition that will enable them better qualify for financing thereby improving their growth and productivity and in the long run become a source of revenue for county and other counties in terms of Business permits.
3. It is recommended that the Kiambu County Government should uphold and increase KTDJLB fund as it has had positive effect in the performance of business entities within the County. Such an endeavour would help the County through creating employment as well as providing source of County funds.
4. The County Government of Kiambu should increase the maximum amount of loan that KTDJLB disburses to business entities to increase its impact on businesses.
5. The study also recommends that the County should establish KTDJLB in remote areas of the County as distance to Kiambu negated access to the Fund.
6. The results of the study reveal that the KTDJLB program as a financial services innovation for SMEs in need of financial services influences women enterprise performance in particular. Hence the program occupies a central position in the endeavour to improve the welfare of women in the County. The study provides empirically sound support for targeted interventions in favour of women owned SMEs, resulting in their economic empowerment.
7. Further, KTDJLB management should increase awareness of the Fund as majority of the business owners were not aware of the existence.

5.3 FURTHER AREAS OF STUDY

The study suggests the following as areas of interest for further studies;

1. Studies should be carried out on the affordability and sustainability of the KTDJLB scheme and other JLB schemes in Kenya.
2. Replication of this study in other contexts would strengthen the findings on how Government's Micro credit funds affect the performance of SMEs. This is premised on the fact that business performance could be influenced by contextual factors which might differ from one county to the next.
3. Further, studies can be done on the performance of the Loans offered by the Kiambu Trade Development Joint Loan Board as this was not covered in this study.
4. Studies can also be done on factors impacting on SMEs sales

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APPENDIX

Study questionnaire

QSNR NO KTDJLB……

MSME QUESTIONNAIRE

THE EFFECTS OF THE KIAMBU TRADE DEVELOPMENT JOINT LOAN BOARD LOANS ON MICRO, SMALL AND MEDIUM ENTERPRISES PERFORMANCE IN KIAMBU COUNTY

This Questionnaire is administered by and/or on behalf of Mr. Julius Mumo Mwololo, an M.A Economics student of the University of Nairobi, with a view to ascertaining the Effects of Microcredit Financing on Small and Micro Enterprises in Kiambu County to help to inform the business fraternity and future researchers in this area on existing gaps and ways to bridge the gaps (if any) in the area of SME financing. Further the final research recommendations of the report to be generated will be used for policy formulations and implementations.

Therefore, the information provided in this form will be treated with utmost confidentiality and solely for purposes of this research.

SECTION 1 PERSONAL DETAILS OF ENTERPRENEUR

Cell phone Number of Entrepreneur/Business manager ……

Gender of entrepreneur/Manager : (*Tick appropriately)*

Male ( ) ii) Female ( )

Age (in years) of Entrepreneur/Manager (optional)……

Marital Status I Married ( ) ii Not Married ( )	Postal Address……
Physical address:	City/Town……

Level of education of Entrepreneur/Manager……..

Have you received any formal Business Training?

Yes ( ) ii) No ( )

If Yes, Please specify The Type of Training and the Period of the Training. ……..

SECTION 2. ENTERPRISE RELATED DETAILS

What is the name of your Business……

Kind of business, (*Tick appropriately)*

1) Whole sale ( )

2) Retail ( )

3) Any other (specify) ……..

Location of business ……

Is your business registered for purposes of KRA?

yes ( )

No ( )

Does your Business have a Business permit?

Yes ( )

No ( )

For how long have you been operating this Business as the owner/manager?

……

How many Employees do you have in your Business?

……
……

SECTION 3: GEOGRAPHIC RELATED DETAILS

What is the Distance between Your Business Location and Kiambu Town in kilometres? ……

What is the state of the access roads to your Business?

Tarmacked ( )

Murramed ( )

Other please specify……..

SECTION 4.CREDIT RELATED DETAILS

How much was your initial start-up capital? Kshs……

What is your current value of business assets? Kshs…….
What was your initial value of Business Assets? Ksh…….....
What was the Source of Finance for your Business? Loan ( ) Own savings ( ) Others please specify ( )
If you financed your Business by a loan, Please indicate the source Government Micro-credit scheme ( ) Bank ( ) Other ( ) please specify……..
If from a Government Micro-credit Scheme, please indicate which one…….
Are you aware of the existence of Kiambu Trade Development Joint Loans Board Loans? Yes ( ) No ( )
If yes, how did you come to know about it? From a Friend ( ) Through Public Barazas ( ) From the Internet ( ) Other ( ) please specify…….
Have you ever financed your Business through the KTDJLB? i) Yes ( ) ii) No ( ) If Yes please indicate the amount of loan given in Ksh……

Please state what motivated you to prefer getting a loan from the Kiambu Trade Loan……
……
……

What is your opinion on the relevance of the Trade loan on businesses performance in Kiambu County?.....……

Which areas on the operations of the Kiambu Trade Development Joint Loan Board loans do you think needs improvement?.....

……...
.....

Did you Finance Your Business by Funding from Other Sources? I Yes ( ) ii No ( )

If Yes please state the source of Funding……

Please state what motivated you to access credit from other sources other than the Kiambu Trade Development Joint Loans Board Loan scheme…….....

Was there any Formal Requirement for Collateral to get the loan from KTDJLB or any other Loan? I Yes ( ) ii No ( )

If yes please state the requirement……

Has access to credit improved your Business in any way? I Yes ( ) ii No ( )

If Yes, was is an increase in;

( ) Increase in sales

( ) Increase in Profits

( ) Increase in retained Earnings

( ) Increase in Stock levels

( ) Increase in Returns on Investment

Date of interview.....

STATA OUTPUT

HECKMAN PROBIT MODEL WITH SAMPLE SELECTION

Increase in sales

```
. heckprob increaseinsales d27a_loan_given_ksh d31t_other_financesources q2_hhgender q3_age
edu_new   size_firm2 b15_yearsofbusinessexperience c17_distance_Kiambu retail_biz wholesale_biz
c18_access_roads_state2,      select(            d27t_finance_of_KTDJLB=q2_hhgender      q3_age
q9_t_formalbusinesstraining       b15_yearsofbusinessexperience    edu_new    c17_distance_Kiambu
c18_access_roads_state2   wholesale_biz  retail_biz     size_firm2  b13_t_businessregistered_KRA)
nolog

Probit model with sample selection              Number of obs      =       211
                                                Censored obs       =       114
                                                Uncensored obs     =        97

                                                Wald chi2(11)      =     11.69
Log likelihood = -156.9532                      Prob > chi2        =    0.3876

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
increaseinsales              |
          d27a_loan_given_ksh |   1.04e-06   6.30e-06     0.17   0.868    -.0000113    .0000134
    d31t_other_financesources |   .3748144   .3912628     0.96   0.338    -.3920466    1.141675
                 q2_hhgender |  -.2138615   .4206392    -0.51   0.611    -1.038299    .6105763
                      q3_age |   -.016848   .0187399    -0.90   0.369    -.0535775    .0198816
                     edu_new |   .0892087   .3272478     0.27   0.785    -.5521853    .7306027
                  size_firm2 |  -.2080169   .4388018    -0.47   0.635    -1.068053    .6520189
b15_yearsofbusinessexperience |    .037895   .0476694     0.79   0.427    -.0555353    .1313252
          c17_distance_Kiambu |   .0263075   .0102959     2.56   0.011     .0061279     .046487
                   retail_biz |   .5820065   .3887843     1.50   0.134    -.1799968     1.34401
                wholesale_biz |   -.192328   .8667113    -0.22   0.824    -1.891051    1.506395
      c18_access_roads_state2 |   .3050291     .96965     0.31   0.753     -1.59545    2.205508
                        _cons |  -.8767314    3.56546    -0.25   0.806    -7.864904    6.111442
-----------------------------+------------------------------------------------------------------
d27t_finance_of_KTDJLB       |
                 q2_hhgender |    .082843    .223075     0.37   0.710    -.3543758    .5200619
                      q3_age |   .0079704    .011523     0.69   0.489    -.0146142     .030555
  q9_t_formalbusinesstraining |   1.215096   .2493581     4.87   0.000      .726363    1.703829
b15_yearsofbusinessexperience |   .0674294   .0195254     3.45   0.001     .0291604    .1056985
                     edu_new |   .2873215   .0966999     2.97   0.003     .0977932    .4768498
          c17_distance_Kiambu |  -.0044994   .0066374    -0.68   0.498    -.0175085    .0085097
      c18_access_roads_state2 |   .5234127   .3188502     1.64   0.101    -.1015222    1.148347
                wholesale_biz |  -1.013481      .3317    -3.06   0.002    -1.663601   -.3633614
                   retail_biz |   -.233327   .2537492    -0.92   0.358    -.7306664    .2640123
                   size_firm2 |    .086243   .2312014     0.37   0.709    -.3669034    .5393893
 b13_t_businessregistered_KRA |  -.0428345   .2680279    -0.16   0.873    -.5681595    .4824905
                        _cons |  -3.085216   .7232582    -4.27   0.000    -4.502776   -1.667656
-----------------------------+------------------------------------------------------------------
                      /athrho |   .0683908   1.122048     0.06   0.951    -2.130782    2.267564
-----------------------------+------------------------------------------------------------------
                          rho |   .0682844   1.116816                     -.9721917    .9787766
------------------------------------------------------------------------------
LR test of indep. eqns. (rho = 0):   chi2(1) =     0.00   Prob > chi2 = 0.9508
```

Increase in profits

```
. heckprob increaseinprofits_oct d27a_loan_given_ksh d31t_other_financesources q2_hhgender q3_age
edu_new   size_firm2  b15_yearsofbusinessexperience  c17_distance_Kiambu  retail_biz  wholesale_biz
c18_access_roads_state2,       select(             d27t_finance_of_KTDJLB=q2_hhgender       q3_age
q9_t_formalbusinesstraining        b15_yearsofbusinessexperience    edu_new    c17_distance_Kiambu
c18_access_roads_state2  wholesale_biz retail_biz  size_firm2 b13_t_businessregistered_KRA) nolog

Probit model with sample selection              Number of obs      =       211
                                                Censored obs       =       114
                                                Uncensored obs     =        97

                                                Wald chi2(11)      =      9.93
Log likelihood =  -121.737                      Prob > chi2        =    0.5371

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
increaseinprofits_oct        |
          d27a_loan_given_ksh |   .0001098    .000048     2.29   0.022     .0000158    .0002038
    d31t_other_financesources |   1.021869   .9724473     1.05   0.293    -.8840924    2.927831
                 q2_hhgender |   4.645737   2.090458     2.22   0.026     .5485148    8.742959
                      q3_age |  -.0171457   .0266362    -0.64   0.520    -.0693516    .0350602
                     edu_new |  -.8671085   .4960362    -1.75   0.080    -1.839322    .1051047
                  size_firm2 |   4.387231   2.139467     2.05   0.040     .1939522     8.58051
b15_yearsofbusinessexperience |   .6594137   .2787909     2.37   0.018     .1129935    1.205834
          c17_distance_Kiambu |    .049273   .0292816     1.68   0.092    -.0081179    .1066639
                   retail_biz |   4.270235   1.789209     2.39   0.017     .7634496     7.77702
                wholesale_biz |  -12.18725   5.458015    -2.23   0.026    -22.88476   -1.489733
      c18_access_roads_state2 |   2.798985   2.539688     1.10   0.270    -2.178712    7.776682
                        _cons |  -20.67983     10.147    -2.04   0.042    -40.56758    -.792084
-----------------------------+------------------------------------------------------------------
d27t_finance_of_KTDJLB       |
                 q2_hhgender |   .0816115   .2234437     0.37   0.715    -.3563301    .5195531
                      q3_age |   .0079192   .0113979     0.69   0.487    -.0144203    .0302587
  q9_t_formalbusinesstraining |   1.213125    .248164     4.89   0.000      .726733    1.699518
b15_yearsofbusinessexperience |   .0675638   .0191651     3.53   0.000     .0300009    .1051267
                     edu_new |   .2876929    .096623     2.98   0.003     .0983153    .4770704
          c17_distance_Kiambu |  -.0044287   .0065401    -0.68   0.498    -.0172469    .0083896
      c18_access_roads_state2 |   .5224878   .3182063     1.64   0.101    -.1011852    1.146161
                wholesale_biz |  -1.018831    .321732    -3.17   0.002    -1.649414   -.3882479
                   retail_biz |   -.230411   .2499889    -0.92   0.357    -.7203802    .2595581
                   size_firm2 |   .0891446   .2291075     0.39   0.697    -.3598977     .538187
 b13_t_businessregistered_KRA |   -.034325   .2346169    -0.15   0.884    -.4941658    .4255157
                        _cons |  -3.091153   .7231712    -4.27   0.000    -4.508542   -1.673763
-----------------------------+------------------------------------------------------------------
                      /athrho |  -.0522152   .8820941    -0.06   0.953    -1.781088    1.676658
-----------------------------+------------------------------------------------------------------
                          rho |  -.0521678   .8796935                      -.944812    .9324264
------------------------------------------------------------------------------
LR test of indep. eqns. (rho = 0):   chi2(1) =     0.00   Prob > chi2 = 0.9528
```

Increase in stock levels

```
. heckprob increaseinstocklevels_oct d27a_loan_given_ksh d31t_other_financesources q2_hhgender
q3_age edu_new size_firm2 b15_yearsofbusinessexperience c17_distance_Kiambu retail_biz
wholesale_biz c18_access_roads_state2, select( d27t_finance_of_KTDJLB=q2_hhgender q3_age
q9_t_formalbusinesstraining b15_yearsofbusinessexperience edu_new c17_distance_Kiambu
c18_access_roads_state2 wholesale_biz retail_biz size_firm2 b13_t_businessregistered_KRA) nolog

Probit model with sample selection              Number of obs      =       211
                                                Censored obs       =       114
                                                Uncensored obs     =        97

                                                Wald chi2(11)      =     19.09
Log likelihood = -154.0274                      Prob > chi2        =    0.0594

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
increaseinstocklevels_oct    |
         d27a_loan_given_ksh |   9.17e-06   4.94e-06     1.86   0.063    -5.08e-07    .0000188
    d31t_other_financesources |   .1461988   .2927053     0.50   0.617    -.4274931    .7198907
                 q2_hhgender |   .0522401   .3181224     0.16   0.870    -.5712684    .6757487
                      q3_age |   .0212073    .012963     1.64   0.102    -.0041997    .0466143
                     edu_new |   .0677528   .1472041     0.46   0.645    -.2207619    .3562676
                  size_firm2 |   .2073043   .3161752     0.66   0.512    -.4123877    .8269963
b15_yearsofbusinessexperience |   .0376413   .0213254     1.77   0.078    -.0041558    .0794383
          c17_distance_Kiambu |  -.0018437    .007071    -0.26   0.794    -.0157026    .0120152
                   retail_biz |  -.1907691   .3065321    -0.62   0.534    -.7915609    .4100227
                wholesale_biz |   -1.06856   .4036963    -2.65   0.008     -1.85979   -.2773296
      c18_access_roads_state2 |   .2113695    .505176     0.42   0.676    -.7787573    1.201496
                        _cons |  -2.871694   1.305096    -2.20   0.028    -5.429635   -.3137535
-----------------------------+------------------------------------------------------------------
d27t_finance_of_KTDJLB       |
                 q2_hhgender |   .1001049   .2213257     0.45   0.651    -.3336856    .5338953
                      q3_age |   .0091038   .0108734     0.84   0.402    -.0122077    .0304153
  q9_t_formalbusinesstraining |   1.250919   .2399596     5.21   0.000     .7806065    1.721231
b15_yearsofbusinessexperience |   .0602996   .0176554     3.42   0.001     .0256957    .0949036
                     edu_new |   .2854334   .0969729     2.94   0.003       .09537    .4754968
          c17_distance_Kiambu |  -.0021009   .0061546    -0.34   0.733    -.0141637    .0099618
      c18_access_roads_state2 |   .4695067   .3123349     1.50   0.133    -.1426584    1.081672
                wholesale_biz |  -1.032921   .3257891    -3.17   0.002    -1.671456   -.3943859
                   retail_biz |  -.2162404    .248386    -0.87   0.384    -.7030681    .2705873
                   size_firm2 |   .0799395   .2327936     0.34   0.731    -.3763275    .5362065
 b13_t_businessregistered_KRA |   .0168033   .2134336     0.08   0.937    -.4015188    .4351254
                        _cons |  -3.137142   .7063536    -4.44   0.000     -4.52157   -1.752714
-----------------------------+------------------------------------------------------------------
                      /athrho |   10.15175   351.9052     0.03   0.977    -679.5699    699.8734
-----------------------------+------------------------------------------------------------------
                          rho |          1   2.14e-06                           -1           1
------------------------------------------------------------------------------
LR test of indep. eqns. (rho = 0):   chi2(1) =     7.51   Prob > chi2 = 0.0061
```

Increase in retained earnings

```
. heckprob increaseinretainedearnings d27a_loan_given_ksh d31t_other_financesources q2_hhgender
q3_age   edu_new   size_firm2   b15_yearsofbusinessexperience   c17_distance_Kiambu   retail_biz
wholesale_biz   c18_access_roads_state2,   select(     d27t_finance_of_KTDJLB=q2_hhgender   q3_age
q9_t_formalbusinesstraining     b15_yearsofbusinessexperience     edu_new     c17_distance_Kiambu
c18_access_roads_state2    wholesale_biz    retail_biz    size_firm2  b13_t_businessregistered_KRA)
nolog

Probit model with sample selection              Number of obs      =       211
                                                Censored obs       =       114
                                                Uncensored obs     =        97

                                                Wald chi2(11)      =     20.18
Log likelihood = -154.2675                      Prob > chi2        =    0.0429

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
increaseinretainedearnings   |
          d27a_loan_given_ksh |   8.15e-06   5.22e-06     1.56   0.119    -2.09e-06    .0000184
    d31t_other_financesources |   -.385303   .3349103    -1.15   0.250    -1.041715    .2711091
                 q2_hhgender |   .3726883   .3628865     1.03   0.304    -.3385561    1.083933
                      q3_age |  -.0030906    .013567    -0.23   0.820    -.0296815    .0235004
                     edu_new |  -.0047171    .149774    -0.03   0.975    -.2982687    .2888345
                  size_firm2 |  -.8996671   .3701624    -2.43   0.015    -1.625172   -.1741622
b15_yearsofbusinessexperience |   .0506289   .0242597     2.09   0.037     .0030807     .098177
          c17_distance_Kiambu |   .0092621   .0074401     1.24   0.213    -.0053202    .0238444
                   retail_biz |  -.4068762   .3478014    -1.17   0.242    -1.088554     .274802
                wholesale_biz |  -1.062073   .4945372    -2.15   0.032    -2.031348   -.0927976
      c18_access_roads_state2 |  -.1007922   .5562401    -0.18   0.856    -1.191003    .9894184
                        _cons |  -1.346502   1.271966    -1.06   0.290    -3.839509    1.146505
-----------------------------+------------------------------------------------------------------
d27t_finance_of_KTDJLB       |
                 q2_hhgender |   .0784911   .2210155     0.36   0.722    -.3546913    .5116735
                      q3_age |   .0094634   .0110497     0.86   0.392    -.0121936    .0311204
  q9_t_formalbusinesstraining |   1.247882     .24513     5.09   0.000     .7674361    1.728328
b15_yearsofbusinessexperience |   .0642341   .0185551     3.46   0.001     .0278668    .1006014
                     edu_new |   .2764676   .0940279     2.94   0.003     .0921762    .4607589
          c17_distance_Kiambu |  -.0059007   .0064489    -0.91   0.360    -.0185402    .0067389
      c18_access_roads_state2 |   .5429961   .3134478     1.73   0.083    -.0713503    1.157343
                wholesale_biz |  -.9849296   .3191578    -3.09   0.002    -1.610467   -.3593918
                   retail_biz |  -.2212242   .2489886    -0.89   0.374    -.7092329    .2667845
                   size_firm2 |   .0865495   .2277642     0.38   0.704    -.3598601     .532959
 b13_t_businessregistered_KRA |  -.0645349   .2224005    -0.29   0.772    -.5004319    .3713621
                        _cons |  -3.083104   .7030896    -4.39   0.000    -4.461135   -1.705074
-----------------------------+------------------------------------------------------------------
                      /athrho |   11.55557   90.98645     0.13   0.899    -166.7746    189.8857
-----------------------------+------------------------------------------------------------------
                          rho |          1   3.34e-08                            -1           1
------------------------------------------------------------------------------
LR test of indep. eqns. (rho = 0):   chi2(1) =     6.76   Prob > chi2 = 0.0093
```

Increase in return on investment

```
. heckprob roi_oct d27a_loan_given_ksh d31t_other_financesources q2_hhgender q3_age edu_new size_firm2
b15_yearsofbusinessexperience c17_distance_Kiambu retail_biz wholesale_biz c18_access_roads_state2, select(
d27t_finance_of_KTDJLB=q2_hhgender q3_age q9_t_formalbusinesstraining b15_yearsofbusinessexperience edu_new
c17_distance_Kiambu c18_access_roads_state2 wholesale_biz retail_biz size_firm2 b13_t_businessregistered_KRA)
nolog

Probit model with sample selection              Number of obs      =       211
                                                Censored obs       =       114
                                                Uncensored obs     =        97

                                                Wald chi2(11)      =     40.58
Log likelihood = -153.6056                      Prob > chi2        =    0.0000

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
roi_oct                      |
         d27a_loan_given_ksh |   8.52e-06   3.14e-06     2.71   0.007     2.35e-06    .0000147
    d31t_other_financesources |   .2927625   .1646437     1.78   0.075    -.0299331    .6154582
                 q2_hhgender |   .8816769   .2980184     2.96   0.003     .2975716    1.465782
                     q3_age |  -.0029309   .0140392    -0.21   0.835    -.0304472    .0245854
                    edu_new |  -.2917385   .1138898    -2.56   0.010    -.5149583   -.0685186
                  size_firm2 |  -.4145095   .2461294    -1.68   0.092    -.8969142    .0678952
b15_yearsofbusinessexperience |   .0067417   .0227517     0.30   0.767    -.0378509    .0513342
         c17_distance_Kiambu |    .018246   .0084917     2.15   0.032     .0016026    .0348893
                  retail_biz |     .40991    .306219     1.34   0.181    -.1902681    1.010088
               wholesale_biz |  -.0747678   .4368392    -0.17   0.864    -.9309568    .7814212
     c18_access_roads_state2 |  -.1087474   .3824229    -0.28   0.776    -.8582824    .6407877
                       _cons |   .0741023   .9399832     0.08   0.937    -1.768231    1.916436
-----------------------------+------------------------------------------------------------------
d27t_finance_of_KTDJLB       |
                 q2_hhgender |   .1509135   .2175178     0.69   0.488    -.2754135    .5772406
                     q3_age |   .0092954   .0109362     0.85   0.395    -.0121393      .03073
  q9_t_formalbusinesstraining |   1.088185   .2271073     4.79   0.000     .6430632    1.533308
b15_yearsofbusinessexperience |   .0703719   .0183962     3.83   0.000     .0343161    .1064278
                    edu_new |   .2882559   .0939578     3.07   0.002      .104102    .4724098
         c17_distance_Kiambu |  -.0037785   .0064536    -0.59   0.558    -.0164273    .0088702
     c18_access_roads_state2 |   .6983266   .2906027     2.40   0.016     .1287558    1.267897
               wholesale_biz |  -1.004771   .3172451    -3.17   0.002    -1.62656   -.3829822
                  retail_biz |  -.2974759   .2359473    -1.26   0.207    -.7599241    .1649724
                  size_firm2 |   .0523515   .2157913     0.24   0.808    -.3705918    .4752947
 b13_t_businessregistered_KRA |  -.2132106   .1663529    -1.28   0.200    -.5392563    .1128351
                       _cons |  -3.167522   .7006913    -4.52   0.000    -4.540852   -1.794192
-----------------------------+------------------------------------------------------------------
                    /athrho |  -11.64187   50.04044    -0.23   0.816    -109.7193    86.43558
-----------------------------+------------------------------------------------------------------
                        rho |         -1   1.55e-08                           -1           1
------------------------------------------------------------------------------
LR test of indep. eqns. (rho = 0):   chi2(1) =     3.26   Prob > chi2 = 0.0711
```

PROBIT KTDLB PARTICIPATION

```
. probit d27t_finance_of_KTDJLB q2_hhgender q3_age q9_t_formalbusinesstraining  b15_yearsofbusinessexperience
edu_new   c17_distance_Kiambu   c18_access_roads_state2       wholesale_biz    retail_biz           size_firm2
b13_t_businessregistered_KRA

Iteration 0:   log likelihood = -148.63338
Iteration 1:   log likelihood = -109.77166
Iteration 2:   log likelihood = -109.32631
Iteration 3:   log likelihood = -109.32609
Iteration 4:   log likelihood = -109.32609

Probit regression                                 Number of obs   =        215
                                                  LR chi2(11)     =      78.61
                                                  Prob > chi2     =     0.0000
Log likelihood = -109.32609                       Pseudo R2       =     0.2645

------------------------------------------------------------------------------
d27t_finance_of_KTDJLB |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------+------------------------------------------------------------------
          q2_hhgender |    .225978   .2150206     1.05   0.293    -.1954546    .6474106
              q3_age |   .0084108   .0110361     0.76   0.446    -.0132195    .0300411
q9_t_formalbusinesstrain~g |   1.014147   .2313716     4.38   0.000     .5606671    1.467627
b15_yearsofbusinessexper~e |   .0653322   .0186636     3.50   0.000     .0287521    .1019123
             edu_new |    .270174   .0946275     2.86   0.004     .0847076    .4556405
   c17_distance_Kiambu |  -.0065066   .0064451    -1.01   0.313    -.0191389    .0061256
c18_access_roads_state2 |   .6450783   .3106831     2.08   0.038     .0361508    1.254006
          wholesale_biz |  -1.023006   .3204307    -3.19   0.001    -1.651038   -.394973
             retail_biz |  -.0824919   .2407095    -0.34   0.732    -.5542738    .3892901
              size_firm2 |   .2231455   .2204316     1.01   0.311    -.2088924    .6551835
b13_t_businessregistered~A |  -.0892495   .2294271    -0.39   0.697    -.5389184    .3604194
                  _cons |  -3.078061   .7071306    -4.35   0.000    -4.464012   -1.692111
```

Goodness of Fit

```
. estat gof, group(10)

Probit model for d27t_finance_of_KTDJLB, goodness-of-fit test

  (Table collapsed on quantiles of estimated probabilities)

      number of observations =            215
            number of groups =             10
     Hosmer-Lemeshow chi2(8) =          19.08
                Prob > chi2 =         0.1044
```

```
. linktest

Iteration 0:   log likelihood = -148.63338
Iteration 1:   log likelihood = -108.84716
Iteration 2:   log likelihood = -108.64269
Iteration 3:   log likelihood =  -108.6418
Iteration 4:   log likelihood =  -108.6418

Probit regression                                 Number of obs   =        215
                                                  LR chi2(2)      =      79.98
                                                  Prob > chi2     =     0.0000
Log likelihood =  -108.6418                       Pseudo R2       =     0.2691

------------------------------------------------------------------------------
d27t_finance_of_KTDJLB |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------+------------------------------------------------------------------
                 _hat |   1.064737   .1472923     7.23   0.000     .7760488    1.353424
               _hatsq |   .1613841   .1400068     1.15   0.249    -.1130241    .4357923
                _cons |  -.0865331   .1230698    -0.70   0.482    -.3277455    .1546793
------------------------------------------------------------------------------
```

Classification

```
. estat classification

Probit model for d27t_finance_of_KTDJLB

              -------- True --------
Classified |         D            ~D  |      Total
-----------+--------------------------+-----------
     +     |        78            34  |        112
     -     |        23            80  |        103
-----------+--------------------------+-----------
   Total   |       101           114  |        215

Classified + if predicted Pr(D) >= .5
True D defined as d27t_finance_of_KTDJLB != 0
--------------------------------------------------
Sensitivity                     Pr( +| D)   77.23%
Specificity                     Pr( -|~D)   70.18%
Positive predictive value       Pr( D| +)   69.64%
Negative predictive value       Pr(~D| -)   77.67%
--------------------------------------------------
False + rate for true ~D        Pr( +|~D)   29.82%
False - rate for true D         Pr( -| D)   22.77%
False + rate for classified +   Pr(~D| +)   30.36%
False - rate for classified -   Pr( D| -)   22.33%
--------------------------------------------------
Correctly classified                        73.49%
--------------------------------------------------
```

74% of the variables are correctly classified i.e. they fit the model perfectly

Correlation

```
.   pwcorr   q2_hhgender   q3_age   q9_t_formalbusinesstraining      b15_yearsofbusinessexperience   edu_new
c17_distance_Kiambu c18_access_roads_state2  wholesale_biz retail_biz  size_firm2 b13_t_businessregistered_KRA


             | q2_hhg~r   q3_age q9_t_f~g b15_ye~e  edu_new c17_di~u c18_ac~2
-------------+------------------------------------------------------------------
 q2_hhgender |   1.0000
      q3_age |  -0.1190   1.0000
q9_t_forma~g |   0.0520   0.1710   1.0000
b15_yearso~e |  -0.0474   0.5754   0.1589   1.0000
     edu_new |   0.1824  -0.0630   0.3094  -0.2263   1.0000
c17_distan~u |   0.0838   0.2552   0.0029   0.1934  -0.1076   1.0000
c18_access~2 |   0.0805  -0.1806   0.2743  -0.2314   0.1265  -0.1295   1.0000
wholesale_~z |   0.1636   0.1939   0.1325   0.2812   0.0062   0.1450  -0.0264
  retail_biz |  -0.2719  -0.1373  -0.1170  -0.1860  -0.0813  -0.1559  -0.0722
  size_firm2 |   0.0405   0.1517   0.0858   0.2857   0.0025   0.1958   0.0214
b13_t_busi~A |   0.0787   0.1632   0.2451   0.0864   0.1780   0.0440   0.3415

             | wholes~z retail~z size_f~2 b13_t_~A
-------------+------------------------------------
wholesale_~z |   1.0000
  retail_biz |  -0.4322   1.0000
  size_firm2 |   0.3373  -0.2206   1.0000
b13_t_busi~A |   0.2391  -0.2834   0.0446   1.0000
```

Collinearity Diagnostics

Variable	SQRT VIF	VIF	Tolerance	R-Squared
q2_hhgender	1.16	1.08	0.8615	0.1385
q3_age	1.70	1.30	0.5873	0.4127
q9_t_formalbusinesstraining	1.33	1.15	0.7497	0.2503
b15_yearsofbusinessexperience	2.00	1.42	0.4990	0.5010
edu_new	1.31	1.14	0.7644	0.2356
c17_distance_Kiambu	1.16	1.08	0.8608	0.1392
c18_access_roads_state2	1.42	1.19	0.7020	0.2980
wholesale_biz	1.39	1.18	0.7204	0.2796
retail_biz	1.36	1.17	0.7343	0.2657
size_firm2	1.24	1.11	0.8084	0.1916
b13_t_businessregistered_KRA	1.34	1.16	0.7438	0.2562

Mean VIF 1.40

	Eigenval	Cond Index
1	8.3221	1.0000
2	1.0957	2.7560
3	0.5772	3.7973
4	0.4783	4.1712
5	0.3591	4.8143
6	0.3150	5.1398
7	0.2876	5.3797
8	0.1984	6.4770
9	0.1579	7.2609
10	0.1487	7.4822
11	0.0431	13.8898
12	0.0171	22.0551

Condition Number 22.0551
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
Det(correlation matrix) 0.1465

Receipt of Credit, by Sector

```
. oneway d27t_finance_of_KTDJLB b11_Kindofbusiness3, tabulate

b11_Kindofb | Summary of d27_finance_of_KTDJLB
usiness |        Mean   Std. Dev.       Freq.
------------+------------------------------------
other bus |   .55128205   .50058241          78
retail |   .44230769   .49906559         104
wholesal |   .32432432     .474579          37
------------+------------------------------------
      Total |   .46118721   .49963331         219
```

Analysis of Variance

Source	SS	df	MS	F	Prob> F
Between groups	1.36326527	2	.681632634	2.77	0.0646
Within groups	53.0568261	216	.245633454		
Total	54.4200913	218	.249633446		

```
Bartlett's test for equal variances:  chi2(2) =   0.1558  Prob>chi2 = 0.925

. pwmean d27t_finance_of_KTDJLB, over(b11_Kindofbusiness3) mcompare(tukey) effects
```

Pairwise comparisons of means with equal variances

over : b11_Kindofbusiness3

	Number of Comparisons
b11_Kindofbusiness3	3

d27t_finance_of_KTDJLB	Contrast	Std. Err.	t	TukeyTukey P>|t|	[95% Conf.	Interval]
b11_Kindofbusiness3						
etailvs other business	-.1089744	.0742362	-1.47	0.308	-.2841705	.0662218
whole sale vs other business	-.2269577	.0989338	-2.29	0.059	-.4604399	.0065244
whole sale vs retail	-.1179834	.0948715	-1.24	0.429	-.3418787	.1059119