EFFECT OF LEVEL OF COFFEE PRODUCTION ON THE PERFORMANCE OF COFFEE COOPERATIVE SOCIETIES IN KENYA

Strategy

EFFECT OF LEVEL OF COFFEE PRODUCTION ON THE PERFORMANCE OF COFFEE COOPERATIVE SOCIETIES IN KENYA

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Abstract

Purpose: To evaluate the effect of level of coffee production on the performance of coffee cooperative societies in Kenya.

Methodology: This study adopted a descriptive research design. The population of the study will be 1052 small holder coffee factories in Kenya. The research was done in the entire country which was divided into 18 strata from where 283 factories were sampled and studied.

Results: The regression results revealed that level of coffee production had a positive and significant effect on performance of coffee cooperative societies in Kenya.

Unique contribution to theory, practice and policy: The study recommends that the cooperative societies should work hard so as to improve the level of their coffee production. This will boost their performance.

Keywords: *level of production, performance, cooperative society*

1.0 INTRODUCTION

1.1 Background of the Study

Coffee is a widely traded commodity in the world where it is grown in over 50 countries (International Coffee Organization, ICO, 2010). Every year over 400 billion cups are consumed (Bagel, 2013). Coffee is the source of livelihood for over 25 million families and hence supports over 100 million people (Ponte, 2002). Coffee is produced in three regions; America, Africa and Asia and consumed mainly in Europe, and America (ICO, 2014). South America is the largest producer of coffee in the world and produces 56% of the coffee (ICO 2014). It is constituted by countries like Brazil, Peru, Colombia and other smaller producers. Brazil has been the largest producer of coffee in the world for the last 100 years. In 2013 it produced 36 million 60 kg bags which is almost a third of global production (ICO, 2015). Although the liberalization of 1980s and 1990s increased the overall prices of coffee the Brazilian small scale farmers lost (Cleland, 2010). The performance of small scale coffee farmers was lower. The small scale farmers didn't have the luxury of time but the large scale farmers had the lee way of waiting until the coffee prices improved.

In Africa, coffee is mainly grown in Ethiopia, Uganda, Ivory Coast, Tanzania, Rwanda and Kenya. The continent used to produce 33% of all the global coffee produced annually in 1970s (Bagel, *et al*, 2013) this decreased to an average of 16% in 1990s and further to 13.1% in the 2000s. The continent's coffee production has decreased from 19.7 million bags per year in the regulated period to 15.7 million bags in the free market (ICO, 2015). This decrease in production has resulted in decline in the performance of farmers' organizations (ICO, 2015).

Coffee was the leading export crop in Kenya from Independence to 1988 (Kabura & Doppler, 2009) contributing 40% export value. After the coffee crisis of 1989 the situation changed and by 1992 its contribution to export value was a mere 9%. The prices also declined. The average price for the period 1976 to 1986 was 141.66 US cts per gallon and by 1992 the price had decreased to 28US cts per gallon (ICO, 2007). The annual production decreased from 130, 000 tonnes of clean coffee in 1987/1988 to an average of 40, 000 tonnes in 2012.

1.2 Statement of the Problem

Coffee is an important global commodity that is grown in over 50 countries (ICO, 2010). It is the source of livelihood for over 25 million families globally. As such it supports over 100 million people. It is a major foreign exchange earner in many developing countries (Ponte, 2002). Coffee sector may be categorized into two; Large estates and small holder farmers. The large estates wet mill their coffee whereas the small holder farmers form cooperatives where they pool their coffee and wet mill it jointly. Decline in coffee production and quality causes performance of the cooperatives to decline since coffee is one of the heavily traded commodities by the cooperatives (Ferreira & Braga, 2004).

With the collapse of the quota system in 1987, the Kenyan coffee farmer absorbed the full shock of the plummeting world prices. The production of coffee in Kenya decreased from 130, 000 metric tonnes down to 37, 000 metric tonnes in the next 25 years (KIPPRA, 2014). This greatly affected

the coffee farmers' cooperatives performance. The small scale farmers' cooperatives got the biggest shock as a result of the collapse of the quota system. The decline in earnings was made even worse by the poorly implemented Structural Adjustment Programs (SAPs) championed by the International Monetary Fund the World Bank in 1980s and 1990s. The structural adjustment programmes had been introduced in Africa after organizations performance started declining after independence (Franz, 2011). The SAPs removed the control of cooperative societies, parastatals and other organizations from the state and were privatized. The leadership in these organizations lacked entrepreneurial and business skills (Franz, 2011). This saw the cooperatives split and others merge into uneconomical units. The end result was collapse of coffee cooperatives which made coffee farmers abandon coffee farming. According to the Institute of Economic Affairs (2000) in the period 1994 to 1998 the percentage of coffee marketed through the cooperatives declined from 68% in 1994 to 48.3% in 1998. According to Nyoro and Karanja (2002), the average throughput per society (average tonnage of clean coffee produced by a society) decreased tremendously from 248 (in 1990) to 60 (in 2002), Nyoro and Karanja, 2002). The throughput per society for 2015/2016 was 106 (AFFA, 2017).

Following the decline in coffee cooperatives performance in Kenya, innovative ways are needed to bring the coffee sector back to where it was and even beyond. This study seeks to evaluate the contribution of coffee production level on the performance of coffee cooperatives in Kenya with a view of coming up with a model to guide the coffee cooperatives and also other cooperatives to optimize their performance.

1.3 Objective of the Study

To evaluate the effect of level of coffee production on the performance of coffee cooperative societies in Kenya.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Exposure theory

Exposure to ideas, opportunities towards creativity and innovation lead people to create new ventures. Education through classes and lectures as well as exchange visits aids in the creation of the awareness. Exposure of coffee farmers will give them ideas on how to improve their farming businesses through increasing production.

2.2 Empirical Studies

The success of a cooperative has a positive correlation with the quantity of the cooperative product that it sells. It is also dependent on 'other incomes' and market access, (Azadi *et al*, 2010). This fact supports the cooperatives' principle, 'members' economic participation'. When all members participate actively then the coffee produced will be high. Level of production/yield rather than the premiums paid by the certification partners is the most important factor in increasing the net cash returns for coffee growers in Mexico and Peru, (Bradford & Weber, 2011). The production

is in turn dependent on weather. Whenever frost has affected coffee, the production has always reduced drastically. An example is 1994 and 1997 frost attack in Brazil, (Chaddad, 2007). In the same Brazil in 1975 frost made the projected coffee production reduce by over 90%., (Ferreira, 2007). Production of coffee in Kirinyaga was found to be dependent on access to adequate credit and having cash from other enterprises (Minae *et al*., 2014). This means that cooperatives ought to secure income sources to increase their coffee production. They should also use innovation to come up with other means of generating income for their cooperatives.

Coffee production can be measured in terms of tonnes or bags of clean coffee or kilos/bags of cherry. Minai and Mbataru in their research on coffee production in Kirinyaga (2014) used kgs of cherry produced by a tree. Nsibirrwa (2006) measured coffee exports in 60 kg bags. In this study the production will be measured in Kgs of cherry produced by a coffee factory under study. This is also in tandem with Nyambura (2014) in her study in Kenya.

3.0 RESEARCH METHODOLOGY

This study adopted a descriptive research design. The population of the study was 1052 small holder coffee factories in Kenya. The research was done in the entire country which was divided into 18 strata from where 283 factories were sampled and studied. A study questionnaire was used to collect data from the respondents. A pilot study was carried out to test the reliability of the questionnaire and the necessary amendments done. Data was analyzed using descriptive statistics as well as regression analysis. Diagnostic tests were carried out on the data for example heteroscedasticity, multicollinearity and autocorrelation and tests of normality and linearity.

4.0 RESULTS AND DISCUSSIONS

4.1 Demographic Characteristics

This section consists of information that describes basic characteristics of the respondents.

4.1.1 Gender of the Respondents

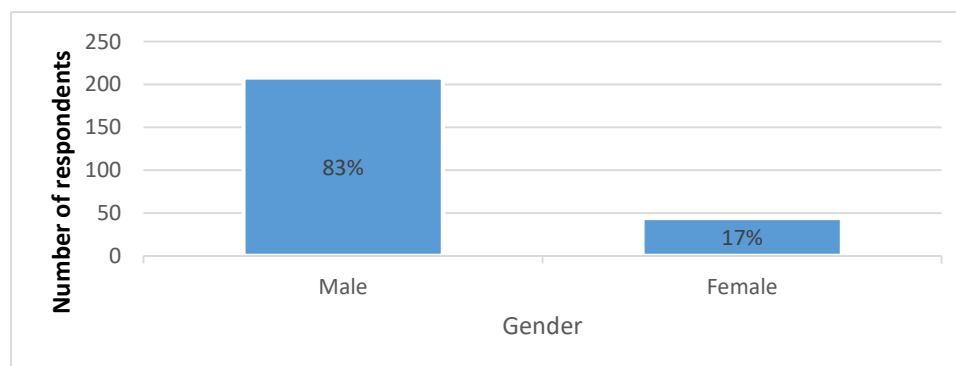The results are as shown in Figure 1 below.

Figure 1: Gender of the Respondents

The results in Figure 1 revealed that majority of the respondents (83%) were male while only 17% of respondents were female. This implies that most coffee factory managers in Kenya are men. This clearly indicated that there was gender imbalance in the management of the coffee factories in Kenya. Gender imbalance in the management of the coffee factories may not have any effect on performance of the factories since no manual work is involved that may disadvantage women.

4.1.2 Age of the Respondent
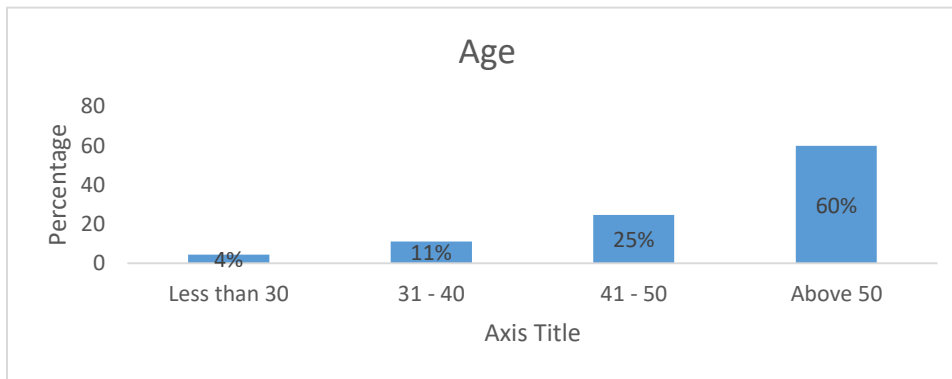
The results are shown in Figure 2 below.

Figure 2: Age of the Respondents

The results in Figure 2 revealed that majority of the respondents (60%) were above 50 years. 25% of the respondents were between 41 – 50 years, 11% were between 31 – 40 years while only 4% of the respondents were less than 30 years. This implies that most managers were above 50 years and thus elderly. This may negatively affect the performance of the factories since older people may not be as productive as younger ones.

4.1.3 Level of Education of respondents

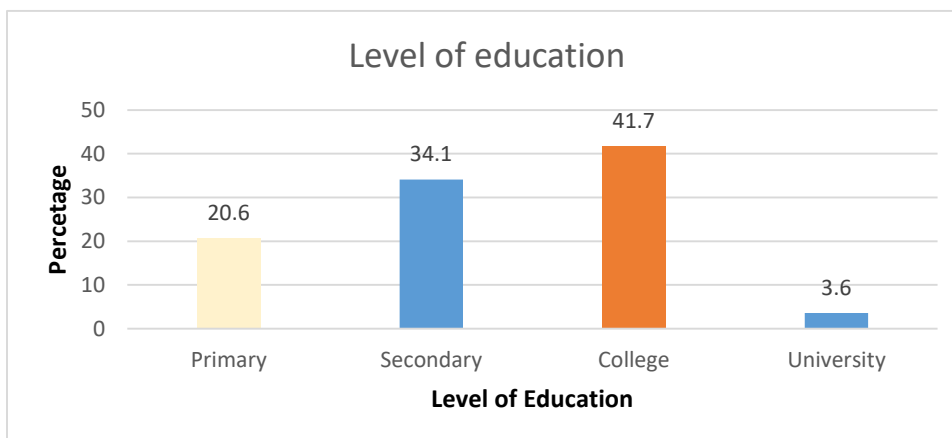The results were shown in Figure 3 below.

Figure 3: Level of Education of respondents

The results showed that majority of the respondents (41.7%) indicated that their highest level of education was college, (34.1%) had up to secondary school education, (20.6%) had gone up to primary school while (3.6%) had university education. This implies that a majority of coffee factory managers did not have college education. This could lead to low performance of the factories.

4.1.4 Duration of Work in the Factory

The results of the duration they have worked for the factory are shown below;
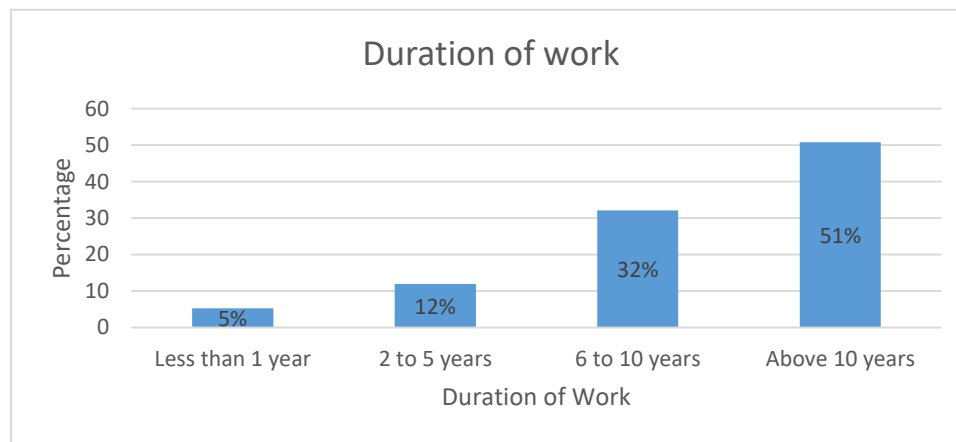

Figure 4: Duration respondents had worked in the Factory

The results in Figure 4 showed that majority of the respondents (51%) had worked for the factory for more than 10 years, (32%) had worked in the factory for 6 to 10 years, (12%) had worked for 2 to 5 years while only 5% who had worked for less than 1 year. This was an indicator that most had the relevant experience and thus had the capacity to improve the performance of their coffee factories.

4.2 Level of Coffee Production and Performance of Coffee Cooperative Societies

The respondents were asked to indicate whether the level of coffee production affected the performance of the cooperative society. The results are presented in the figure below;
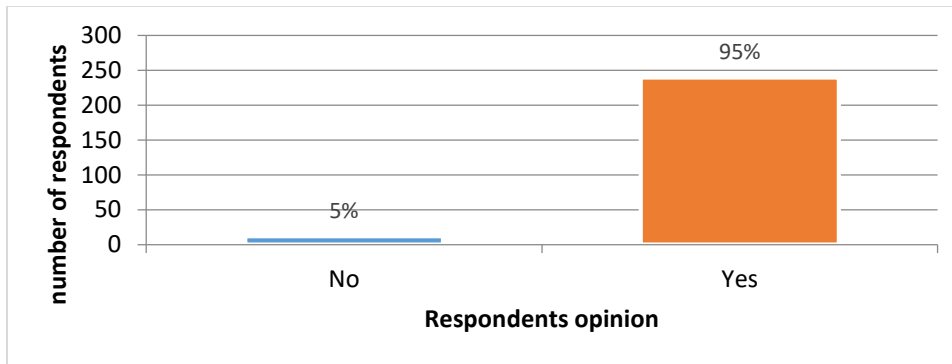
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Figure 5: Level of Coffee Production and Performance

Figure 5 show that majority of the respondents (95%) believed that the level of coffee production affected performance of coffee cooperative societies in Kenya.

The respondents who indicated that that level of coffee production affected performance of coffee cooperative societies in Kenya were further asked to indicate the extent to which the level of coffee production affected the performance of coffee cooperative societies. The results are presented in figure 6 below;
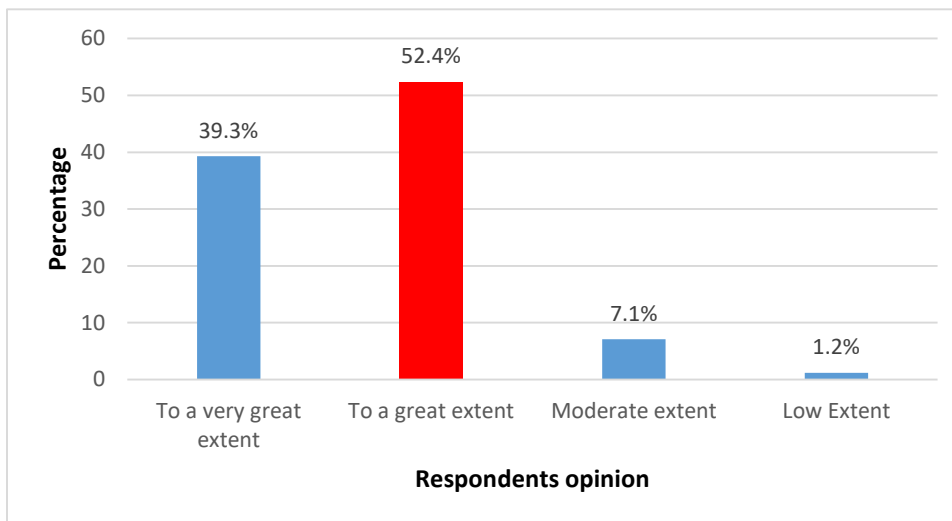

Figure 6: Extent to which level of Coffee Production affect Performance

The results in Figure 6 show that majority of the respondents (52.4%) argued that level of coffee production affected performance of coffee cooperative societies to a great extent. 39.3% of the respondents stated that the level of coffee production affected performance of coffee cooperative societies to a very great extent, (7.1%) argued that level of coffee production affects performance of coffee cooperative societies to a moderate extent while only (1.2%) indicated that level of coffee production affect performance of coffee cooperative societies to a low extent.

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The study also sought to establish how the interviewees rated various coffee production aspects in their respective factories which could affect performance of the cooperatives. The results of this study are presented in Table 1.

Table 1: Level of Coffee Production and Performance

Statement	Strongly disagree	Disag ree	Neut ral	Agr ee	Strongly Agree	Me an	Std. Dev
This factory is a high producer of coffee	15.5%	27.4 %	22.6 %	21. 4%	13.1%	2.9	1.3
Many members participate actively in coffee production.	15.5%	25.0 %	16.7 %	29. 8%	13.1%	3.0	1.3
The factory has incentives for members who produce a lot of cherry	20.2%	10.7 %	8.3%	46. 4%	14.3%	3.2	1.4
Our farmers do not have any limitation to produce lots of coffee	19.0%	42.9 %	9.5%	14. 3%	14.3%	2.6	1.3
Our management supports high production of coffee	9.5%	1.2%	14.3 %	56. 0%	19.0%	3.7	1.1
Average						**3.1**	**1.3**

The results in Table 1 revealed that majority of the respondents (42.9%) disagreed with the statement that their factory was a high producer of coffee. This implies that most of the factories were producing small quantities of coffee and thus income likely to be low. The results further showed that 40.5% of the respondents disagreed with the statement that many members in the cooperative society participated in coffee production. Lower participation of members would translate to lower performance due to lower coffee production. Low participation by members goes against one of the principles guiding the cooperative management, 'the economic participation of members'. In addition the results showed that majority of the respondents (60.7%) agreed with the statement that their factory had incentives for members who produce a lot of cherry. This implies that members of the cooperative societies were motivated to produce more coffee and thus most coffee societies would increase their production and hence the cooperative would have more coffee to sell and hence improved performance. The results further showed that majority of the respondents (61.9%) disagreed with the statement that their farmers did not have any limitation to produce lots of coffee. Limitations like lack of agro-inputs financing would lead to low production and hence lower performance. Astrid et al (2014) argued that lack of inputs lowers coffee production and limited resources limit the performance of cooperatives in Kenya. The results also revealed that majority of the respondents (75.0%) agreed with the statement that their management supported high production of coffee. The management support of high coffee production would mean higher performance. The support was mainly in terms of securing crop advance payments from financiers.

On a five-point scale, the average mean of the responses was 3.10 which means that a narrow majority of the respondents disagreed with most of the statements; The statements touched on production of more coffee meaning most respondents didn't agree that they were producing a lot

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of coffee. This means that the performance of the cooperatives would be affected by the low production. The answers given by the respondents were narrowly varied as shown by a standard deviation of 1.27 which show a little variation among the answers given. This would mean that many factories were nearly similar in coffee production capacity.
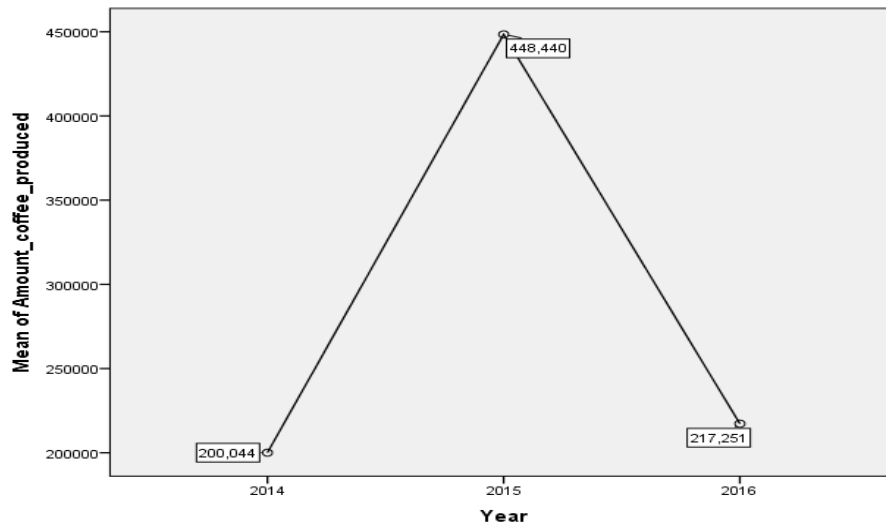
Quantity of coffee produced

Figure 7: Quantity of coffee produced

The trend analysis results showed that the average quantity of coffee produced in the year 2014 was 200044. The average quantity of coffee produced increased to 448440 in the year 2015 but declined to 214251 in the year 2016. This could be due to the biennial production cycle of Arabica coffee. The quantity of crop produced is important as it is what is processed and sold. The higher the quantity of coffee produced the more the likelihood of higher performance since the factory fixed costs would have to be paid regardless the coffee quantities.
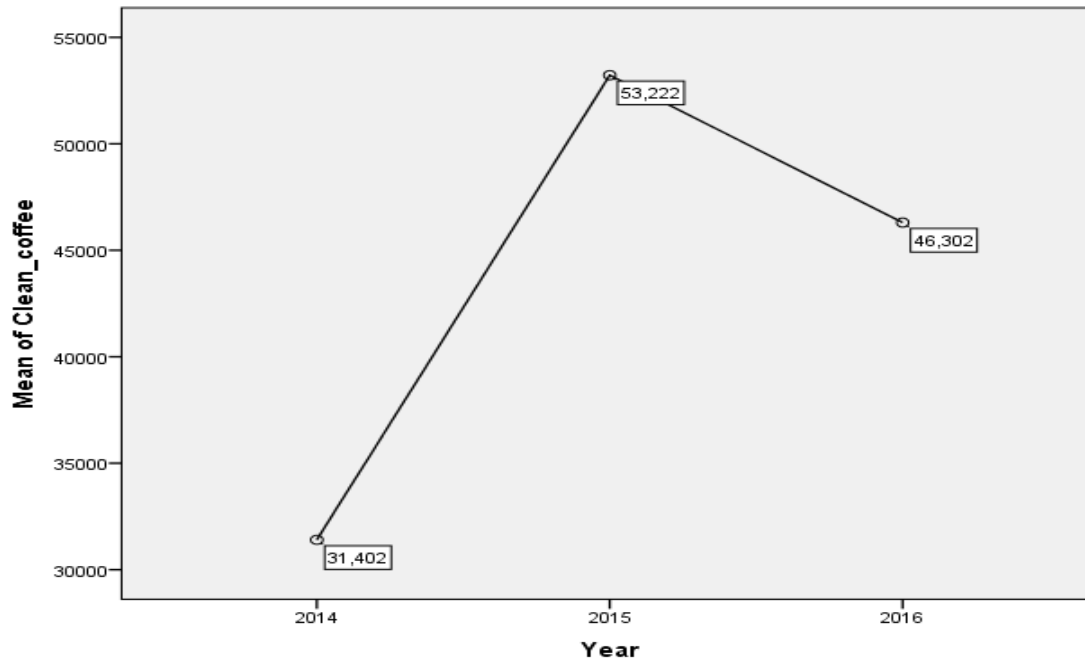
Quantity of Clean coffee

Figure 8: Amount of Clean coffee produced

The trend analysis results revealed that the average amount of clean coffee in the year 2014 was 31402. However the average amount of coffee produced increased to 53222 in the year 2015 but declined to 46302 in the year 2016. This could be due to the biennial production cycle that is characteristic of Arabica coffee. The graph of cherry (Figure 7) is not identical to the one for clean coffee (Figure 8). This could be as a result of factors like changes in weather from one year to the other or malpractices during milling. The quantity of clean coffee is important since it directly determines the financial performance of the factory as it is the commodity that is sold at the auction or directly to the overseas buyers. An increase in coffee quantity, ceteris paribus, increases the revenue to the cooperative society.

4.3 Correlation between level of coffee production and performance of coffee cooperative societies.

The coffee production level was measured in terms kilograms of cherry produced while performance was in terms of earnings in US dollars per kilogram of clean coffee.

Table 2: Level of Coffee Production and Performance

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	Performance	Amount of Coffee Production
Performance	1	
Amount of coffee produced	0.991	1.000
	0.0007	

The results in Table 2 revealed that amount of coffee produced and performance of coffee cooperative societies are positively and significantly associated (r=0.991, p=0.0007). The p value is less than 0.05 meaning production is significant at 95% confidence level. This implies that an increase in quantity of coffee produced would lead to improvement in performance of coffee cooperative societies.

4.4 Regression Analysis for Level of Coffee production

The results between level of coffee production and performance are presented in the table below.

Table 3: Model Fitness

Indicator	Coefficient
R	0.49
R Square	0.2401
Adjusted R	0.2389

The results presented in the fitness of the model used in the regression model to explain the study phenomena. Level of Coffee Production was found to be satisfactory variable in determination of performance of coffee cooperative society. This is supported by coefficient of determination also known as the R square of 24.01%. This means that level of coffee production explain 24.01% of the variations in the dependent variable which is performance of coffee cooperative society. These results further mean that the model applied to link the relationship of the variables was satisfactory.

Table 4: Analysis of Variance

	F	Sig.
Regression	12.4476	0.019

Table 4 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. Further, the results imply that the level of coffee production is a good predictor of performance. This was supported by an F statistic of 12.4476 and the reported p value (0.019) which was less than the conventional probability of 0.05 significance level.

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Table 5: Regression Analysis for level of coffee production

Performance	Coef.	Std.Err	z	P>|z|
Amount of coffee produced	89.72	0.003132	1.98	0.01
_cons	6464.48	2273.219	2.84	0.004

The results in Table 5 showed that amount of coffee produced had a positive and significant relationship with performance (R=89.72, p=0.01). This implies that increase in level of coffee production by 1 unit would lead to an increase in performance of the coffee cooperative society by 89.72 units.

$$Y = 6464.48 + 89.72 \: X1$$

Where

Y is Performance of the coffee cooperative society

X1 is the level of coffee Production

4.4.1 Hypothesis testing for Level of coffee production

The hypothesis was tested by using multiple linear regression (Table 4, above). The acceptance/rejection criteria was that, if the f calculated is greater than f critical 0.05, the Ho1 is not rejected but if it's less than f critical, the Ho1 fails to be rejected.

The null hypothesis was that there is no significant relationship between level of production of coffee and performance of coffee cooperative societies. Results in Table 4.24 above show that the f calculated was 12.4476 which was greater than the f critical which was 3.94. This indicated that the null hypothesis was rejected hence there is a significant relationship between level of production of coffee and performance of coffee cooperative societies.

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The objective of the study was evaluating the effect of level of coffee production level on the performance of coffee cooperative societies in Kenya. The results revealed that level of coffee production had a positive and significant effect on performance of coffee cooperative societies in Kenya. This was further supported by the statements in the questionnaire where majority of the respondents agreed with the various statements on the importance of level of coffee production.

The hypothesis results revealed that level of coffee production had a significant effect performance of coffee cooperative societies in Kenya.

5.2 Conclusions

The coffee production level is an important determinant of the performance of coffee cooperative societies.

5.3 Recommendations

The study recommends that the cooperative societies should work hard so as to improve the level of their coffee production. This would boost their performance.

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