THE IMPACT OF AGRICULTURAL LOANS ON SMALL SCALE FARMERS' OUTPUT (A CASE STUDY OF GOMBA DISTRICT)

BY

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A RESEARCH REPORT SUBMITTED TO THE COLLEGE OF ECONOMICS AND MANAGEMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN STATISTICS OF KAMPALA INTERNATIONAL UNIVERSITY

AUGUST 2019

DECLARATION

I Matsiko Rabson, hereby declare to the best of my knowledge that this work herein is original and is purely my own effort and has never been submitted in any University around the globe for any award.

Sign.....

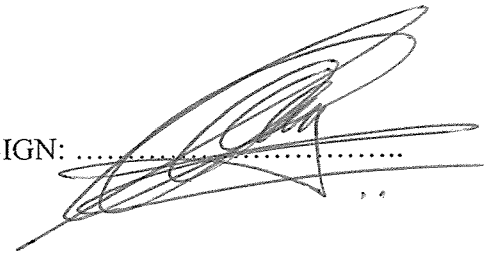
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Date..13/08/2019.....

APPROVAL

This work was supervised from the development of the proposal to completion of the full research report and I approve that the work should be submitted to the Department of Economics and Statistics and to the college of Economics and Management of Kampala International University.

SIGN: 

MR. LUGGYA HERBERT

DATE: 13/08/2019

DEDICATION

I dedicate this research report to my lovely parents Mr. Rwabutuguri Nathan and Mrs. Jane Rwabutuguri for their unending care, love and support towards my education for their genuine support. I also dedicate this research report to my loving friends Tonny, Erisa, Paul, Jane, Daniel and all my class mates for good advice and motivation they showed me during the course of the study.

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ABSTRACT

The study explored the level of success recorded in assisting rural farmers to increase agricultural output in Gomba District. The general objective of this study was to find out the relationship between agricultural output, agricultural loans and employment rate in Gomba District and the specific objectives were to determine the behavior of agricultural loans in Gomba district and to determine the behavior of agricultural outputs in Gomba district.

The research hoped to help the district planning unit for policy making with the relevant information regarding the issues of agricultural output and prioritize different areas and mark necessary resources accordingly. The data used was majorly from secondary sources and it was official especially from government publications and other government Institutions from MAAF and Central Bank. Data was organized, processed and summarized using SPSS, 16.0 and stata-12. Stata-12 and SPSS, 16.0 software was used because they had the capacity to handle large database and since they have command and menu intensive. The study revealed that there was a positive trend in the behavior of agricultural loan. However, the study showed that there was a positive trend that was not perfect in that there was slight change of loans issued out to the farmers holding other factors constant. The study also found out that there was a positive trend on the behavior of Agricultural output. The smallholder farmers were found to be constrained by lack of capital and ignorance on how to apply for existing agricultural loans. Furthermore the study revealed that there was a positive relationship between agricultural output, agricultural loans and employment rate. This implies when the government increases agricultural loans, farmers in Gomba District are likely to influence greater improvement in their agricultural yields or output. As the agricultural loans increases, farmers in Gomba get more income to invest into agriculture sector thus improving on their outputs. The study recommended that the government The government should sensitize the farmers on how to apply and get loans. This is because the study revealed that an increase in government loans leads to an increase in agricultural output,he government should reduce on the costs of the agricultural inputs such as fertilizers, tractors among others. This will help the farmers to increase on their agricultural yields and that government should put more emphasis on extending agricultural loans to farmers since the study revealed that an increase in agricultural loans increases agricultural output.

LIST OF ACRONYMS

ADP	Agricultural Development Program
AL	Agricultural Loans
ANOVA	Analysis of Variance
AOP	Agricultural Output
BOU	Bank of Uganda
ER	Employment Rate
GD	Gomba District
MAAF	Ministry of Agriculture, Animal and Fisheries
MFDTIA	Micro Finance Deposit Taking Institutions Act
NAADS	National Agricultural Advisory Services
PAD	Precision Agriculture for Development
SOEs	State-Owned Enterprises
SPSS	Statistical Package for Social Sciences
STAT	Statistics
TCE	Transaction Cost Economics
USSR	Union of Soviet Socialist Republics
CMA_AOP	Centered Moving Average for Agricultural Output
CMA_AL	Centered Moving Average for Agricultural Loans
CMA_ER	Centered Moving Average Employment Rate

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CHAPTER ONE

1.0 Introduction

This chapter constituted of the background of the study (historical, theoretical, conceptual and contextual perspective), statement of the problem, main objective of the study, research objectives, research hypotheses, scope and the significant of the study and definition of terms.

1.1 Background

1.1.1 Historical Perspective

Agriculture plays an important role in both developed and developing countries world over. In the past, it was viewed as the passive sector in the development process. In today`s economy however, it has been taken as an active sector and co-partner of the industrial sector in the development process (Thorbecke, 1970). In the less developed world where majority of the people depend on agriculture as a source of livelihood and a significant portion of domestic value added comes from agricultural sector, it has been one of the widely discussed public policy topic.

Different issue pertaining to agricultural sector hit the discussion and dialogues among policymakers of the underdeveloped economics while formulating, implementing and evaluating the policies concerning agricultural sector. Some of them are: increased use of modern techniques of production, availability of modern and efficient irrigation system, use of improved seed, availability of fertilizers and easy access to agricultural loans.

Agricultural loans as a factor attracted thoughtful attention of public policy makers; because once farmers have an easy access to loans, they can intensify the use of improved seeds, fertilizer and mechanized techniques of farming. Thus, it is considered as one of the strategic resources playing a decisive role in the development of an underdeveloped economy (Bashir et.al, 2010).

In Uganda, the agriculture policy framework of 1987 was an inward-looking economic development strategy, which emphasized the role of state in economic development. It appeared self-evident that an active state, pursuing interventionist economic policies in line with clearly articulated development plans, could within a short period of time eradicate poverty and underdevelopment, and ensures national control over strategic sector of the

economy. As a result of this thinking, the state undertook a major role in development by investing heavily in sectors seen as strategically important and by providing generous incentives including interest rate and credit subsidies to state-owned enterprises (SOEs), including agricultural marketing boards and to private investment in priority sectors.

Small-scale farmers in communal areas of Uganda have limited access to factors of production including credit and information and this is due to ignorance among the Ugandans on how to access agricultural loans backed by dominance of subsistence sector. Markets are often constrained by inadequate property rights and high transaction costs. Despite these problems, some small-scale farmers have managed to produce food for own consumption and for the market (Ortmann& King, 2006).

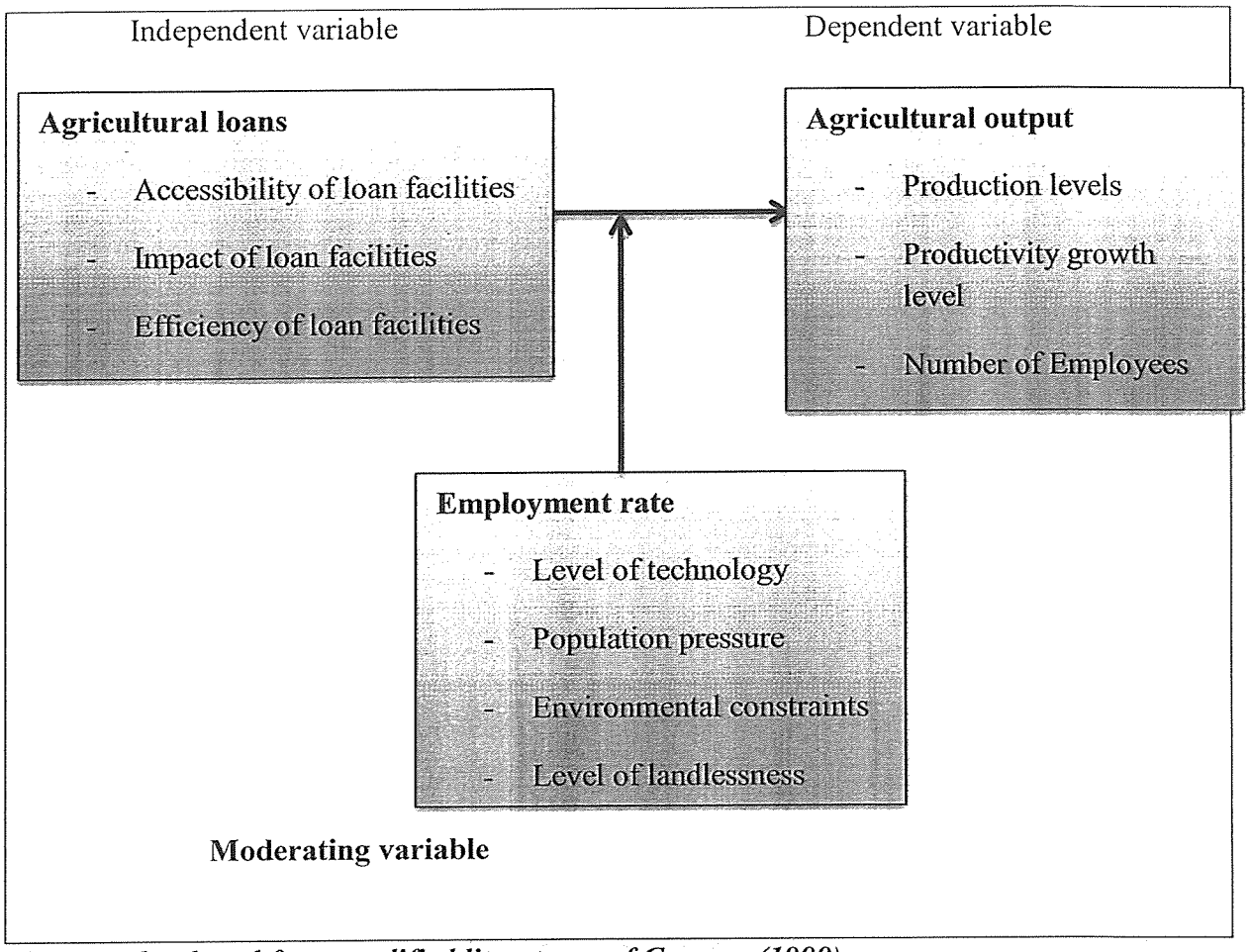
1.1.2 Theoretical Perspective

The study was guided by the two-sector or dualistic model. Its analytical framework is always based on distinguishing the traditional sector (Agricultural) from the modern sector (Manufacturing). The early model of Lewis (1954) began with the assumption of the existence of an Unlimited (or totally elastic) supply of labor originating from the traditional sector. It was assumed that the traditional sector was not rational in the sense of profit maximizing and that the emigration of reduction of its output because of zero marginal product of its labor. The study further reviewed the unlimited labor supply theory by Rains and Fei (1961).

1.1.3 Conceptual Perspective

The study adopted the conceptual perspective work to show the relationship between the agricultural output, agricultural loans and employment rate.

Figure 1.1 Showing the relationship between independent variable, dependent variable and moderating variable



Source: developed from modified literatures of Gregory (1999)

Agricultural output was measured in terms of production levels, productivity growth level, number of employees, quality levels and operation efficiency. Agricultural loans was measured in terms of accessibility of loan facilities, impact of loan facilities and efficiency of loan facilities and employment rate was also measured in terms of level of technology, population pressure, environmental constraints and level of landlessness.

1.1.4 Contextual Perspective

Improving on agricultural loan facilities to the small scale farmers is important for enhancing farmers` livelihood, reducing rural poverty, increasing food security and improving agricultural output (Shiferaw B, 2011).Uganda being predominantly an agricultural country, emphasis has been redirected to promotion of agricultural activities which are suitable for improving productivity of rural farmers in the areas including Gomba district. Farmers who have access to agricultural loans through use of appropriate agricultural financing practice get

all benefits accrued to it including increased production, creates more employment opportunities, good quality produce and food security.

1.2 Problem Statement

In Gomba District (GD), there has not been defined ways of properly financing agricultural activities especially for small scale farmers to access loans from government because most of these farmers are peasants and rural dwellers. A major problem leading to this research is to know the percentage of success recorded in assistance of farmers especially those ones in the villages with loans and to know if increased agricultural loans and employment rate increases productivity in Gomba district.

1.3 Main Objective of the Study

To know the level of success recorded in assisting rural farmers to increase productivity.

1.4 Research Objectives

i. To determine the behavior of agricultural loans in Gomba district.

ii. To determine the behavior of agricultural outputs in Gomba district.

iii. To know if there is a relationship between agricultural loans and agricultural output in Gomba district.

1.5 Research Hypotheses of the Study

The research hypotheses are as follows:

Hypothesis 1

H_0: there is no trending in agricultural loans

H_A : there is trending in agricultural loans

Hypothesis 2

H_0: there is no trending in agricultural output

H_A : there is trending in agricultural output

Hypothesis 3

H_0: There is no significant relationship between agricultural loan and employment level in Gomba district.

H_A: There is a significant relationship between agricultural loan and employment level in Gomba district.

Level of significance: 0.05

Decision rule: reject H_0 if p-value is less than the level of significance. Accept H_0 if otherwise.

1.6 Significance of the Study

The research hoped to help the district planning unit for policy making with the relevant information regarding the issues of agricultural output and prioritize different areas and earmark necessary resources accordingly. This, in turn is to help achieve efficiency in agricultural output and realize the long-term economic goals of GD.

Another significance study was to help the researcher know if there is a relationship between agricultural output, agricultural loans and employment rate and to know the level of success in assisting farmers with agricultural loans in GD.

The study was to contribute to the existing researches about agricultural output and agricultural loans for future reference by other students at Kampala international University

1.7 Scope of the Study

1.7.1 Content Scope

The study contained the relationship between agricultural output, agricultural loans and employment rate whereby agricultural output was the dependent variable, agricultural loan was the independent variable and employment rate was the moderating variable. It clearly showed the relationship between accessibility of loan facilities, impact of loan facilities, efficiency of loan facilities, level of technology, population pressure, environmental constraints, level of landlessness, production levels, productivity growth level, number of employees and quality levels in GD.

1.7.2 Geographical Scope

The study was carried out in GD. Gomba is a district in the central region of Uganda. Kanoni is where district headquarter is located and is the main municipal, administrative, and commercial Centre of Gomba District, and the district headquarters are located there. Gomba District is bordered by Mubende District to the west and north, Mityana District to the northeast and Butambala District to the east. Kalungu District, Bukomansimbi District and Sembabule District lie to the south of Gomba District approximately 97 kilometres (60 mi). The location is approximately 60 kilometres (37 mi) west of Mpigi, the

nearest large metropolitan area. The coordinates of the district are: 00 11N, 31 55E. (Latitude: 0.1750; Longitude: 31.9100).

1.7.3 Time Scope

The study was carried out in a period of (4) a month that is May to August 2019, whereby the researcher took the proposal for supervision in the first month. Then later continued with data collection from the recognized Institutions and accomplished chapters of data analysis, discussions and conclusions in the second and third month of the research schedule.

1.8 Definition of terms

Loan: Money that an organization such as a bank lends and somebody or group of people borrows.

Agriculture: The science or practice of farming

Small scale farmer: A person who produces crops and livestock on a small-piece of land without using advanced and expensive technologies.

Employment rate: A measure to the extent to which available labour resources (people available to work) are being used.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Framework

One of the most dominant theories by which we conceptualized the development process is termed as a two-sector or dualistic model. Its analytical framework is always based on distinguishing the traditional sector (Agricultural) from the modern sector (Manufacturing). The early model of Lewis (1954) began with the assumption of the existence of an Unlimited (or totally elastic) supply of labor originating from the traditional sector. It was assumed that the traditional sector was not rational in the sense of profit maximizing and that the emigration of reduction of its output because of zero marginal product of its labor.

According to Lewis, the modern sector consists of manufacturing and some agricultural production, uses modern technology. The sector is capital intensive and is rational in the sense of seeking to maximize profit by hiring labor up to the point where the marginal product of the last unit of labor transferred to the modern sector is equal to the wage. Savings were assumed to be made only out of profit. As these profits were reinvested, the demand for labor would increase, this would continue until labor in the traditional sector is no longer unlimited. At the point when labor becomes scarce, traditional sector began to be commercialized and subsequently, labor would be hired up to the point where the marginal product is equal to the wage.

An alternative on Lewis's unlimited labor supply theory was made by Rains and Fei (1961), where the marginal product of labor was drawn out of the sector, terms of trade would turn against the modern sector and the wage rate must be raised, as the traditional sector produces, food was assumed to be consumed by the modern sector. Consequently, profits in the modern sector tended to go down, and investment would also slow down. It is also likely, therefore, that growth will stop prior to the commercialization of the traditional sector.

In this regard, there are two schools of thought: the pre-requisite thesis and the concurrence thesis. The former thesis argues that an agricultural revolution and the subsequent rise in agricultural productivity are pre-requisite for the initial spur of development, whereas the latter thesis denies the condition for pre-requisite and asserts instead that rapid growth in agricultural productivity could occur simultaneously with industrialization.

Marx, one of the early growth- stage theorists, presented his (stages) classification on changes in production technology and associated changes in the system of property rights and ideology. Rostow also presented his classification of stages in the transition from a primitive to a modern economy and offered basically an equivalent reason of regarding the agricultural development as the precondition to lake-off' (Hayami and Ruthan, 1971).

As mentioned earlier, one reason for supporting the prerequisite thesis is in fact that it is the outputs of the primary sector, rather than of others that could be increased without costing much of the critically scarce resources of financial capital and foreign exchange. Thus, it is only when agriculture is already growing rapidly that it could and should be squeezed on behalf of the more dynamic sectors of the economy. If on the other hand, the agricultural sector is operating at the "immature" stage i.e the quasi-subsistence level, squeezing agriculture would create economic stagnation and not growth.

In contrast, the concurrence thesis argues that the agricultural development and the industrial development could proceed simultaneously. In addition to the effect of agriculture on industrialization put forward by the pre-requisite thesis, the industrial development, for its part, tends to offer a widening market for rural surpluses. It may also contribute to fuller exploitation of the agricultural Sector by facilitating improvements in transport, credit and production techniques.

Further, the credit and productivity in the primary sector may create a growing market for manufacturing products especially as incomes rise beyond the level which affords the minimum essentials. Thus, the pre-requisite argued that efforts to increase food supply should receive top priority because of the high demand and great need for additional food or because the highest marginal productivity of capital lies in agriculture. Coals and Hoover (1986) concluded that very substantial progress in the requisite to successful development of the economy as a whole limits the growth of the other; it is more likely to be a case of agricultural growth limiting non-agricultural and vice versa.

Also, the concurrence group, while recognizing the need for arising agricultural productivity, concludes that it can be accomplished only by giving big pushes to economic development programme top priority. Higgins (1980) states his position most plainly by arguing that the only means to a cumulative improvement in agricultural productivity is a public policy designed to move to large-scale agricultural and encouraging a rapid rate of industrialization. Elsewhere, he recognized that such a policy requires heavy investment in both the industrial

and agriculture sectors. Despite this premise about the agricultural sector, the logic of Higgins group necessitates emphasis on agricultural output since without it, farm mechanism could hardly increase the scarcity of labor.

2.2 Financing Agriculture

Finance is one input required for agricultural development as it represents the power to purchase all other inputs and thus, it is not the single determinant of the level of development in agriculture.

Several studies have been carried out on commercial banks and the finance of agriculture in the country. According to Elegham (1983), the availability of credits to local farmers poses a serious problem. This is because of the rate in the increase of defaulting cases among small farmers. Tims (1974) also revealed that commercial banks in Uganda were willing to grant to large-scale farmers because it has noticed that small farmers default. Mostly in the act of loan repayment, they also have no provision for collateral security required by banks. It is in light of this that the government has always maintained that commercial banks should not neglect agricultural and allied activities since they are the Chief agent of mobilization of savings.

Notwithstanding the unsuitability of commercial banks for financing agriculture in general and small-scale farmers in particular, studies carried out by Akinwole (1985), Osuntogu (1973) and Ijere (1975) pointed out the need for raising the volume of loan resources, so as to permit increase in lending to the individual borrowers. However, Ogunfowora et al (1972) attributed most of the shortcomings and institutional credits in Uganda to facts such as; ineffective supervision or monitoring, insufficient funds, political interference, cumbersome and time consuming loan processing and gearing absence of financial projections.

Agricultural facilities granted are closely monitored. This is occasioned by the nature of the industry, especially the production aspect that is highly risky because of its precarious nature.

Agricultural facilities are also known to be specific-purpose oriented i.e planting, fertilizing, harvesting and transporting etc.). As a result of follow-up facilities, the indications of possibility of default (usually) referred to as "danger sign" of default are easily detected, a current finding in the view on bank credit management.

2.3 Sources of Agricultural Financing

2.3.1 Commercial Bank

According to Amechi (2004), Commercial banks can also finance agricultural projects. She further said; "In developing countries, the federal government directs Commercial banks to allocate a part of their lending to agriculture at reduced interest rates. Such banks usually set up departments of agriculture and employ agriculturists to manage them. Such loans can be on short term, medium term and long term.

Short-Term is where the loans are used to finance Annual and biennial crops and quick maturing, livestock projects such as pigs and poultry. Medium-Term is where the loan matures in two or three years. Such loans are normally invested on biennial and some perennial crop which mature in about three years such as Cassava, Citrus, and Pineapple etc. Long-Term is where the loan matures in three or more years. They are used to finance long-spanning perennial crops such as coffee, cotton, tea sugar cane etc.

2.3.1.1 Commercial Bank Credit and Agricultural Output

Essang and Olajide (1974) define a commercial bank as a monetary institution owned by either government or private businessmen for the purpose of profit. In pursuit of the profit, the bank undertakes a number of functions, one of these function is the acceptance of deposits from the public. These deposits are in turn given as credit to trade industry, agriculture etc which lead to more production and employment.

According to Aryeety (1996), credit is the amount extended out with a future date of payment. The Micro Finance Deposit-Taking Institutions Act, 2003.However, provides a wider definition of credit, and this includes aggregate of all loans, advances, overdrafts, commercial papers, Bankers acceptance, bills discounted. Leases and guarantee (MFDTIA, 2003).

Discussing the importance of credit to agricultural sector, Nzotta (1999) posited that it reactivates, expands or modernizes all types of agricultural enterprise which are considered economically feasible and desirable to the achievement of stated economic goals of self-sufficiency in agricultural production. While Qureshi, et al (1996) reported that such credit removes financial constraints faced by farmers, as it provides incentives to adopt new technologies that would otherwise be more slowly accepted. Thus, the availability of credit

enables farmers to switch quickly to new technologies which enable the achievement of a rapid productivity and growth.

According to Ijere (1986), credit can be considered from its ability to energize or motivate other factors of production. For example, it can make the latent, potential or under-used capacities functional. He further said that credit acts as a catalyst that activates the engine of growth enabling it to mobilize its inherent potentials and to advance in the planned or expected direction. It follows therefore that the greater the influx of capital, the more the propensity of the economy to move in its given path. As summarized by Fosu (1992), Amin (1996), Umoh (2003) credit thus constitutes the power or key to unlock latent talents, abilities, vision and opportunities, which in turn act as the mover of economic development, contributing to the argument about Commercial bank Credit and agricultural output. Wells (1970) confirms that commercial bank credit contributions to economic development by enhancing production and productivity and thus higher income and better quality the life of the people.

2.2.2 Self-financing

According to Aryeetey (1996), this is where a farmer decide to reinvest his savings in another agricultural project or expanding an already existing one. This however, is a slow process since saving money depends on a lot of factors, economic and fiscal factors. It leads to small-scale farming and is only suitable for subsistence farming.

2.2.3 Government Sources

Government (Federal, State and local) can give agricultural loans to farmers either directly or indirectly through some agencies like Ministries of Agriculture, National Agricultural Advisory Services (NAADS), the Agricultural Development Programme (ADP) and others.

According to the (MAAF) publication(1980), 58% of farming- related borrowings was obtained from family and friends; 24% from professional private money lenders, 15% from merchant and only 3% from commercial banks and other institutional sources. Garba (2000) noted that they are grossly, inadequate and unsatisfactory for the credit needs of the farmers. Thus, there is the need for lager credit sources.

2.4 Related Studies

Yaron et al (1997) conducted a study about credit programs and agricultural output in Morroco. He found out that directed credit programmes were associated with the adoption of modern technologies such as green-houses in Morocco and tube wells in North West Bangladesh and these innovations were associated with increase in production gains in the agricultural sector. He found out that there was a significant relationship between credit programs and agricultural output.

Odetola and Etumnu (2013) investigated the contribution of the agriculture sector to the economic growth in Nigeria using the growth accounting framework and time series data from 1960 to 2011. The study found that the agricultural sector has contributed positively and consistently to the economic growth in Nigeria, reaffirming the sector's importance in the economy. The contribution of agriculture to economic growth is further affirmed from a causality test which showed that agricultural growth led to the GDP growth, however no reverse relationship was found. The resilient nature of the sector is evident in its ability to recover more quickly than other sectors from shocks resulting from disruptive events e.g. civil war (1967-70) and economic recession (1981-85) periods. The study also found that the crop production subsector contributes the most to agricultural sector growth and that growth in the agriculture sector is overly dependent on growth of the crop production subsector. This indicates the importance of this subsector and probably, lack of attention or investment to the other subsectors.

Jane et al (2014) conducted a study on the challenges which limit agricultural output in African countries. They found out that agriculture faces unprecedented developmental challenges globally. At the same time, rapid advances in agricultural research and innovation at the global, regional and national levels, offer unprecedented opportunities, improving performance across the entire agriculture product value chain. This study highlighted a multi-case study on six emerging economies in Asia and Africa and representative institutions, where opportunities for agricultural-led development are being explored to address pressing global challenges and transform agriculture into a vibrant and competitive sector. The study used secondary data and using a case study approach, this findings provide an overview and benchmarking of agricultural R&D indicators and policies at the country and institutional levels. The study also found out that there are varying levels of agricultural development and successes of the six countries: Philippines, India, Sri Lanka, Egypt, Uganda, Kenya, in terms

of agricultural performance, R&D investments and implementation of policies in managing modern agricultural innovations, intellectual property, technology transfer and public-private sector partnership in research and economic development. The paper presents some best practices and suggested measures that may be useful references for emerging economies and institutions with similar interests and initiatives to integrate agricultural research and technology transfer.

Emmanuel (2008) carried out a study on the impact of macroeconomics environment on agricultural sector growth in Uganda. The macroeconomic policies included in the model are:- credits to the agricultural sector, nominal interest rates on the loan, exchange rate, world prices of agricultural produce, foreign private invest-government expenditure and inflation rate.

Using multiple regression analytical technique (ordinary least square), he discovered that nominal interest rate is positively related to the index of agricultural production. This implies that at higher nominal interest rate, more credit facilities are made available to the operators of the Uganda agricultural sector, but at lower nominal interest rate, credit facilities are no more widely available. The index of agricultural output is also positively related to world prices of Uganda major agricultural commodities.

This implies that better world prices enhance agricultural output growth in Uganda. Similarly, the index of agricultural production was positively related to government expenditure on agriculture. Moreover, it was discovered that the index of agricultural production is negatively related to the level of inflation, implying that as inflation becomes high, the index of agricultural production declines. He thus recommends that macroeconomic policies that enhance favorable exchange rates make agricultural credit widely available at low interest rate, reduce the rate of inflation; increase foreign private investment in agriculture would not fortify government investment in the sector but would be invaluable in supporting agricultural output growth in Uganda.

Johnson (1975) studied Japanese industrial development and concluded that without the prior increase in agricultural productivity, the financing of Japanese industrial development would not have been possible. He also compared USSR to Japan in terms of their decision on industry and agriculture. During the decade following 1929, the USSR concentrated its attention upon industrialization and fought its peasants instead of teaching them how to increase output per acre. This led to tremendous price inflation, but during the 30 years preceding World War 1, the Japanese were more sensible. Overall, their output increased just as rapidly as that of industry and agriculture. Thus, supply of savings from agriculture was the critical factor in Japan's rapid industrialization and this is often understood as the main reason why Japan succeeded in supplying itself the necessary investment funds in the early stages of industrialization (Binswanger, 1989).

The experience of Japan shows that appropriate expenditure by government (on agricultural research, extension credit and roads) can have spectacular effects on the output of peasants and that agriculture instead of acting as a brake on the rest of the economy, can be turned into a leader generating demand for other sectors, and also providing them with capital.

Bakare (2013) examined the relationship between sustainable agriculture and rural development in Nigeria. Vector Auto Regression analytical technique (VAR) was employed for the empirical study. The prior expectation is that sustainable agriculture will impact positively on rural development in Nigeria. The findings of the study show that the past values of agricultural output could be used to predict in the model are stationary at first difference and the results of Chow breakpoint test suggest that there is no structural break in the period under review. The results also revealed that agricultural sector is contributing higher than the petroleum sector, though they both possessed a positive impact on the economic growth and development of the economy. A good performance of an economy in terms of per capita growth may therefore be attributed to a well-developed agricultural sector.

2.6 Research Gaps

The study identified the following gaps that required immediate attention, these include; the conceptual, contextual, theoretical and the time the researchers did their studies:

The researchers did not talk about how agricultural loan facilities of small scale farmers impact the agricultural out in the agriculture sector especially Gomba district. Farmers are the pillars of agricultural economy, majority of them find borrowing necessary as their own farm savings are inadequate to finance various agricultural development activities. This research intended to investigate how agricultural loans for small scale farmers and employment rate influence agricultural output in Gomba district.

Most studies about agricultural output were carried out in foreign countries and continents such as Europe, Asia among others in different time aspects. The studies left out Uganda Gomba district in particular. However, these studies cannot decide or provide vivid conclusions since agricultural productivity in the world especially in Uganda in particular keeps on changing time and again.

Despite the heavy dependency of Gomba district's people on agriculture as a source of income and employment, there is still a paucity of research on how the agricultural productivity can be boosted up by extending the access of farmers to better seeds, fertilizers, pesticides and modern technique of production. There are a couple of studies about the impact of agricultural credit on farmers' productivity and income based on aggregate time series data. However, studies related to the evaluation of impact of agricultural loans on small scale farmers are still lacking. This study aimed at fulfilling this gap by taking a number of farmers' data from Gomba district to explore the problem related to the agricultural loan and employment rate and assess its impact on agricultural output.

2.7 Areas of further Research

More studies should be carried out on the effect of climatic changes on the agricultural output in Gomba district. Since only loan funds cannot decide on the output.

The researcher also recommends other studies on the effect of government policies such as fiscal policy and monetary policy towards the development of agriculture in Uganda.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter gives details on how research was organized as well as methods for collecting and analyzing the data. This includes research design, sampling design, data sources, data analysis, and data presentation.

3.1 Research Design

Abili (2009) described quantitative research as an involving measurement of variables and the delivery of findings in numerical form in which research findings are described by text of significance, confidence intervals, and mathematically demonstrated relationships. He further describes qualitative research as a paradigm, which is conducted to find out what to do, think, know, and feel. Such a study aims at understanding and explaining a phenomenon that focuses on "why", and "how" questions as well as in depth and detailed "what" questions. It is important to note that many researchers such as Abili (2009) have agreed that a study may have a mixture of both qualitative and quantitative paradigms.

This study was based on quantitative paradigms. Time series data was used in this research to explain the relationship between agricultural output, agricultural loans and employment rate. The behavior of agricultural output and agricultural loans was studied in form of trends.

3.2. Sampling Design

The research collected data for thirty-six years from 1980 to 2015 on which the study was based on. The period from 1980 to 2015 was representative enough in analyzing the three variables that is; agricultural output, agricultural loans and employment rate of small scale farmers in GD.

3.3 Data Collection

The collected data was majorly from secondary sources and it was official especially from government publications and other government institutions like MAAF and Bank of Uganda. Secondary data was useful in building the model and conducting statistical tests . Annual data

for agricultural output, agricultural loan and employment rate of small scale farmers of GD from 1980 to 2015 was obtained from publication of MAAF in Uganda.

3.4 Data Sources

Secondary data is data that has already been collected elsewhere for some other purposes but can be used or adopted for the survey being conducted .The data was retrieved from the website of the MAAF evidence based on data from BOU (2015/16). The data was composed of three variables and these included; agricultural output, agricultural loans and employment rate as indicated in appendix 3.

3.5 Data Analysis

Data was organized, processed and summarized using Excel, SPSS and stata-12. Stata-12 software was used because it has the capacity to handle large database and it is both command and menu intensive. The data used was quantitative and secondary in nature.

The study analyzed the relationship between agricultural output, agricultural loan and employment rate using regression analysis. Furthermore, the behavior of agricultural output, agricultural loan and employment rate was determined using trend line method of analysis.

3.5.1 Model Specification

Agricultural output is a measure of total agricultural productivity that can be produced from a given set of input. It can be defined either as total output of a single product per unit of a single input or in terms of index of multiple outputs relative to an index of multiple inputs (precious, 2008). In this analysis, the research measured agricultural output as yield (metric tons per year).

Yield = f (AL, ER)

Where;

Yield is the total agricultural output annually

AL indicates access to agricultural loans by the small scale farmers

ER indicates the employment rate

The research assumed the production function, such that the equation that was estimated would become a multiple linear regression model, given that the dependent variable was continuous and linear as below;

$$\textbf{Agricultural_output} = \beta_0 + \beta_1 \textbf{Agricultural_loans} + \beta_2 \textbf{ Employment_rate} + \epsilon$$

Where;

β_0, β_1 and β_2 are the parameters to be estimated in the model

ϵ is the random error in agricultural output for observation

3.5.2 Statistical test

The research followed different tests such as normality test, Stationarity test and testing for linearity among the variables under the study. The normality tests were tested using P-P plots, Shapiro wilkson's test among others. The stationarity test was done using augmented Dickey-fuller test, Durbin-Watson test.

The null hypothesis that there was no relationship between agricultural output, agricultural loan and employment rate was examined using Pearson correlation coefficients with relation to p-values in the regression analysis. The research study was also set to investigate a simple linear regression model assuming a linear relationship between agricultural outputs with agricultural loan and employment rate.

6.6 Projection

The study forecasted the data for the next four years to tell and predict future values and was extracted from excel using moving average statistical approach.

3.7 Data Presentation

In this study, data was presented in form of histogram, line graph and tables for easy interpretation of data and presentation by the researcher.

CHAPTER FOUR

RESULTS AND DISCUSSIONS OF FINDINGS

4.0 Introduction

This chapter contained analysis and presentation of results about the source of the data, testing of Normality, Stationarity (Unit root test) and Linearity of the variables in the study and these variables include; agricultural loan, employment rate and agricultural output.

4.1 Testing for Normality

4.1.1 Normality Test for Agricultural Loans

Normality test about the agricultural loans under the study was tested in order to investigate whether the data was to be first transformed or not before further analysis.

Table 4.1 Normality test for Agricultural Loan Using Shapiro Wilkson's Test

```
. swilk aop

                    Shapiro-Wilk W test for normal data

    Variable |   Obs        W           V          z       Prob>z
-------------+--------------------------------------------------
         aop |    36    0.77494      8.207      4.402     0.00001
```

Interpretation

The criterion was that when the Prob>Z value is less than the level of significance (0.05), the Null hypothesis that data about agricultural output came from a normally distributed population is rejected. From table 4.1 above, the Prob>z (0.00001) was less than 0.05 level of significance hence rejecting the null hypothesis. Therefore, the data about agricultural output came from a normally distributed population. Thus implying that it could give reliable results for the study.

Figure 4.1 Normality test about Agricultural Loan Using a Super-imposed Histogram

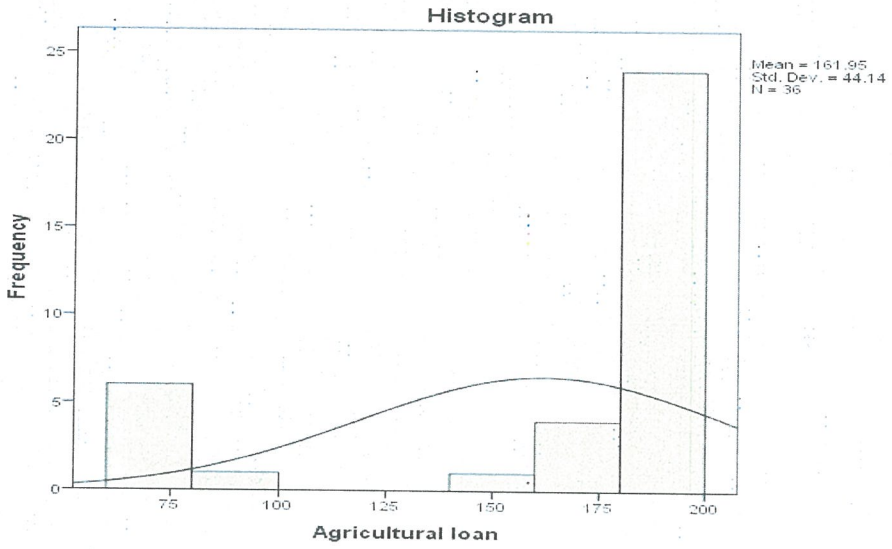
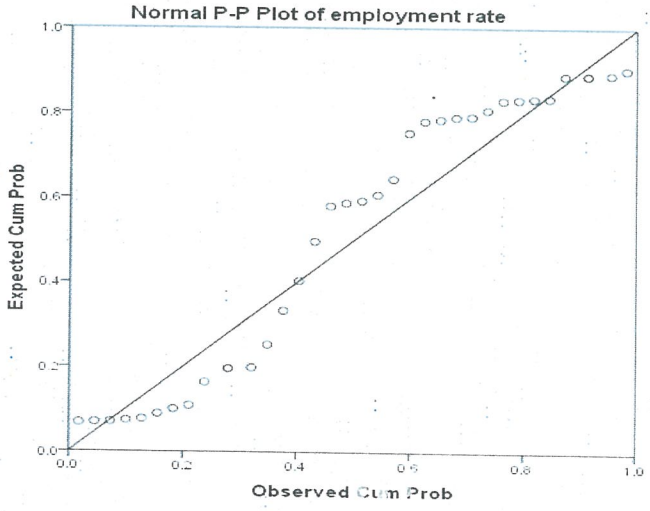


Figure 4.1 shows normality test about agricultural loan using a super-imposed Normal curve on the histogram. The criterion was that when the normal curve is formed on the histogram, the data about the variable is said to be from a normally distributed population. From figure 4.1 above, the normal curve is formed on the histogram. Thus, the data about agricultural loan came from a normally distributed population. Therefore, the data was further used in the data analysis.

Figure 4.2 Normality Test about Employment rate Using P-P plots



The criterion is that when the plotted points using P-P plots are close to the regression line, the data about the variable is normally distributed. From figure 4.2 above, the plots are nearing the regression line. This implies that the data about employment rate is normally distributed. Therefore, the data was further used in the data analysis.

4.2.2 Testing for Stationarity

The stationarity tests helped the researcher to determine whether the variables under the study was either stationary or not.

Table 4.2 Unit Root Test Using Dickey Fuller Test about Agricultural Output

Dickey-Fuller test for unit root — Number of obs = 35

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.618	-3.682	-2.972	-2.618

MacKinnon approximate p-value for Z(t) = 0.0054

Table 4.2 shows a unit root test about agricultural output using dickey fuller stationarity test. Given, H_0: there is stationarity. From table 4.2 above, the test statistic (-3.618) is less than critical value (-2.972). This implies that the null hypothesis is accepted. Therefore, the data about the agricultural Output is stationary. Thus, the data on agricultural output varies from time to time. Also, when P-value for Z(t) value is less than 0.05, the data about the variable in the study is not stationary. Since the Z(t)=0.0054 above, therefore the data about the agricultural output is stationary.

Table 4.3 Stationarity Test about Agricultural loan Phillips-Peron Unit Root Test

```
. pperron al, lags(1) trend regress

Phillips-Perron test for unit root                  Number of obs   =        35
                                                    Newey-West lags =         1

                                                    Interpolated Dickey-Fuller
                 Test                 1% Critical          5% Critical          10% Critical
               Statistic                 Value                Value                Value
------------------------------------------------------------------------------
 Z(rho)         -3.738                  -23.780              -18.660              -16.080
 Z(t)           -1.395                   -4.288               -3.560               -3.216
------------------------------------------------------------------------------
```

Figure 4.3 shows Phillips-Peron unit root test about agricultural loan. Ho: there is stationarity. The criterion is that when Z(rho) greater than critical value at 5% level of significance, the null hypothesis is accepted. From the output above, Z(rho) (-3.738) > critical value (-18.660), the null is accepted thus the data is stationary.

Table 4.4 Stationarity Test about Employment rate using Johansen's Test

LAG	AC	PAC	Q	Prob>Q	-1 0 1 [Autocorrelation]	-1 0 1 [Partial Autocor]
1	0.9337	0.9838	34.077	0.0000		
2	0.8625	-0.1324	64.011	0.0000		
3	0.7869	0.1411	89.678	0.0000		
4	0.7091	0.2339	111.18	0.0000		
5	0.6262	-0.0207	128.48	0.0000		
6	0.5479	-0.0507	142.17	0.0000		
7	0.4676	-0.0077	152.48	0.0000		
8	0.3788	-0.0641	159.49	0.0000		
9	0.2942	-0.2483	163.88	0.0000		
10	0.2132	-0.0613	166.27	0.0000		
11	0.1289	-0.1736	167.18	0.0000		
12	0.0424	-0.0167	167.28	0.0000		
13	-0.0383	0.0441	167.37	0.0000		
14	-0.1131	-0.1442	168.17	0.0000		
15	-0.1795	0.0922	170.27	0.0000		
16	-0.2223	0.1740	173.65	0.0000		

Table 4.4 shows the Johansen stationarity test about employment rate. The H_0: the data about employment rate is stationary. The criterion is that when most Prob>z value are less than 0.05 level of significance, the H_0 is rejected. According to table 4.2.2.2 above, most of the prob values are less than 0.05. Thus the data about employment rate is trending. This means that the employment rate varies from time to time especially yearly as it is in the study.

4.2.4 Linearity Testing

Linearity testing helped the researcher to determine whether the variables in the study were highly correlated or not.

Table 4.5 Testing for Autocorrelation using Durbin Watson's test

. estat durbinalt, force

Durbin's alternative test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	0.000	1	1.0000

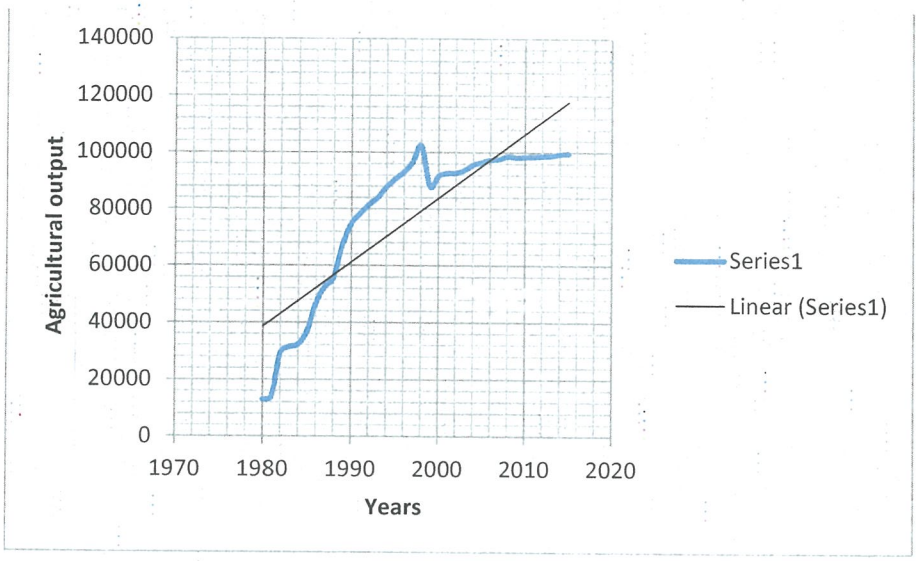
H0: no serial correlation

Interpretation:

The criterion is that; reject H_0 that there is no serial correlation if prob>chi2 is less than 0.05.From table 4.5, since prob>chi2 = 1.000 is greater than 0.05 we accept Ho that there is no serial correlation. This implies that correct results about the independent variables and agricultural output are obtained.

4.3 Behavior of agricultural output

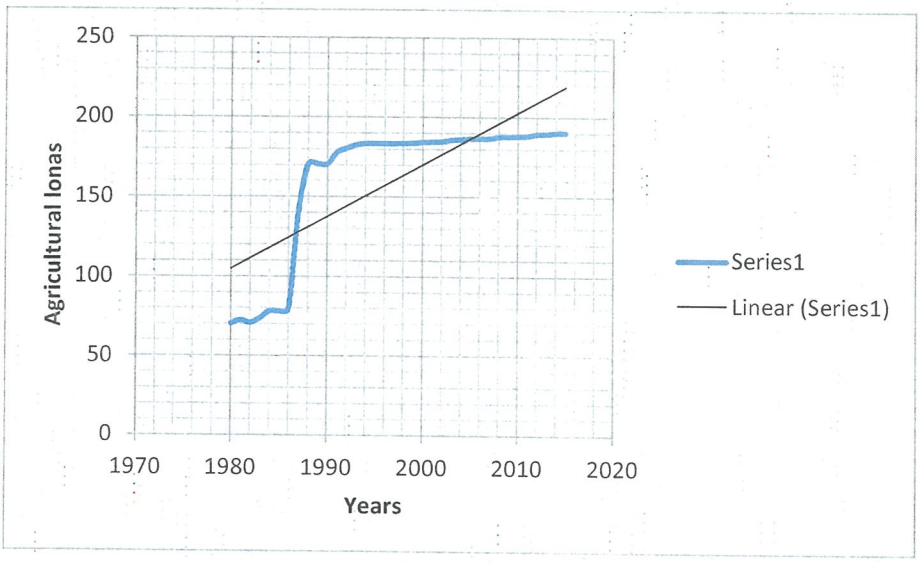
Figure 4.3: Behavior of agricultural output



Interpretation

The criterion is that reject null hypothesis that there is no trending in the behavior of agricultural output. We reject null hypothesis since the findings in figure 4.4 showed that there was a positive trend in agricultural output from 1980 to 2015 evidenced positive trend line.

Figure 4.4: Behavior of agricultural loans



Interpretation

The criterion is that reject null hypothesis that there is no trending in the behavior of agricultural loans. Researcher rejected null hypothesis since the findings in figure 4.5 showed that there was a positive trend in agricultural loans from 1980 to 2015 evidenced positive trend line.

Table 4.6 Regression Analysis about the Agricultural output, Agricultural Loans and Employment Rate

```
. regress Agricultural_output Agricultural_loans Employment_rate

      Source |       SS       df       MS              Number of obs =      36
-------------+------------------------------           F(  2,    33) =  332.06
       Model |  2.4978e+10     2  1.2489e+10           Prob > F      =  0.0000
    Residual |  1.2412e+09    33  37610877.2           R-squared     =  0.9527
-------------+------------------------------           Adj R-squared =  0.9498
       Total |  2.6219e+10    35   749113718           Root MSE      =  6132.8

------------------------------------------------------------------------------
Agricultural_out~t |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------
Agricultural_loans |   403.2834   39.49806    10.21   0.000      322.924    483.6429
   Employment_rate |   480.9222   82.07875     5.86   0.000     313.9318    647.9127
             _cons |  -3590.676   4579.783    -0.78   0.439    -12908.31    5726.963
------------------------------------------------------------------------------
```

Table 4.6 shows the relationship between the variables in the study. The multiple regression model is:

Agricultural_output = -3590.676 + 403.2834 *Agricultural_loans* + 480.9222 *Employment_rate*

Interpretations

When agricultural loan and employment rate is held constant, the level of agricultural output is -3590.676 units. But a unit change in agricultural loans keeping employment rate constant, the increases level of agricultural output by 403.2834 units. Also, a unit change in employment rate holding agricultural loan constant, increases the level of agricultural output by 480.9222 units.

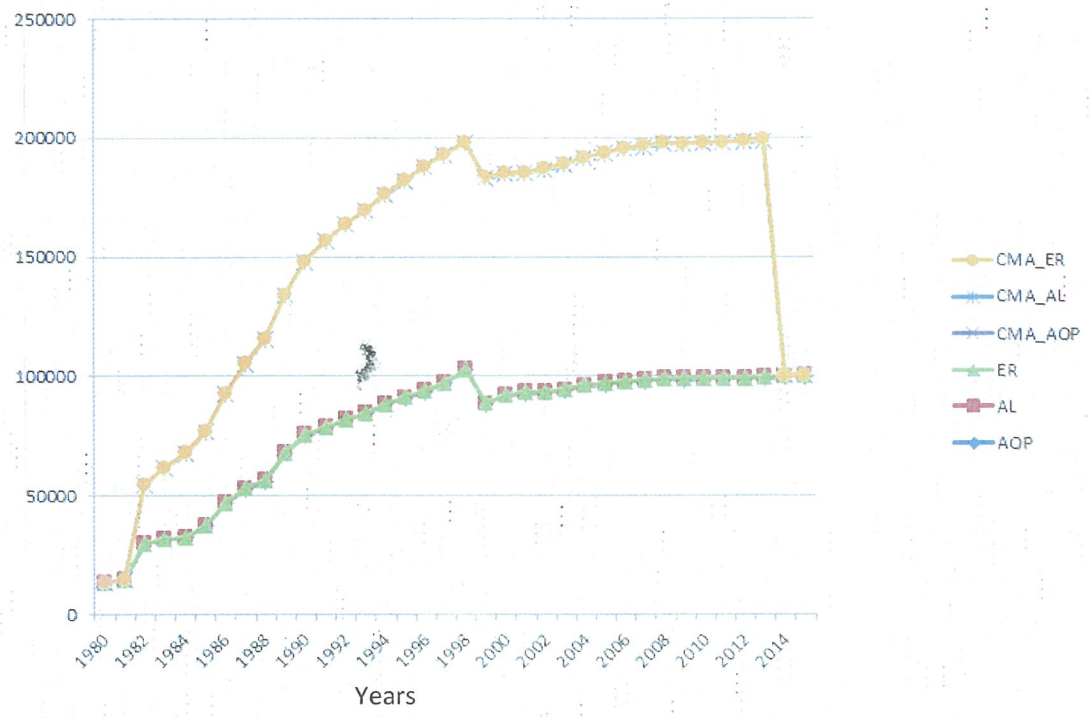
Also, Prob>F (0.0000) is less than 0.05. This implies that the constructed model above is statistically significant. This means that it can be used for further policy making.

Furthermore, the R-square (0.95) shows that there is a high impact played by the agricultural loan and employment rate to yield the level of agricultural output.

4.4 Forecasts

The study projected the behavior of agricultural output, agricultural loans and employment rate for next four years using moving average statistical approach as indicated in appendix 4

Figure 4.5 forecast of agricultural output, agricultural loans and employment rate



The criterion is that when CMA_ER, CMA_AL and CMA_AOP line graphs are above the ER,AL,AOP, it indicates that there is an increase in agricultural output, agricultural loans and employment rate and vice versa. From the figure above, line graphs of CMA_ER, CMA_AL and CMA_AOP were above the ER,AL, AOP which showed that in next four years agricultural output, agricultural loans and employment rate are likely to increase in Gomba district leaving other factors constant.

CHAPTER FIVE

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The summary of results, conclusions and recommendations were presented. The results were presented according to the purpose and the specific objective of the study. The study aimed at examining the impact of agricultural loans on the agricultural outputs in Gomba district, Uganda

5.1 Summary Findings

5.1.1 Behavior of Agricultural Loans

From the study the criterion was that reject null hypothesis that there is no trending in the behavior of agricultural output. We reject null hypothesis since the findings revealed that there was a positive trend in agricultural output from 1980 to 2015 evidenced positive trend line.

From the findings of the study, the normal curve was formed on the histogram. Thus, the data about agricultural loan came from a normally distributed population. Therefore, the data was further used in the data analysis. Furthermore, Findings showed that the plots were nearing the regression line. This implied that the data about employment rate was normally distributed

Phillips-Peron unit root test about agricultural loan was used to test the stationarity. Ho: there is stationarity. The criterion is that when Z(rho) greater than critical value at 5% level of significance, the null hypothesis is accepted. From the findings of the study, Z(rho) (-3.738) > critical value (-18.660), therefore null hypothesis was accepted thus the data was stationary.

5.1.2 Behavior of Agricultural Output

Basing on the results about the agricultural outputs, the test statistic (-3.618) was less than critical value (-2.972). the null hypothesis was accepted and the data about the agricultural Output was stationary.

From the findings, the criterion was that when the Prob>Z value is less than level of significance (0.05), Ho: the variable is normally distributed. From the findings, the Prob>Z

(0.00001) was less than 0.05 level of significance hence rejecting the null hypothesis. Therefore, the data about agricultural output came from a normally distributed population.

From the findings of the study, the criterion was that reject null hypothesis that there is no trending in the behavior of agricultural output. The analysis rejected null hypothesis since the findings in the study showed that there was a positive trend in agricultural output from 1980 to 2015 evidenced positive trend line.

5.1.3 Relationship between agricultural Output, Agricultural loans and Employment rate

Basing on the linear model obtained; *Agricultural_output* = -3590.676 + 403.2834 *Agricultural_loans* + 480.9222 *Employment_rate.* When agricultural loan and employment rate were held constant, the level of agricultural output was -3590.676 units. But a unit change in agricultural loans keeping employment rate constant, the level of agricultural output increased by 403.2834 units and a unit change in employment rate holding agricultural loan constant, the level of agricultural output increased by 480.9222 units. This implied that there was a positive relationship between agricultural Output, agricultural loans and employment rate.

5.2 Conclusions

5.2.1 Behavior of Agricultural loans

The study concluded that there was a positive trend on the behavior of agricultural loan. However, the study showed that there was a positive trend that was not perfect in that there was slight change of loans issued out to the farmers holding other factors constant.

5.2.2 Behavior of Agricultural Output

The study concluded that there was a positive trend on the behavior of Agricultural output. The smallholder farmers were found to be constrained by lack of capital and ignorance on how to apply for existing agricultural loans.

5.2.3. Relationship between Agricultural Loan and Agricultural output

The study concluded that there was a positive relationship between agricultural output, agricultural loans and employment rate. This implies when the government increases agricultural loans, farmers in Gomba District are likely to influence greater improvement in

their agricultural yields or output. As the agricultural loans increases, farmers in Gomba get more income to invest into agriculture sector thus improving on their outputs.

5.3 Recommendations

5.3.1 Behavior of Agricultural loans

The government should sensitize the farmers on how to apply and get loans. This is because the study revealed that an increase in government loans leads to an increase in agricultural output.

5.3.2 Behavior of Agricultural Output

The government should reduce on the costs of the agricultural inputs such as fertilizers, tractors among others. This will help the farmers to increase on their agricultural yields.

5.3.3 Relationship between Agricultural loan, agricultural output and employment rate

The government should put more emphasis on extending agricultural loans to farmers since the study revealed that an increase in agricultural loans increases agricultural output.

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APPENDICES

APPENDIX 1: PROPOSED BUDGET

Particulars	**Quantity**	**Amount(Uganda Shillings)**
Stationary	3 copies@ 17,000	51,000
Internet costs		80,000
Miscellaneous		40,000
Total		**171,000**

APPENDIX 3: DATA USED IN ANALYSIS (RECORD SHEET)

Year	AOP	AL	ER
1980	13244	70.8	2.5
1981	14240	72.9	2.7
1982	29552	71.3	2.85
1983	31601	74.1	3.4
1984	32512	78.6	3.9
1985	37106	78.6	5.6
1986	47015	80	8
1987	52772	140.8	7
1988	55964	170.9	13.4
1989	67581	170.9	16
1990	75085	170.9	16
1991	78691	178.2	16.2
1992	81802	180.7	20
1993	84286	182.9	25
1994	88080	183.8	29
1995	90817	183.8	34
1996	93401	183.8	40
1997	96789	183.8	42.1
1998	102646	184.1	39.2
1999	88266.8	184.2	38.9
2000	91927.5	184.8	38.5
2001	92886.3	185	48.7
2002	92987.8	185.2	50.6
2003	93987.6	186.2	50.9
2004	95876.9	186.7	51.3
2005	96678.6	187	51.4
2006	97659.1	187.2	52.6
2007	97898.8	187.2	54.8
2008	98876.8	188.2	54.4
2009	98454.7	188.5	54.6
2010	98668.9	188.6	54.9
2011	98766.4	188.8	60.1
2012	99004.6	190	60.3
2013	99160.9	190.2	60.1
2014	99689.8	190.8	60
2015	99870.6	190.8	61.7

Source: MAAF evidence based on data from Bank of Uganda, 2015/2016

APPENDIX 2: RESEARCH TIME FRAME

Activity	May	June	July	August
Proposal development				
Data analysis				
Submission of final thesis				

APPENDIX 4: DATA USED TO FORECAST AOP, AL AND ER IN NEXT FOUR YEARS

'ear	AOP	AL	ER	MA_AOP	CMA_AOP	MA_AL	CMA_AL	MA_ER	CMA_ER
980	13244	70.8	2.5						
981	14240	72.9	2.7						
982	29552	71.3	2.85	22159.25	24567.75	72.275	73.25	2.8625	3.0375
983	31601	74.1	3.4	26976.25	29834.5	74.225	74.9375	3.2125	3.575
984	32512	78.6	3.9	32692.75	34875.625	75.65	76.7375	3.9375	4.58125
985	37106	78.6	5.6	37058.5	39704.875	77.825	86.1625	5.225	5.675
986	47015	80	8	42351.25	45282.75	94.5	106.0375	6.125	7.3125
987	52772	140.8	7	48214.25	52023.625	117.575	129.1125	8.5	9.8
988	55964	170.9	13.4	55833	59341.75	140.65	152.0125	11.1	12.1
989	67581	170.9	16	62850.5	66090.375	163.375	168.05	13.1	14.25
990	75085	170.9	16	69330.25	72560	172.725	173.95	15.4	16.225
991	78691	178.2	16.2	75789.75	77877.875	175.175	176.675	17.05	18.175
992	81802	180.7	20	79966	81590.375	178.175	179.7875	19.3	20.925
993	84286	182.9	25	83214.75	84730.5	181.4	182.1	22.55	24.775
994	88080	183.8	29	86246.25	87696.125	182.8	183.1875	27	29.5
995	90817	183.8	34	89146	90708.875	183.575	183.6875	32	34.1375
996	93401	183.8	40	92271.75	94092.5	183.8	183.8375	36.275	37.55
997	96789	183.8	42.1	95913.25	95594.475	183.875	183.925	38.825	39.4375
998	102646	184.1	39.2	95275.7	95091.5125	183.975	184.1	40.05	39.8625
999	88266.8	184.2	38.9	94907.325	94419.4875	184.225	184.375	39.675	40.5
000	91927.5	184.8	38.5	93931.65	92724.375	184.525	184.6625	41.325	42.75
001	92886.3	185	48.7	91517.1	92232.2	184.8	185.05	44.175	45.675
002	92987.8	185.2	50.6	92947.3	93440.975	185.3	185.5375	47.175	48.775
003	93987.6	186.2	50.9	93934.65	94408.6875	185.775	186.025	50.375	50.7125
004	95876.9	186.7	51.3	94882.725	95466.6375	186.275	186.525	51.05	51.3
005	96678.6	187	51.4	96050.55	96539.45	186.775	186.9	51.55	52.0375
006	97659.1	187.2	52.6	97028.35	97403.3375	187.025	187.2125	52.525	52.9125
007	97898.8	187.2	54.8	97778.325	98000.3375	187.4	187.5875	53.3	53.7
008	98876.8	188.2	54.4	98222.35	98348.575	187.775	187.95	54.1	54.3875
009	98454.7	188.5	54.6	98474.8	98583.25	188.125	188.325	54.675	55.3375
010	98668.9	188.6	54.9	98691.7	98707.675	188.525	188.75	56	56.7375
011	98766.4	188.8	60.1	98723.65	98811.925	188.975	189.1875	57.475	58.1625
012	99004.6	190	60.3	98900.2	99027.8125	189.4	189.675	58.85	59.4875
013	99160.9	190.2	60.1	99155.425	99293.45	189.95	190.2	60.125	60.325
014	99689.8	190.8	60	99431.475		190.45		60.525	
015	99870.6	190.8	61.7						