Influence of Return on Investment of Debt Financing on Financial Portfolio Diversification among Commercial Sugarcane Farmers in Kenya

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Abstract

The study's specific objective was to evaluate the relationship between financial returns of debt financing and financial portfolio diversification among commercial sugarcane farmers in Kenya. Descriptive correlation was then used to describe and establish the relationships among the study variables. The target population for this study comprised of all sugarcane farmers in Kakamega and Bungoma Counties. The study variables were measured using both the ordinal scale and summated scale (likert-type scale).The questionnaire was pre-tested on pilot respondents who were not be part of the study respondents but knowledgeable in the study aspects in order to ensure their validity and relevance. Cronbach's alpha coefficient was used to measure the reliability of the scale. The study focused on farmers of two counties: Bungoma and Kakamega. The regression results reveal statistically significant positive linear relationship between return on investment of debt financing and financial portfolio diversification ($\beta = 0.789$, p-value = 0.002). At the individual level, all the indicators of return on investment of debt financing had positive and significant effect on financial portfolio diversification as follows: Profits from Debt financing had positively influenced on financial portfolio diversification ($\beta = 0.789$ and p-value = 0.002) while Security flexibility of debt financing also positively affected financial portfolio diversification ($\beta = 0.117$, p-value = 0.003). The results also showed that financial return on investment of debt financing had moderately high explanatory power on financial portfolio diversification among commercial sugarcane farmers in Kenya in that it accounted for 62.3 percent of its variability therefore commercial sugarcane farmers in Kenya need to take into account financial return on investment of debt financing measures such as profits from farm outputs are sufficient enough to support my individual needs even as they diversify their portfolios.

1.1 Background of the study

Debt financing is a method of financing in which a company receives a loan and gives its promise to repay the loan. Debt financing includes both secured and unsecured loans. In addition most debt will be subject to a repayment period. The key loans typically paid back within 6-18months, intermediate loans paid back within 3 years and long term loans paid back from cash flows of the business in 5years or less (Authur, 2015). Debt financing refers to the use of borrowed funds to operate a business or firm. According to Demirguc-Kuntet *el. al.* (2006), there are two primary sources of finance for the SMEs; equity and debt. Due to the high costs of accessing external equity in form of venture capital or stock exchange, many SMEs rely on bank loans and overdrafts and suppliers credit for financing (Mengistae *et al.* 2010).

Cecchetti *et el.* (2011) studied the effects of debts on the performance of firms and found out that there are moderate limits within which the firms are expected to perform well when using debts, but also concluded that after a certain level of debt is exceeded, then there is a possible risk of financial crisis. As stated by Rainhart and Rogoff (2009), they also agreed with the research by Cecchetti *et al*. above. They also added that a firm with a high debt ratio will channel most of its attention and funds to the repayment of the loans and may therefore end up failing to undertake the possible more profitable projects at their exposure, due to low access of extra funds from the financial institutions. High debt ratio, they explained, also increases the business risk and financial distress during temporary industry and economic-wide downturns.

Recent research argues that thorough consideration leads to costs of debt that roughly equal the

marginal (tax) benefits of debt in equilibrium. In a recent study, Abor (2005) examined the effect of cost of debt on the corporate profitability of listed firms in Ghana using a panel regression model. His measures included short-term debt ratio, long-term debt ratio and total debt ratio. His findings show a significantly positive relation between the short-term debt ratio and profitability. However, a negative relationship between long-term debt ratio and profitability was established. In terms of the relationship between total debt ratio and profitability, the results of his study indicated a significantly positive association between total debt ratio and profitability. The results from a South African data imply that pursuing a high long-term debt strategy might be associated with low profitability. This position supports the findings of previous empirical studies (Abor, 2005). The results from this South African data also reveal significantly negative interaction between firm size and return on assets for measures of short-term debt, long-term debt, and total debt.

Much has been studied on the use of debt finance and the advantages and disadvantages of using debt finance. Gleason et al. (2000) in their study examined the relationship between performance and leverage by using return on asset. Their findings proved that total debt has a significant, negative influence of performance. Hammes (2003) examined the relation between capital structure and performance by comparing Polish and Hungarian firms to a large sample of firms in most of the industrialized countries. He used Panel data analysis to investigate the relation between total debt and performance as well as between different sources of debt. His results show a significant and negative effect for most countries. He found out that the type of debt, tax payments or additional working capital is not of major importance since what matters is debt in general. However, little has been done on the effects of these sources of debt finance on the performance of SMEs. This study is therefore dedicated to researching on this aspect using the information from the firms as first hand information. Farm sector operating loan volumes and farm income continued to drift apart in the second quarter. Farm income in 2015 has been projected to drop from year-ago levels, but non-real estate farm loan volumes have risen substantially. Specifically, loans made to finance short-term operating expenses continued to drive the increases in farm sector lending at commercial banks. Moreover, in contrast to recent trends, loans to finance operating expenses accounted for the majority of large loans in the second quarter. Although delinquency rates and charge-off rates on farm loans have remained relatively low, recent survey data point to slight increases in the potential for future risk in farm sector lending and generally weaker credit conditions. (Kauffman, 2015).

Debt financing means borrowing money and not giving up ownership. Current debt market conditions have created complex and difficult environment for borrowers. Organizations are currently facing challenges both with raising debt, refinancing and repaying debt (Flynn, 2010). The most current debt strategy implemented by organizations is shown below:-
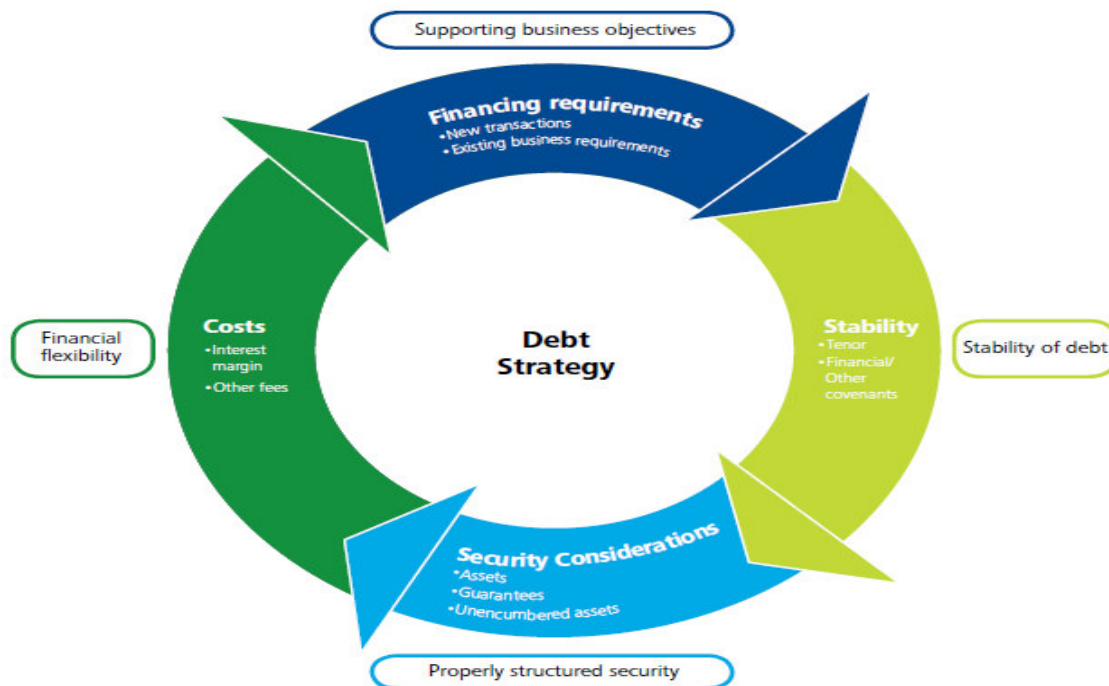
The key considerations in debt financing include: business objectives, properly structured security, stability of debt and financial flexibility. An effective debt strategy should be aligned to the long and short term objectives of your business, and consider your future financing requirements in order to support business growth. Key considerations include the capacity of the business to fund its current financing requirements using its

existing debt structure, the ability of the business to reduce the level of committed facilities currently available, potentially improving other terms and conditions on offer such as a reduction in the security package or the maintenance of an attractive margin, the requirement for additional funding to support new developments, acquisition or other growth going forward. This will also include consideration of the ability and appetite of existing lenders to provide additional funding to the business and could lead you to consider developing relationships with new banks as potential future providers of funding and consider credit risk on current cash balances if significant levels of cash are held with one or a small number of banks. (Flynn, 2010)

According to (Flynn, 2010), any parent, cross company or personal guarantees provided to financial institutions should be considered in light of any future plans for these assets. The risks of security being exercised following a potential default should be fully evaluated. Key considerations in this perspective include: Considering the security structure currently in place, including any parent, cross company or personal guarantees and fixed and floating charges over assets, analysis of the current level of security in light of financial covenants in place. This is particularly relevant in respect of Loan to Value covenants, given potentially falling asset values and the focus on covenant compliance by financial institutions, evaluation of unencumbered assets which may be offered as additional security, if required, or to secure more attractive terms ,protection of unencumbered assets held by the business and potential to refinance assets with other financial institutions, thus developing new relationships and reducing exposure to existing lenders if required.

The stability of a company's financing arrangements is vital, including the term of the loans and the reasonableness of the covenants applied. In general, the principle of matching your debt tenor to the life of the asset should apply in the first instance. A key consideration in today's environment is the requirement for stable, medium to long term financing arrangements which reduce or eliminate refinancing risk and the risk of covenant breach in the business. However, any such medium to long term arrangements typically have a cost implication and the appetite of the business, and the ability of its projected cash flows to support any such cost increases, must be examined (Flynn, 2010). The cost of the debt package in place is a key consideration for any business evaluating its debt strategy. There is typically a trade-off between increased stability, including longer term loans and sustainable covenants, the level of security given and the margin cost of the loan. Key considerations: the current or proposed cost of finance (including base rate, margin and other fees) and the ability of the business to meet these costs based on projected cash flows. In current market conditions, margins are typically rising and stress testing of a businesses' cash flow model to reflect higher margins should be a priority, risk of changes in the base rate and whether hedging of rates e.g. fixed rates or interest rate caps are required, consider the tenor versus cost trade-off, whereby longer maturities typically attract higher margins, and the willingness and ability of the company to support this. While important, cost should not be the primary driver of a debt strategy, and must be considered in light of each of the wider debt structure considerations (Flynn, 2010).

Income and wealth for farm businesses have changed noticeably over the last decade. Debt levels have been rising, asset levels have outpaced debt despite the rise in land prices and equity has more than doubled for farm businesses. The primary determinants of dent financing are the level of debt, its cost and interest rates and the amount of farm income available to service the debt. Low interest rates and high improve debt repayment wile higher interest and lower income does the opposite. The term debt structure refers to farms mix of debt repayment terms including timing (repayment schedule), cost (interest rate) collateral and loan covenants (conditions the borrower must meet to receive the loan). Debt represents claims on firms' assets by creditors who make capital available for use in the business (Flynn, 2010). Farming businesses often rely on external funding to finance their operations. Use of debt financing is widespread although funding levels and cost of such funding vary greatly among farms. This variation exists because lenders often adjust the cost of debt and other terms of credit in response to changes in various risk characteristics. The study assumes that ROI on debt financing directly affect the portfolio diversification of commercial sugarcane growing farmers in Kenya. This is measured using business objectives; new transactions, existing business requirements, properly structured security; assets, securities and unencumbered assets, stability of debts tenor and financial covenants and financial flexibility; interest margin and other costs.

The operations of SMEs require capital which can be raised in different ways. One way of raising capital is through debt from financial institutions. Debt finance can be short-term or long-term in nature. SMEs can use debt finance to start-up or expand their operations. Whether the use of debt financing in the Small and Medium size Enterprises improves or reduces profitability in them is yet to be determined (Mensah 2004). This study aimed at finding out these effects. The empirical studies by Eriotis et al (2002), Rajan and Zingale (1995) regarding the impact of debt on the performance of firms have primarily focused on the large firms in the developed countries. These studies found a positive relationship between the use of debt and the performance of firms. Few studies, such as Tse-Wei et al(2002) however, have been conducted in the developing countries and emerging markets such as South Africa. Modigliani and Miller's (1963) pioneering theory is the basis for the studies above by Tse-Wei et al(2002). Their study determined that interest payments on debts are a tax deductible expense and thus creating tax savings for the borrower. Tax deductibility of interest payments on debt

thus reduces the cost of the debt. Therefore firms can use debt financing to lower their costs of capital and maximize the profitability and the shareholders. The study is based on the premise that as ROI on debt financing assets improves; the portfolio diversification tends to improve as well.

1.2 Statement of the problem

Farm diversification is common to rural landowners across the developing world. In Kenya, diversification is being promoted as a system to build economic resilience for farming families. Diversification is an addition of another stream of farm-based income to supplement the existing source/s. Over time, the diversification enterprise may overtake and replace the original core business (Andrew, 2009). Investable capital has been identified as the main financial component for determining Return on Investment for commercial sugar cane farming. However the relationship between these components and portfolio diversification is not known. This study seeks to establish the relationship between financial return on investable capital and portfolio diversification among commercial sugarcane farmers in Kenya.

1.3 Objective of the study:

To evaluate the relationship between financial returns of debt financing and financial portfolio diversification among commercial sugarcane farmers in Kenya

1.4 Hypotheses

H_{02} ROI of debt financing does not have a significant relationship with financial portfolio diversification among commercial sugarcane farmers in Kenya.

2.0 Theoretical Review

2.1 Portfolio theory

MPT- modern portfolio theory, also called "portfolio theory" or "portfolio management theory," MPT suggests that it is possible to construct an "efficient frontier" of optimal portfolios, offering the maximum possible expected return for a given level of risk. It suggests that it is not enough to look at the expected risk and return of one particular stock. By investing in more than one stock, an investor can reap the benefits of diversification, particularly a reduction in the riskiness of the portfolio. MPT quantifies the benefits of diversification, also known as not putting all of your eggs in one basket. Consider that, for most investors, the risk they take when they buy a stock is that the return will be lower than expected. In other words, it is the deviation from the average return. Each stock has its own standard deviation from the mean, which MPT calls "risk"(Cochrane,2007). The risk in a portfolio of diverse individual stocks will be less than the risk inherent in holding any one of the individual stocks (provided the risks of the various stocks are not directly related). Consider a portfolio that holds two risky stocks: one that pays off when it rains and another that pays off when it doesn't rain. A portfolio that contains both assets will always pay off, regardless of whether it rains or shines. Adding one risky asset to another can reduce the overall risk of an all-weather portfolio. In other words, Markowitz showed that investment is not just about picking stocks, but about choosing the right combination of stocks among which to distribute one's nest egg. On the more technical side, there are five statistical risk measurements used in modern portfolio theory (MPT); alpha, beta, standard deviation, R-squared and the Sharpe ratio. All of these indicators are intended to help investors determine a potential investment's risk-reward profile. (Cochrane, 2007).

Rather than look at diversification at the individual security level, Harry Markowitz approached it from a different perspective. He understood that diversification needed to be viewed at the portfolio level. If investors were attempting to diversify the first security they owned with a second, then the third security purchased needed to consider not only the first, but also the second. As additional securities were added, so did the complexity of the decisions investors had to make. It was clear that diversification was not just a single security problem, but a complex problem that needed to consider all of the other securities that make up an investor's portfolio. Markowitz's 1952 Journal of Finance article titled "Portfolio Selection" provided investors with the answer as to how they should approach diversification. The theory began with the recognition that investors facing uncertain outcomes have always had to make investment decisions based on their beliefs about the future of the investments they selected (Cochrane, 2007). In fact, the first three lines of the article explained that "the process of selecting a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities. The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio."

Observations and experiences	→	Beliefs	→	Portfolio

Figure 2.1: *The Fundamentals of the Portfolio Selection Process*

It is both evident and intentional from the very introduction of the concept of asset allocation that the beliefs we hold are at the core of the portfolio selection process. In this sense it is important to understand that the process represents not only a diversification of assets or asset classes, but also a diversification of the beliefs regarding the expected returns and risks of those investments or asset classes. (Cochrane, 2007).

2.2 Diversification and Efficiency theory

Not only does the [Expected Return-Variance] hypothesis imply diversification, it implies the 'right kind' of diversification for the 'right reason. The selection of variance as a representation of investment risk was not a coincidence. In deliberating variance as a measure of risk, Markowitz looked to a statistical equation which revealed that portfolio variance depends not only on the variances of the securities held in the portfolio, but also on the covariance or co-movements, that reflect the relationships between securities.

Equation: Variance for a Two-Security Portfolio

$$Var(Portfolio_{A,B}) = w_A^2 Var(A) + w_B^2 Var(B) + 2w_A w_B Cov(A,B)$$

Where:

$$w_A = The\ weight\ of\ security\ A\ in\ the\ portfolio$$
$$w_B = The\ weight\ of\ security\ B\ in\ the\ portfolio$$

Covariance describes how two investments move in relation to one another. A common expression of co-movement is correlation. The conversion of covariance to correlation can be done with the equation below:

Equation 3: Conversion of Covariance to Correlation.

$$Correlation_{A,B} = \frac{Covariance_{A,B}}{Standard\ Deviation_A Standard\ Deviation_B}\ or\ \rho_{A,B} = \frac{\sigma_{A,B}}{\sigma_A \sigma_B}$$

Correlation tells us how closely one investment moves in relation to another security and has a value that ranges between 1 and -1. A value of 1 indicates that the two investments move perfectly in tandem. When one investment goes up, the other investment also goes up. A value of -1 indicates that the two investments move perfectly opposite to one another. When one goes up, the other goes down. Values that fall between 1 and -1 indicate the degree to which two investments move in relation to one another. A value of 0 indicates that there is no relationship between the movements of the two investments. This relationship between investments can have a significant impact on a portfolio's volatility and is a critical insight that is central to understanding how diversification works

The conceptual Framework
Independent variable   **Dependent variable**

ROI on debt financing:
• Business Objectives
• Structure of security
• Stability of debt
• Financial flexibility

→

Financial portfolio diversification

3.0 Methodology and Design

A research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data (Sakaran, 2003).This study was a survey research design as the research involved collecting data as reported by individuals. The data was then described and further correlated to create a snap shot of the current state of affairs and to establish and describe the

relationships among two or more study variables. Descriptive research design allows the researcher to evaluate and describe the relationship between the study variables which are associated with the problem. Correlational design also allows a researcher to measure the research variables by asking questions to the respondents and then examining their relationship (O'Connor, 2011). Therefore the study was descriptive correlational study. Descriptive was chosen because it provides a relatively complete picture of what is occurring at a given time and allowed the development of questions for further study while correlational research design allowed testing of expected relationships between and among variables, making predictions and can assess these relationships in everyday life events.

3.1 Population
The target population for this study comprised of all sugarcane farmers around Kakamega and Bungoma Counties. The farmers were preferred because they are likely to exhibit elaborate relationships between the study variables since they are highly knowledgeable about the farming activities related with the crop and the environment in which the crop is grown.
The population of the study was 2,039,645. *KNBS (2012)*

3.2 Sampling techniques and sample size
The study will focus on sugarcane growing farmers of the two counties where the farmers who grow sugar cane and the sugar factories are concentrated. The researcher will use multi stage sampling techniques to get the sample size. The first stage sampling include selection of the two counties using purposive sampling technique, the second stage of sampling will include identification of sugarcane farmers in the two counties: Nzoia factory for Bungoma county and Mumias and West Kenya limited for Kakamega county and the third stage is sampling of sugarcane growing households using random sampling techniques to pick a representative number of sugarcane growing farmers from each of the identified companies (Table 3.2). The sampling technique is as follows.

Yamane (1967:886) provides a simplified formula to calculate sample sizes. A 95% confidence level and P = .5 are assumed for the Equation. Where n is the sample size, N is the population size, and e is the level of precision. The formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

.
Sample size= $\dfrac{599{,}447}{1+599{,}447(0.05)^2}$

With a total population of 599,447 households in both Bungoma and Kakamega counties region, the sample size is thus: 399 Households.

3.3 Data Collection
The study used both qualitative and quantitative methods of data collection. The likert scale of 1-5 comprising of self-administered closed and open ended questionnaires were used to evaluate the effects of various variables of employee talent management strategies which were believed to impact on the retention of doctors and nurses at Kenyatta national hospital. The questionnaire was tested before a refined one was administered to the respondents.

3.4 Data Analysis
The data followed Sekaran, (2003) four step process of data analysis; getting data ready for analysis which involves getting a feel of the data, testing the goodness of the data and testing the hypothesis. The data was subjected into factor analysis in order to determine the suitability of the data for regression analysis. According to Kothari (2010), factor analysis is a useful tool for investigating variable relationships for complex concepts such as socioeconomic status, dietary patterns, or psychological scales. It allows researchers to investigate concepts that are not easily measured directly by collapsing a large number of variables into a few interpretable underlying factors. Descriptive statistics was used to obtain a general understanding of the respondents' characteristics. Both parametric and non-parametric tests were done depending on measurement scale. In an effort to establish the suitability of the data for regression analysis by ensuring that the dependent and independent variables have a statistically significant relationship while at the same time controlling for multicollinearity problem which occurs if any two independent variables are highly correlated (Cooper & Schindler, 2005), correlation analysis was used to measure the strength of the relationship between financial returns on investment and financial portfolio diversification.

4. Study Findings

The return on investment of debt financing was assessed by fourteen measures namely; Profits from farm outputs are sufficient enough to support my individual needs, my individual needs are reasonably met by profits from farm outputs, farmers individual needs are covered by profits from farm outputs, profits from farm outputs are sufficient to support farm activities, farm outputs provide profits which are reasonable to support farm activities, farm activities are fully covered by profits from farm outputs, the money I borrow require sufficient security, when borrowing money the value of the security is necessary, when borrowing money I leave room for consideration of additional security for other loans, the period of the debt is matched to the life of assets used in securing it, when I borrow money I consider the flexibility of changing the period of time of the debt, when I borrow money I consider the flexibility of changing the amount of money borrowed, when I borrow money I consider the interest rate to be charged, the amount of time to payback borrowed money is one of my considerations while taking a loan and I consider shorter periods for the loans since I get to pay less interest.

Table 4.8 presents the relevant result which shows that on the scale of 1 to 5 (where 5= the greatest extent and 1is the lowest extent). Most the households are to great extent of the view that farm outputs provide profits which are reasonable to support farm activities (Mean 3.81) and also farmers individual needs are covered by profits from farm outputs (mean 3.75). This concurs with Dlamini (2010) through his vast experience in the sugarcane industry; who found out that there are numerous factors that determine sugarcane profitability. He reiterated that management determinants such as labour should be closely monitored in as far as planting, weeding, irrigation, fertilizer application and harvesting in order to improve profitability. However, the money farmer borrow require sufficient security (mean 3.15) and when borrowing money the value of the security is necessary (mean3.25) were moderate. Overall, the intensity of return on investment of debt financing in the financial portfolio diversification is moderately high (3.489).

Table 4.1 Financial Return on Investment of Debt Financing

ROI Investable Debt Financing measures	N	Mean	Std. Deviation	t-value	Significance (P-value)
Profits from farm outputs are sufficient enough to support my individual needs	320	3.550	1.243	42.354	0.000
My individual needs are reasonably met b profits from farm outputs	320	3.750	1.134	38.834	0.000
Farmers individual needs are covered by profits from farm outputs	320	3.750	1.089	33.452	0.000
Farm activities are fully covered by profits from farm outputs	320	3.400	1.280	26.372	0.000
The money I borrow require sufficient security	320	3.150	1.013	38.380	0.000
When borrowing money the value of the security is necessary	320	3.250	.993	28.972	0.000
When borrowing money I leave room for consideration of additional security for other loans	320	3.254	.993	36.892	0.000
The period of the debt is matched to the life of assets used in securing it	320	3.253	.993	34.891	0.000
When I borrow money I consider the flexibility of changing the period of time of the debt	320	3.500	.806	32.343	0.000
When I borrow money I consider the flexibility of changing the amount of money borrowed	320	3.550	.804	29.634	0.000
When I borrow money I consider the interest rate to be charged	320	3.550	.739	28.934	0.000
The amount of time to payback borrowed money is one of my considerations while taking a loan	320	3.500	.806	32.456	0.000
I consider shorter periods for the loans since I get to pay less interest	320	3.350	.852	36.482	0.000

The results reveal that at one-sample t-test comparison of the return on investment of debt financing mean score indicates differences that were all statistically significant. The extent of financial return on investment of debt financing varied from one household to another. Profits from farm outputs are sufficient enough to support my individual needs influence on portfolio diversification had the highest difference (t-test = 42.354, p-value < 0.05) and it was followed by my individual needs are reasonably met by profits from farm outputs (t-value=38.834, p-value < 0.05). This goes hand in hand with Kamruzzaman and Hasanuzzaman (2007) who studied the factors affecting the profitability of sugarcane production. His study revealed that family labour cost, cost of urea, frequency of fertilizer applications, cost of seed cane were important factors in influencing the profitability of sugarcane production. On the other hand, the lowest difference was reported in when borrowing

money the value of the security is necessary (t-value=26.372, p-value < 0.05) followed by when I borrow money I consider the interest rate to be charged (t-value=28.934, p-value < 0.05).

4.1 Factor analysis for Financial Return on Investment of Debt Financing
From the results, KMO has an index of 0.723 implying that factor analysis is appropriate for these data. According to Field (2003) Bartlett's Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett's Test of Sphericity must be less than 0.05. From the study results, the Bartlett's Test of Sphericity has p-value of 0.000 which is less than the stated α = 0.05, implying that the test is highly significant; hence the factor analysis is appropriate.

Table 4.2 Results of Factor Analysis for Financial Return on Investment of Debt Financing

Component Matrix(a)		
	Component	
	Security flexibility of debt financing	Profits from debt financing
Profits from farm outputs are sufficient enough to support my individual needs		.929
My individual needs are reasonably met by profits from farm outputs		.923
Farmers individual needs are covered by profits from farm outputs		.957
Farm activities are fully covered by profits from farm outputs		.778
The money I borrow require sufficient security	.857	
When borrowing money the value of the security is necessary	.916	
When borrowing money I leave room for consideration of additional security for other loans	.916	
The period of the debt is matched to the life of assets used in securing it	.916	
When I borrow money I consider the flexibility of changing the period of time of the debt	.890	
When I borrow money I consider the flexibility of changing the amount of money borrowed	.870	
When I borrow money I consider the interest rate to be charged	.831	
The amount of time to payback borrowed money is one of my considerations while taking a loan	.890	
I consider shorter periods for the loans since I get to pay less interest	.806	
Overall Mean	**3.373**	**3.613**
Cronbach's Alpa	**0.904**	**0.921**

Extraction Method: Principal Component Analysis.
a 2 components extracted.

Rotation has the effect of optimizing the factor structure and states the relative importance of the factor. This implies that from the study results, the system has identified two important factors to be loaded in the analysis. From the rotated matrix, factor one (Security flexibility of debt financing) has is highly and positively correlated with when borrowing money I leave room for consideration of additional security for other loans (0.916) and when borrowing money I leave room for consideration of additional security for other loans (0.916) while farmers individual needs are covered by profits from farm outputs (0.957) with factor two (Profits from debt financing). The overall correlation between the indicator of Security flexibility of debt financing was 0.870 and indicators of Profits from debt financing was 0.897.

The measures of the return on investment of debt financing were subjected into the reliability test using Cronbach's alpha coefficient and were found to have Cronbach's alpha coefficient of 0.841 hence considered to be highly reliable since they all had alpha coefficient greater than the minimum accepted Cronbach's alpha coefficient of 0.70.

Table 4.3 Relationship between Debt Financing with Age

Mode		Overall significance, ANOVA (F-test)				
		Sum of Squares	Degree of Freedom	Mean Square	F	Sign. p-value
Security Flexibility of Debt Financing with Age	Regression	1.248	4	1.248	1.0652	0.000
	Residual	1.086	316	0.342		
	Total	2.334	320			
Profits from debt financing with Age	Regression	2.208	4	2.208	14.018	0.000
	Residual	1.430	316	0.552		
	Total	3.638	320			

Predictors: (Constant), Age

The study results reveal that age had overall significant positive relationship with the Security flexibility of debt financing in that the p-value was less than 0.05 (p-value = 0.000) and on the other hand the study found that age had an overall significant positive relationship with profits from debt financing with a p-value of 0.000.

4.2 Correlation for Return on Investment of Debt Financing and Financial Portfolio Diversification

The strength of the relationship between return on investment of debt financing which was the dependent variable of the study and financial portfolio diversification was assessed using Pearson product moment correlation. As shown in Table 4.10 below, there is a positive correlation between profits from debt financing and financial portfolio diversification which was statistically significant (r =.532, p<0.05). On the other hand, there is a positive and significant correlation between Security and flexibility of debt financing and financial portfolio diversification which was statistically significant (r =.498, p<0.05). Security and flexibility of debt financing and profits from debt financing all had positive and significant relationship with financial portfolio diversification. The research findings also show that there is a positive relationship between all the measures of debt financing and financial portfolio diversification and the measures had positive and significant relationship among themselves as well.

Table 4.4 Correlation analysis of Debt Financing and Financial Portfolio Diversification

	Scale	1	2	3
1	Portfolio diversification	1		
2	Profits from debt financing	.532*	1	
3	Security and flexibility of debt financing	.498*	.642*	1

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

4.3 Regression Analysis for Debt Financing

The study sought to establish the significant of the relationship between financial portfolio diversification and return on investment of debt financing. In order to do that, the study had formulated the following null hypothesis;

H_{02}: *ROI of debt financing does not have a significant relationship with financial portfolio*

diversification among commercial sugarcane farmers in Kenya.

The aggregate mean score of financial portfolio diversification measures (dependent variable) were regressed on the aggregate mean score of the both Profits from debt financing and Security and flexibility of debt financing which are the components of debt financing (independent variable) and the relevant research findings are presented in Table.4.6.

The regression results reveal statistically significant positive linear relationship between return on investment of debt financing and financial portfolio diversification (β = 0.789, p-value = 0.002). The hypothesis criteria was that the null hypothesis H_{02} should be rejected if $\beta \neq 0$ and p-value ≤ 0.05 otherwise fail to reject H_0 if the p-value > 0.05. From the above regression results, $\beta \neq 0$ and p-value < 0.05, the study therefore rejects the null hypothesis. The regression results also shows that financial return on investment of debt financing had moderate explanatory power on financial portfolio diversification in that it accounted for 62.3 percent of its variability (R square = 0.623).

Table 4.6 Regresion results of Financial Portfolio Diversification against ROI of Debt Financing

Goodness Fit Analysis: Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789(a)	.623	.529	.5201

a Predictors: (constant), Profits from debt financing and Security and flexibility of debt financing

b Dependent variable: Financial Portfolio diversification

Overall significance, ANOVA (F-test)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.074	2	2.074	6.612	.002(a)
	Residual	1.255	318	.314		
	Total	3.329	320			

a Predictors: (constant), Profits from debt financing and Security and flexibility of debt financing

b Dependent variable: Financial Portfolio diversification

Individual significance (T-test): Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.906	5.993		3.155	.004
	Profits from Debt financing	.209	1.637	.789	2.571	.002
	Security flexibility of debt financing	.075	.451	.117	.116	.003

a Dependent Variable: Financial Portfolio diversification

- Lever of significance, $\alpha = 0.05$

At the individual level, all the indicators of return on investment of debt financing had positive and significant effect on financial portfolio diversification as follows: Profits from Debt financing had positively influenced on financial portfolio diversification ($\beta = 0.789$ and p-value = 0.002) while Security flexibility of debt financing also positively affected financial portfolio diversification ($\beta = 0.117$, p-value = 0.003).

The resulting regression equation that would help predict the level of financial portfolio diversification for a given level of return on investment of debt financing was formulated as follows:

PD =2.906+ 0.789PDF+ 0.117SDF

Where:

2.906 is the y-intercept; constant

PD is the financial portfolio diversification,

0.789= an estimate of the expected increase in financial portfolio diversification corresponding to an increase in use of return on profits from debt financing and security flexibility of debt financing.

PDF is return on investment of profits from debt financing

SDF is the security flexibility of debt financing.

The standardized beta coefficient 0.789 and 0.117 represents the expected improvement in financial portfolio diversification for a unit improvement in return on investment of debt financing. This means that, holding other factors constant, a one unit improvement in the return on investment of profits from debt financing and security flexibility of debt financing would raise the level of financial portfolio diversification by a factor of approximately 0.789 and 0.117 respectively.

5.0 Summary of the Findings

The results also showed that financial return on investment of debt financing had moderately high explanatory power on financial portfolio diversification among commercial sugarcane farmers in Kenya in that it accounted for 62.3 percent of its variability. This shows that commercial sugarcane farmers in Kenya will have more financial portfolio diversification if the financial return on investment of debt financing increases. Profits from farm outputs are sufficient enough to support my individual needs influence on portfolio diversification had the highest difference (t-test = 42.354, p-value < 0.05).

At the individual level, all the indicators of return on investment of debt financing had positive and significant effect on financial portfolio diversification as follows: Profits from debt financing had positively

influenced on financial portfolio diversification (β = 0.789 and p-value = 0.002) while security flexibility of debt financing also positively affected financial portfolio diversification (β = 0.117, p-value = 0.003). This concurs with Lislevand (2012) who used cross sectional data that contained information from 403 MFIs in 73 Countries. The findings of the study indicate that most of the MFIs are highly leveraged, they use approximately four times more debt financing than equity. Further the regression results revealed that total debt to assets and short term debt to assets have a positive and significant effect on cost of funds. Long term debt to assets also has a positive impact on cost of funds, but the relationship was not significant. Total debt to assets and long term debt to assets had a negative and significant effect on return on assets. Short term debt to assets also has a negative effect on return on assets, but the relationship was not significant. There were not detected any significance between the debt to equity ratios and MFIs performance in this study.

5.1 Conclusion and Recommendations

Based on the study results which showed that financial return on investment of debt financing had moderately high explanatory power on financial portfolio diversification among commercial sugarcane farmers in Kenya in that it accounted for 62.3 percent of its variability, commercial sugarcane farmers in Kenya need to take into account financial return on investment of debt financing measures such as profits from farm outputs are sufficient enough to support my individual needs even as they diversify their portfolios.

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