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Financing Horticultural Value Chain and Performance of Financing Institutions in Kenya

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Abstract:

Financing horticultural value chain financing has a large effect on performance of Financial Institutions in Kenya. The horticultural value chain financing adopted by the Financial Institutions influence the volumes of the loans procured by the Financial Institutions and thus the performance of the Financial Institutions and thus the performance in the industry. The horticulture sub-sector of agriculture has grown in the last decade to become a major foreign exchange earner, employer and contributor to food needs in the country. This growth notwithstanding, performance of Financial Institutions in this sector in Kenya continues to face a myriad of challenges in the management of credit access. Financial institutions' horticultural value chain financing approaches hamper access to horticulture products loans that increase output by improving farming practices. This research was therefore designed to investigate the effect of horticultural value chain financing on performance of Financial Institutions in Kenya. It is on this premise that the researcher sought to establish the relationship between horticultural value chain financing and performance of Financial Institutions in Kenya. The study was guided by a specific objective which is: To determine the effects of horticultural value chain financing on performance of Financial Institutions in Kenya. The study adopted a descriptive cross-sectional survey and inferential research design. The target population of this study was 54 financial institutions comprising 41 commercial banks and 13 registered Microfinance Institutions in Kenya (CBK, 2019). Data was collected through a survey using self-administered questionnaires delivered to Financial Institutions. The respondents who are the Heads of Credit and Credit line Managers of the various Financial Institutions provided an assessment of their horticultural value chain financing analysis.

Studies on horticultural value chain financing and performance of Financial Institutions in Kenya are scanty. To fill this glaring gap in this vital area of study, the researcher used linear multiple regression model to estimate the parameters. The study scientifically modeled the influence of horticultural value chain financing on performance of Financial Institutions in Kenya. The data was analyzed using descriptive and inferential statistics. Descriptive statistics produced frequencies and percentages while inferential statistics produced regression and correlation results which show the relationship among the variables. Statistical Packages for Social Sciences (SPSS) was used in the analysis of data and results were presented on frequency tables to show how the responses for the variables and indicators which were posed to the respondents. From ANOVA, since p value $p=0.000$ and was lower than $p=0.05$ (p value $0.000 < 0.05$), the findings showed horticultural value chain financing significantly affects the performance of Financial Institutions in Kenya. Horticultural value chain financing had 76.5% effect on performance of Financial Institutions in Kenya.

From the findings, there is a positive relationship between horticultural value chain financing and performance of Financial Institutions in Kenya. Thus, it can be concluded that the performance of Financial Institutions in Kenya is influenced by horticultural value chain financing. The study suggests that the benefits of horticultural value chain financing need to be clearly communicated to minimize the fear that comes with lending the sector. Such benefits include improvement in decision-making, information flow, efficiency, competitiveness and financial performance. This study suggests that Horticultural Value Chain financing can be improved by being more focused in the global value chain process. Once the stages of the process are identified, deliberate diagnosis and proper planning prior to financing is required. At the center of all the Horticultural Value Chain are the activities from, production, processing, handling, packaging, storage & warehousing, distribution and marketing that are opportunities for financing. The study also suggests that resources should be allocated according to the priority areas identified in the horticultural value chain and adjustments made based on major changes in the performance target.

Keywords: Horticultural value chain financing, value chain analysis, production inputs financing, processing financing, marketing channel, marketing margin, supply chain, logistics, export financing, vegetables, fruits, nuts, herbs and spices

1. Statement of the Problem

The performance of Financial Institutions in Kenya is an important subject given the significant role the Financial Institutions play in the economy. Financial Institutions are interested in lending to numerous customers bearing in mind profitability, liquidity and solvency. However, the decision to finance the horticulture sub-sector is influenced by horticultural value chain activities. In spite of the increasing number of Financial Institutions and competition for customers, lack of deliberate focus on horticultural value chain activities from, production, processing, handling, packaging, storage & warehousing, distribution and marketing that are opportunities for financing remains a key hindrance to financial institutions performance in Kenya.

To reorganize financing to this key sector, it is important to analyze the horticultural value chain financing. Scanty studies have been done to investigate the effect of horticultural value chain financing on performance of Financial Institutions in Kenya (Mutuku et al. 2004)

1.1. Hypotheses

The study tests the null hypothesis on the influence of horticultural value chain financing on performance of Financial Institutions in Kenya. It is expressed as follows:

- H_{01} : Horticultural value chain financing has no significant relationship with performance of financial institutions in Kenya.

2. Literature Review

2.1. Theoretical Review

The primary role of a bank is intermediation by way of collecting savings from depositors and making these savings available as loans to borrowers. However, there are challenges experienced for banks to experience growth.

2.2. Market Power (MP) Theory

This theory describes the relationship between the bank size and profitability. (Olweny and Shipho, 2011) observe that the market power posits that performance of banks is influenced by the market structure of the sector. These authors claim that market power hypothesis assumes that the profitability of a commercial bank is a function of exogenous market factors. Within the market power theory, there are two different approaches that are; Structure-Conduct-Performance (SCP) and the Relative Market Power hypothesis (RMP). Following the SCP approach, the level of concentration in the banking market leads to higher potential market power by commercial banks due to increased volumes of deposits. This may raise their profitability. Commercial banks located in more intense markets are most likely to make unusual returns by their ability to lower deposits rates and to charge higher loan rates as a results of collusive or monopolistic reasons, than firms operating in less concentrated markets, irrespective of their efficiency (Tregenna, 2009). In our case, banks will also have to determine different types of loans to be advanced to this heterogeneous population in concentrated markets. On the other hand, RMP theory postulates that market share influences bank profitability. Further, only large commercial banks characterized by differentiated products can influence interest rates, lending volumes and consequently returns earned. Therefore, commercial banks in this case are able to practice market power and earn non-competitive returns.

This theory supports my study by evaluating the effects of liquidity, return on assets and profitability on loans to horticultural activities and financial performance of Financial Institutions in Kenya.

2.3. Empirical Literature Review

There is vast empirical literature on the factors associated with lending behavior among commercial banks. (Ngomsi and Djiogap, 2012) investigated the determinants of bank long-term lending behavior in the Central African Economic and Monetary Community. The study revealed that foreign banks tend to exhibit higher long term loan ratios compared to the state owned. The study collected data from all 41 commercial banks in Kenya. A multiple linear regression model was adopted. It revealed a strong positive and significant relationship between financial performance of commercial banks and horticultural value chain finance.

In a study conducted by (Chernykh & Theodossiou, 2011) revealed that the banks size measured by total assets and bank capitalization influenced commercial lending behaviors and the likelihood of long term lending. The author suggests that large banks have an advantage in providing a large variety of financial services to their clients since they are capable of mobilizing more funds.

(Vazakidis and Adamopoulos, 2009) investigated the relationship between economic growth and credit market development in Italian market. The log-linear regression model indicated a positive effect of economic growth on credit market development. Further, the authors established that through the transmission mechanism, a rise in prime rate negatively affects banks' lending behavior. This affirms a previous study by (Dell'Araccia and Marquez, 2006) whereby bank credit expansions lean to be pro-cyclical; that is, high rates of growth in GDP induces a high rate of growth in bank credit. This is due to the fact that in the period of economic boom, banks loosen up their criteria and lend to both good and bad projects, while in times of economic depression most loans become non-performing and thus constraining credit available to private sector.

2.4. Horticultural Value Chain Finance and Financial Performance

Horticultural farmers need improved access to services and agro-inputs. Despite increased investments in the horticultural subsector over the last few years, the challenges to multiply and scale up success cases remain considerable. Financial impediments persist at all levels. Innovation in establishing market integration for the poor remains a formidable fight.

Poor production technology is another constraint. Horticultural farmers advancing from subsistence farming to commercial farming need to access increased formal credit in ways that address all their fears as well as meet their aspirations (AFA, 2017).

Horticultural and Floricultural loans are for financing growing of specialized horticultural and flower crops. The items financed include; nurseries, seed bed preparation, planting materials, green house equipment, water supply systems, electricity supply networks, and packaging equipment, cold storage equipment, harvesting equipment and operational costs.

The Agri-Business and Agro-Processing loans are loans targeting the market beyond primary production both upstream in supply of farm inputs and downstream in processing and distribution to enable backward and forward integration by the producer farmer. The terms and conditions vary depending on whether it is an individual partnership, company or group borrowing (Giovannucci et al 2012).

2.5. Value Chain

A value chain is a sequence of activities which lead to production goods and/or services that eventually reach the final consumers. It involves several actors who undertake distinct functions that start with an input process, several intermediate stages of product transformation, value addition, and delivery to the market (Porter, 1996).

A value chain is a high-level model developed by Michael Porter used to describe the process by which businesses receive raw materials, add value to the raw materials through various processes to create a finished product, and then sell the finished product to customers. Companies conduct value-chain analysis by looking at every production step required to create a product and identifying ways to increase the efficiency of the chain. The overall goal is to deliver maximum value for the least possible total cost and create a competitive advantage.

A value chain is a company model that segments the flow of production activities into five categories. Each one of these categories is an opportunity for a company to maximize efficiency and create a competitive advantage. The aim of the value chain is to increase profits by creating value at each of the five touch points so that total value exceeds the total costs associated with the product (Porter, 1996).

The component parts of a value chain are by themselves business opportunities. The importance of carrying out a value chain approach in development of smallholder agribusiness is to, Identify potential business opportunities for investments, Identify bottlenecks and the necessary improvements needed for better chain optimization and performance, provide a framework that can enable analysis in the spread of benefit for the various actors in the chain.

The study will focus specifically on the logistical components of the value chain, especially the transport operations that link farmers to the markets. A pre-condition for marketing of high-value products is transport efficiency and proper management of various activities within the supply chains. Coordination of transport is particularly important in the smallholder sector as the farms tend to be spatially dispersed and poorly connected to motorable road networks. Local consolidation of produce into viable volumes requires a reliable local transport system and coordination with traders who collect produce for outward transport to the main markets.

2.6. Logistical Components of a Value Chain

Smallholder farming presents a logistical challenge due to the fragmentation of production into small individual units. In addition, the farms are typically located far from the main rural road network. In this booklet, we use the term 'logistics system' to refer to the mechanisms used by smallholder farmers in a given area to work together to consolidate their produce in order to achieve viable volumes for transport to the market. High value agricultural produce is generally grown for national and international markets, thus, it is highly dependent on efficient transport. Compounding transport challenges for the smallholder farmers include: Highly perishable produce, Maintenance of transport infrastructure in view of heavy rainfalls received in the agricultural production areas of the country. (DGDA, 2012)

2.7. Primary Activities of the Value Chain

All five primary activities are essential in adding value and creating a competitive advantage. The first activity in the value chain is inbound logistics, which includes all receiving, warehousing, and inventory management of raw materials ready for production. The second activity is operations, which encompasses all efforts to convert raw materials into a finished product (USAID, 2010).

Outbound logistics form the third activity in the value chain and occurs after all operations are completed and the product is ready for the customer. Activities required to deliver a product to the end user are considered part of outbound logistics. Marketing and sales are the fourth part of the value chain and include all strategies to enhance the visibility of the product, satisfy consumer needs with the product, and facilitate the sale of the product. Activities include channel selection, advertising, and pricing. Service is the fifth and final step in a company's value chain and describes all activities that create better consumer experiences, such as customer service, refund and exchange programs, and warranty and repair services (Roy, 2012).

Companies can harness a competitive advantage at any one of the five activities in the value chain. Creating outbound logistics that are highly efficient, for example, reduces a company's shipping costs and allows it to either realize more profits or pass the savings to the consumer by way of lower prices. (*AFCAP KENDAT & Partners Value-Chain Logistics*). Kenya Network for Dissemination of Agricultural Technologies (KENDAT) in partnership with International Forum for Rural Transport and Development (IFRTD) and TCP International GmbH

2.8. Support Activities of the Value Chain

Support activities facilitate the efficiency of the primary activities in a value chain. The four support activities are procurement, technological development, and company infrastructure. Increasing the efficiency of any of the four support activities increases the benefit to at least one of the five primary activities. These support activities are normally denoted

as overhead costs on a company's income statement. A value chain is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market (Kormawa, 2012). The concept comes through business management and will be first described by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*.

The idea of the value chain is based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources – money, labor, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits (IfM, Cambridge 2012)

In Porter's value chains, Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, and Service are categorized as primary activities. Secondary activities include Procurement, Human Resource management, Technological Development and Infrastructure (Porter 1985, pp. 11–15). According to the OECD Secretary-General (Gurría 2012) the emergence of global value chains (GVCs) in the late 1990s provided a catalyst for accelerated change in the landscape of international investment and trade, with major, far-reaching consequences on governments as well as enterprises (Gurría 2012).

Interlinked value-adding activities that convert inputs into outputs which, in turn, add to the bottom line and help create competitive advantage. A value chain typically consists of inbound distribution or logistics; manufacturing operations; outbound distribution or logistics; marketing; selling and after-sales service. These activities are supported by purchasing or procurement; research and development; human resource development; and corporate infrastructure. (SNV, 2012)

2.9. Financial Performance of Commercial Banks

One way to measure bank performance is by determining the profitability of the bank. Profitability is the ability of a bank to make profits by earning more money that exceeds the yearly expenses and taxes every financial year. The Banks make profits from fees charged for their services and the interests levied on assets. On the other hand, the main expense incurred by banks is in the interest paid on their liabilities every financial year. A positive difference between the earnings and the expenses represents the profitability of any financial institution. The bank's assets that attract revenue to the institution include loans to individuals, companies, and other institutions and securities the bank holds. The principal liabilities for the banks include deposits and the funds borrowed from other banks or through selling of commercial paper in the money market. The measure of profitability of a bank is determined by the return of assets (ROA) and the return on equity (ROE)

The assets such as the loans and securities are utilized by the banks to earn a large portion of the institution's income. The ROA is determined by dividing the bank's net interest income by average total assets. The ROA is expressed as a percentage. The net interest income is determined by obtaining the difference between the interest received on assets and interest paid on liabilities. Net interest income = interest received on assets – interest paid on liabilities. Return on Assets (ROA) = Net Income / Average Total Assets (Mululem, 2015) Bank profitability can also be measured by determining the return on equity (ROE). The ROE represents the amount of net income returned as a percentage of shareholder's equity. The ROE measures a bank's profitability by determining the institution's earnings using the money invested by the shareholders. Just like ROA, ROE is also expressed as a percentage (Mululem, 2015). Return on Equity = Net Income / Shareholder's Equity (Mululem, 2015).

3. Research Methodology

3.1. Research Design

In order to be able to accomplish the study objectives, the study adopted a descriptive cross-sectional survey research design. According to Cooper and Schindler (2005), cross-sectional study is conducted once to pick out the parameters of a phenomenon at a specific point in time and the aim is to get an accurate means of capturing a population's characteristics at a single point in time relating to what, where, how, who and when of a research topic. The study is designed to examine horticultural value chain financing and performance of Financial Institutions in Kenya. Descriptive cross-sectional research design helped the study in seeking to describe and establish the relationships among the study variables namely horticultural value chain financing and Financial Institutions performance variables. According to Kotler and Kelly (2006) descriptive cross-sectional research design also facilitates checking for significant associations between variables and make generalizations concerning the target population. Descriptive cross-sectional research design has previously and successfully been used by a number of researchers in business related studies including Kuria (2010) and, Wilfred (2014). A research design is the arrangement of conditions for collection, measurement and analysis of data in that aims to combine relevance to the research purpose Kothari (2010).

3.2. Target Population

The target population in this study includes of all 41 licensed commercial banks and 13 registered MFIs in Kenya;

| Financial Institution | Category of Population | Number | Percentage |
|----------------------------------|------------------------|--------|------------|
| Commercial Banks | Head of Credit | 41 | 48% |
| | Line Credit Manager | 21 | 24% |
| Microfinance Institutions (MFIs) | Head of Credit | 13 | 15% |
| | Line Credit Manager | 11 | 13% |
| Total | | 86 | 100 |

Table 1: Target Population of the Study

A census study was conducted studying the entire population as it was reasonable to include all 41 commercial banks and 13 registered Microfinance Institutions (MFIs).

The researcher used a purposive sample which is a non-probability sample that was selected based on characteristics of the population and the objective of the study. Purposive sampling is also known as judgmental, selective, or subjective sampling.

3.3. Operationalization of Key Study Variables

This study analyzed the influence of horticultural value chain financing on performance of financial institutions in Kenya. This section deals with how the key dependent and independent variables were operationalized in this study. The key independent variable used in this study was liquidity Policy. The key dependent variable is Financial Institution Performance; measured in terms of Return on Assets (ROA), Return on Equity (ROE), profitability and solvency.

The study variables were measured using Likert-type scale (1= *Never*; 2= *Some Extent*; 3= *Not sure*; 4= *High Extent*; 5= *Always*) because these scales not only have more informational value but they come handy with respondent centered studies according to Kothari (2010). Measurement scale operationalizing the study variables and indicators of these variables were used to construct the research instrument as shown in table 2.

| Independent Variable (X) | | | | |
|--------------------------------------|--|---|--------------------------------|-----------------|
| Variable | Operationalization | Indicator | Assessment scale | Question number |
| Horticultural Value Chain Financing: | Linked activities that work to add value to a product linking producers to processors and markets. | Production Processing Advertising Marketing logistics | Five Likert type scale/Ordinal | Questions 1 - 5 |

Table 2: Construction of Research Instruments

Source: Researcher, 2020

How well the Financial Institution uses assets to generate revenue

| Variable | Operationalization | Indicator | Assessment scale | Question number |
|----------------------|---|--|-------------------------------|-----------------|
| Liquidity | Ability to meet short-term Financial obligations. | Short-term debt Working capital | FiveLikert type scale/Ordinal | Questions 1 |
| Return on Assets | Percentage of Net Income from Assets. | Net Income Total Assets | FiveLikert type scale/Ordinal | Questions 2 |
| Return on Equity: | Percentage of Net Income from Equity | Net Income Issued Shares | FiveLikert type scale/Ordinal | Questions 3 |
| Profitability | The degree of which Business yields financial gain. | Cost of production Selling Price | FiveLikert type scale/Ordinal | Questions 4 - 7 |
| Solvency | Ability to pay debts to determine stability | long term debt, Assets and equity | FiveLikert type scale/Ordinal | Questions 8 |
| Financial Efficiency | Getting more output From the same resources or getting the same output from fewer resources | A high asset turnover is considered efficient use of assets. | FiveLikert type scale/Ordinal | Questions 9 |

Table 3: Performance of Financial Institutions: Dependent Variable (Y)

Source: Researcher, 2020

3.4. Data Collection Instruments

The primary data was collected using the questionnaires. A 5-point Likert scale was used to determine the horticultural financing factors that enhance performance of Financial Institutions in Kenya. Closed ended questions enabled the research study to collect quantitative data.

3.5. Validity of the Research Instrument

The validity of the data collection instrument for the study was tested by first administering it on conveniently selected respondents of five Financial Institutions. These are the select Financial Institutions. The pilot study aimed at establishing construct validity of the instrument. The pilot survey was conducted to find out if the respondents could respond to the questions without difficulty. The pilot study assisted in identifying the problems which the respondents encountered in the process of answering the questions put across to them. The piloted instrument was revised and ambiguous items modified on the basis of the responses from the pilot tests.

3.6. Reliability of the Research Instrument

Cronbach's alpha coefficient was used to measure the reliability of the scale, which was also used to assess the interval consistency among the research instrument items. This is because it is strong in determining the inter consistency or average correlation of items in a survey instrument to gauge its reliability. The measures of study variables Cronbach's alpha coefficient should be greater than the minimum accepted Cronbach's alpha coefficient of 0.70 (Kothari, (2010). The regression models were also subjected to specification tests of multicollinearity to determine how well the regression assumptions are held.

3.7. Data Collection Procedures

This study made use of quantitative data because the variables under review are measurable and therefore used to uncover patterns in trying to answer the research question outlined in chapter one. The respondents were Heads of Credit and Credit Line Managers of the select Financial Institutions. Horticultural value chain financing was measured by production; processing; advertising; market and logistics which are activities that work to add value to a product linking producers to processors and the market. Performance of Financial Institutions was measured by Liquidity, return on equity (ROE/ROA), profitability of extending credit to the Horticultural farmers, solvency and financial efficiency.

3.8. Data Analysis Techniques

Spearman rank correlation analysis was run to determine the existence and significance of the relationship between horticultural value chain financing and performance of Financial Institutions in Kenya. The regression model was used to determine the relationship between horticultural value chain financing and performance of financial Institutions in Kenya. Financial Institutions performance was the dependent variable while the independent variable was horticultural value chain financing. The variable X_1 was the average of the respondent per Financial Institution.

3.9. Model Specification

The main objective of the empirical model used in this study was to test the hypotheses, that is, to investigate whether a relationship exists between horticultural value chain financing and performance of Financial Institutions in Kenya.

Other factors that have not been included in the model as stand-alone independent variables such as past relationship with the borrower and collateral requirements will be captured by the error term in the model.

$$FIP_i = \beta_0 + \beta_1 HVC_i + \varepsilon_{it}$$

Where i and t denotes financial institution and year respectively.

FIP- Financial Institution Performance as a result of horticultural value chain financing

HVC – Horticultural Value Chain financing

β_0 is the value of the dependent variable (FIP) assuming the independent variable is zero, β_1 is the correlation coefficients of the independent variable while ε is the error term which is assumed to be independent. The model presented above assumes an underlying relationship between the variables. A 5% significance level will be used throughout the regression analysis. The t -statistic will be used to measure the significance of the constants of regression β_0 and β_1 . The strength of the level to which the independent variable HVC explains the variation in FIP was assessed using the coefficient of determination R^2 , and the Adjusted R^2 .

3.10. Bivariate Regression

Regression models enable the researchers to statistically determine the contribution made by the controllable (independent) variable on the dependent variable.

Bivariate regression analysis was done to determine whether horticultural value chain financing influences Financial Institutions' performance in Kenya.

Horticultural Value Chain Financing and Financial Institution performance, (H_{01})

Thence, the formula below to show the relationship between Performance of Financial Institutions in Kenya and the independent variable (horticultural value chain financing) was adopted.

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where Y = Composite index of Financial Institutions Performance (FIP)

β_0 = Constant (is the change in Horticultural Value Chain financing)

β_1 =Coefficient indicating influence of Horticultural Value Chain Financing on financial performance.

X_1 = Index of Horticultural Value Chain(HVC)

ε - the epsilon, is the error

| Hypothesis | Hypothesis test |
|--|--|
| H_0 Horticultural value chain financing has no significant relationship with performance of financial institutions in Kenya. | Regression Analysis $H_0: \beta = 0$ Reject H_0 if p-value ≤ 0.05 , otherwise fail to reject H_0 |

Table 4: Hypothesis Testing Framework

4. Findings and Discussions

From a total of 86 questionnaires, 77 questionnaires were duly filled and returned for analysis. The response rate therefore was 90% which was representative of an appropriate inference from the study.

| Variable | Cronbach Alpha | No Of Items |
|-------------------------------------|----------------|-------------|
| Horticultural Value Chain Financing | 0.712 | 7 |

Table 5: Validity and Reliability of the Questionnaires

The validity on horticultural value chain financing value of 0.712 met the threshold.

4.1. Regression Diagnostics

Various diagnostic tests were conducted to ensure that the coefficients of the estimates were consistent and could be relied upon in making inferences. As argued by Greene (2013) regression can only be accurately estimated if the basic assumptions of multiple linear regressions are observed. The study thus performed tests for, linearity, homoscedasticity, autocorrelation, multicollinearity and normality taking remedial action where necessary as presented below.

4.2. Homoscedastic Test Results

| Test Statistics | Degree of Freedom | P-Value |
|-----------------|-------------------|---------|
| 5.234 | 3 | 0.900 |

Table 6: Breusch Pagan Test for Homoscedasticity

The result of the test presented in table 6.0 revealed that the test statistics was 5.234 while the p-value was 0.9 indicating that the data collected was not heteroscedasticity in variance and thus necessitating the acceptance of null hypothesis that the data collected was homoscedastic in variance and can be relied on for regression analysis.

4.3. Autocorrelation Test

Durbin Watson Statistic was conducted to test for autocorrelation in the data before accepting it for regression analysis.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|------|----------|-------------------|----------------------------|---------------|
| 1 | .931 | .866 | .735 | .44628 | 2.377 |

Table 7: Autocorrelation

- a. Predictors: (Constant), HVC (Horticultural Value Chain Financing)
b. Dependent Variable: FIP (Financial Institutions Performance)

The results showed that the Durbin Watson Statistics for lag 1 was 2.377 which was between the two critical values $1.5 < d < 2.5$ Therefore the null hypothesis which stated that there was no autocorrelation in the data was rejected. This implies that the residuals were independent from each other. Similarly, the result satisfied the rule of thumb which states that values of $1.5 < d < 2.5$ show that there is no autocorrelation in the data (Barley, 2014).

4.4. Tests of Normality

The results presented in table 8.0 showed a K-S statistic whose probability values were greater than 0.05 which was an indication the data was normally distributed.

| | Tests of Normality | | | | | |
|-----|---------------------------------|-----|------|--------------|-----|------|
| | Kolmogorov-Smirnov ^a | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| HVC | .088 | 192 | .701 | .971 | 192 | .090 |
| FIP | .074 | 192 | .213 | .988 | 192 | .105 |

Table 8: Tests of Normality

The results presented in the table showed a K-S statistic whose probability values were greater than 0.05 which was an indication the data was normally distributed.

4.5. Test for Multicollinearity

The results show the independent variables had variance inflation factor less than 10 which was an indication of non- existence of multicollinearity.

| Model | Collinearity Statistics | |
|----------------|-------------------------|-------|
| | Tolerance | VIF |
| 1(Constant)HVC | .826 | 1.211 |

Table 9: Test for Multicollinearity

4.6. Correlation Analysis

In order to specify the strength and direction of the linear relationship between the independent variable and Financial Institutions Performance, bivariate correlation between the computed study variable and the dependent variable was conducted. Correlations between independent variable; Horticultural value chain financing influence on Financial Institutions' Performance was found to be significant at 0.05 level of significance.

| | | FIP | HVC |
|-----|---------------------|--------|-----|
| FIP | Pearson Correlation | 1 | |
| | Sig. (2-tailed) | | |
| | N | 77 | |
| HVC | Pearson Correlation | .765** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 77 | 77 |

Table 10: Correlation Results for Dependent and the Independent Variable

4.7. Regression Analysis of Horticultural Value Chain Financing on Performance of Financial Institutions in Kenya

The study sought to determine the effect of horticultural value chain financing on performance of Financial Institutions in Kenya using objective below.

- Objective: To determine the effect of horticultural value chain financing on performance of Financial Institutions in Kenya.

| ANOVA ^a | | | | | | |
|--------------------|------------|----------------|----|-------------|---------|-------------------|
| | Model | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 18.483 | 1 | 18.483 | 105.676 | .000 ^b |
| | Residual | 13.118 | 75 | .175 | | |
| | Total | 31.601 | 76 | | | |

Table 11: Regression Results of Horticultural Value Chain Financing on Performance of Financial Institutions in Kenya

a. Dependent Variable: Financial Institutions Performance

b. Predictors: (Constant), Horticultural Value Chain Financing (HVC)

The F test was significant with a p value =0.000 which was less than the standard p value of 0.05 and this meant that the model was significant. From ANOVA, since p value p=0.000 and was lower than p=0.05 (p value 0.000<0.05), then the effect of extent of the influence of horticultural value chain financing on performance of Financial Institutions in Kenya was significant. Therefore, this study rejected the null hypothesis. The equation that was fitted for the model was $FIP=1.331+0.632HVC$

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .765 ^a | .585 | .579 | .41821 |

Table 12: Coefficient of Determination

a. Predictors: (Constant), Horticultural Value Chain Financing (HVC)

The regression results in table 12.0: show that the extent of the influence of horticultural value chain financing on performance of Financial Institutions in Kenya was significant (F (1, 75) =105.676, p=0.000<0.05). With R =0.765 and R² = 0.585, the model revealed that horticultural value chain financing had 76.5% effect on performance of Financial Institutions in Kenya.

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|-------------------------------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.331 | .227 | | 5.855 | .000 |
| | Horticultural Value Chain Financing | .632 | .061 | .765 | 10.280 | .000 |

Table 13: Coefficients^a

a. Dependent Variable: Financial Institutions Performance

The coefficient for extent of the influence of horticultural value chain financing(β) was also significant ($\beta = 0.632$, $t = 10.28$, $p = 0.000 < 0.05$) indicating that one percent increase in performance of Financial Institutions in Kenya was because of 0.632% percent increase in horticultural value chain financing..

Since p -value = $0.000 < 0.05$, it can be deduced that horticultural value chain financing significantly affects performance of Financial Institutions in Kenya.

5. Conclusions

The study inferred that Financial Institutions were able to provide short-term credit facilities to horticultural value chain activities. However, Financial Institutions set out strict conditions on the credit facilities. Horticultural value chain financing was noted to largely enhance performance of the Financial Institutions since credit or loans would finance assets, expand production and other operations aimed at enhancing performance. Financing horticultural value chain was crucially important in improving financial performance of Financial Institutions in Kenya.

From the findings of this research the following conclusions are drawn. Financial Institutions finance horticultural activities and borrowers have sources of income that enable them to pay for the loan and the accruing interests(Evers et al 2014).Although horticultural value chain financing has increased, the demand is considerably greater. Loans allocated by local banks have funded business activities across the country that affected a larger pool of horticultural producers by providing improved access to services and facilities (cold storage, processing) or inputs such as seedlings, fruits and vegetables (through nurseries and orchards) (Goger et al 2014).

6. Recommendations

Horticultural activities are dominated by smallholders and other value chain stakeholders who may be disadvantaged by access to affordable financing. It is important to facilitate access by small-scale farmers to larger items of agricultural machinery, such as tractors, harvesters, threshers and milling equipment – at affordable prices. To this end, strategies must be identified and systems set up that provide financing on a commercially sustainable basis; business models developed that facilitate the competitive provision of financial services; financial models developed that enable small horticultural farmers to access agricultural machinery for their own use and for rental to other farmers through the operation of commercially viable hire services and design financial products on a scale that is best suited to the needs of small horticultural farmers.

7. Suggestions for Improving Horticultural Value Chain Financing

There is evidence in many African countries of progress made in establishing more stable macro-economic environments, liberalized markets, tighter fiscal regimes and stronger institutional frameworks. However, as public interventions and investments decline, the private sector does not always step in to provide farmers and other entrepreneurs with essential market, business and financial services. Due to poorly developed markets and low levels of economic activity in many countries in the region, mechanization may depend on public sector initiatives and actions.

There is an urgent need for continued public sector action to strengthen enabling environments for private-sector horticultural economic activity and investments. It is important to identify how to enhance financing innovations in horticultural activities. The government of Kenya could foster the development of sustainable horticultural financing through the following high priority actions: to improve rural infrastructure and strengthen agricultural support services to reduce costs and increase profitability, expanding the supply and effective demand for financial services; to provide direct support to Financial Institutions involved in horticultural financing and hire services through business advisory services; to reduce or absorb transaction and information costs for the provision of financial services to smaller-scale horticultural farmers; to remove legal and regulatory constraints affecting horticultural value chain financing, ensuring that effective procedures are in place for supply and, where necessary, for repossessing assets; to promote cross-border, subregional and regional collaboration for the movement of horticultural equipment and provision of financial services to increase annual utilization rates of machinery and equipment; to remove or reduce import and sales taxes on agricultural machinery and equipment and to make risk management tools, such as insurance, widely available.

Credit and finance are critical for horticultural activities and investments in Kenya. In some countries, government-owned agricultural banks channel subsidized loans to farmers for the purchase of machinery and other capital investments. The best way to finance investments in sustainable horticultural activities is for main-line banks to provide loans as part of their regular service to the horticultural subsector. Embedding the financing mechanism in the systems of regular financial institutions like any other loan makes it sustainable. In addition, innovative financing

mechanisms must be provided to finance investments in sustainable horticultural activities; in particular, credit needs to be made available to horticultural farmers wishing to expand their enterprise. Eventual subsidies need to be based on clear, well-defined and easily understood objectives and requirements.

The public sector has a crucial role: Financing services of a public goods nature, for example, training, research and development, and rural infrastructure; creating an enabling environment for the private sector to finance horticultural investments by enacting appropriate laws for banking, contracts and leasing regulations; providing subsidies for the adoption of particular technologies.

8. Suggestions for Further Research

These include the effect of capital management on performance of Financial Institutions in Kenya; the influence of capital structure on performance of Financial Institutions in Kenya; an assessment of financial factors influencing profitability of Financial Institutions in Kenya.

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