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INFLUENCE OF QUALITY MANAGEMENT STRATEGY ON PERFORMANCE OF COFFEE COOPERATIVE SOCIETIES IN NYANZA REGION, KENYA

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Abstract*: In this time of globalization and increasingly competitive environment, measuring and improving performance has become critical to business success. The inadequacy of performance measurement framework and the introduction of non-financial measures have triggered a considerable amount of research, to the extent that it has been described as a revolution. Although, there is still debate on the application of quality management as a practice in the performance of organizations in many researches, positive effect of using quality management as a tool to achieve sustainable and competitive advantage cannot be ignored. The objective of the study was to establish the influence of quality management on performance of coffee cooperative societies in Nyanza region. The study was grounded on resource based theory. The research was guided by positivistic research design. The target population was the top management personnel in both coffee cooperatives and ministry of cooperatives. Nasiuma (2000) formula was used to select a sample of 394 respondents. Questionnaires were used to collect data. A pilot study was carried on randomly selected individuals in different coffee cooperative societies in Bungoma County. Both descriptive statistics (percentages, mean, standard deviation and variance) and inferential statistics (Multiple regressions and Pearson's correlation) were used to analyze data. The findings showed that quality management had a positive and significant relationship with performance of cooperative societies in Nyanza region. The study concludes that quality management enhanced performance of coffee cooperative societies. The study recommended that management of cooperatives societies should allocate enough funds to enhance the quality of coffee; at the onset and that the cooperative societies should lobby marketing agencies to ensure that coffee prices are not in any way destabilized.*

Keywords*: Integrated performance measurement framework, strategic management practices, quality management, performance, coffee cooperative societies*

1.0 Introduction

The pioneers in quality management, such as Deming, Juran, Cosby and Feigenbaum, highlighted the importance of the quality philosophy as an essential competitive weapon for the transformation of an organization. Kaynak (2015) noted that the quality management road to productivity is the shortest and most effective route to higher productivity and performance. Pantera (2010), also affirmed as quality, not quantity is the key to productivity. Other similar studies such as Hart and Hart (2011), Sumanth and Arora (2012) agreed that quality management incorporates productivity since only through quality improvement can productivity

be enhanced and the route to increased productivity is by increasing quality (Odeny, 2016). Butts (2016) described poor quality management as a vampire-like creature which takes bite after bite out of productivity

Based on empirical evidence, McCollum (2004) demonstrates that world class organizations such as General Electric and Motorola have attributed their performance to having one of the best quality management programs in the world. The two companies are noted to have implemented the Six-Sigma quality program. In the initiative, the level of defect is reduced to approximately 3.4 parts per million (Mohanty, 2008). This can only be achieved when every employee in the organization is trained on quality issues (McCollum, 2004). Motorola in the long run was able to win the prestigious Malcom Baldridge National Quality Award in 1988. In both companies, quality is considered as a critical factor that leads to the increased sales and market share thus good performance.

Quality gurus all recognize the importance of measurement to track progress and ensure quality improvement according to an accepted plan. They emphasize the use of local measures for evaluating performance because of the ease with which a standard can be established. To measure quality, all areas of an organization and its environment must be addressed. A performance measurement framework must contribute to and be integrated with other management objectives. By integrating quality with dimensions of organizational performance, a framework to foster their performance has to be developed.

Both global and national forces are driving change within and across individual business organizations. These changes have served to put the issue of quality management firmly on the agendas of these organizations. Despite the progress that has been made through research and debate, there is still no universal consensus on how best to manage quality within organizations. One of the key reasons for this is the recognition that quality is a complex and multi-faceted construct, particularly in business environments (Harvey & Knight, 1996; Cheng & Tam, 1997). As a result, the measurement and management of quality has created a number of challenges. This, in turn, has led to the adoption of a variety of quality management practices within different organizations many of which draw upon existing industry models (Kiprotich, 2014).

The relationship between quality management and an organizational performance has been abundantly examined. However, while some studies suggested a significant impact (Yasin*et et al.,* 2004; Besterfield *et al.,* 2003; Douglas and Judge, (2001), other studies did not suggest any (Brah*et et al.,* 2002; Sohal and Terziovski, 2000). Soltani*et et al.,* (2005) claimed that the majority of UK organizations have not gained any tangible results from quality management as a practice (Kiprorich, 2014).

2.0 Literature Review

Many scholars have done studies on relationships among quality management practices and examined the effects of these practices on performance, the finding have given inconsistent and conflicting results. Many studies indicate that quality management could benefit organizational performance, it has been reported that not all its application has given satisfactory results to the organizations that implement it (Panuwatwanicha *et al.,* 2017). A large body of literature have highlighted a positive impact of quality management practices on performance (Kaynak, 2003; Kaynak & Hartley, 2005; Sila & Ebrahimpour, 2005; Prajogo & Sohal, 2006), while others have found a negative or a no relationship between quality management and performance of organizations (Nair, 2006; Agus, 2003).

Mahmood (2014) did a study to assess the influence of product quality dimensions on organizational performance in some Arab companies. Two latent constructs were developed to represent the value delivered by product dimensions, intrinsic and extrinsic value, and two others to represent organizational performance,

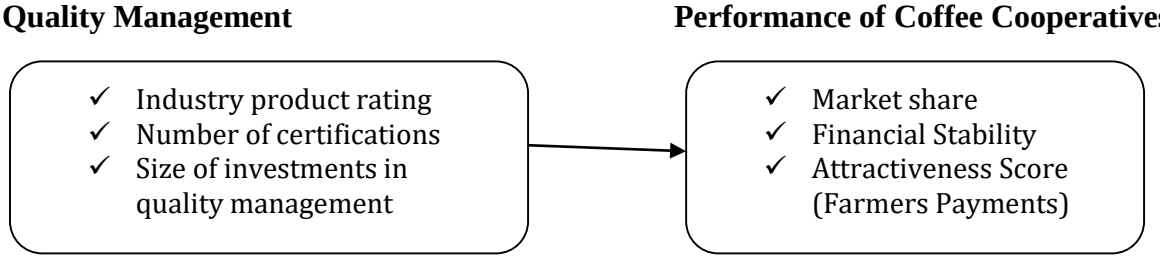
internal and external. Results support the hypotheses and clearly demonstrate that product quality dimensions affect organizational performance. This study was supported by Nguyen *et al.*, (2018) who did a research to establish the relationship between quality management and sustainability performance as well as the moderating effects from quality management implementation timeline, type of industry, and firm size on this relationship. An exploratory research design was used to carry out the study. Based on a sample of 144 valid responses, empirical results indicated that quality management had mixed impacts on economic and environmental performance, while it showed a positive impact on social performance.

Maletič *et al.*, (2014) did a study to examine the relationship between quality management orientation dimensions and maintenance performance among manufacturing firms in Slovenia. Data analysis results also showed that quality management orientation dimensions are positively related to maintenance performance. By testing the impact of quality management orientation on maintenance performance, the study showed that strong foundation on quality management orientation is an effective way of improving maintenance performance.

Researchers such as Cakmaka and Tasb (2014) investigated the effect of quality management practices on the performance of contractor firms in Turkey. They conducted an exploratory research design in doing the research. The study established that contractor firms have mostly been aware of the concept of quality management and that there is a relationship between quality management and the number of customers of the asking for construction services. A study conducted by Ndungu (2017) to establish the relationship between quality management and productivity among the selected small textile industries in Kenya revealed that when quality increases, the productivity also improves. He also found that wastes and rework are reduced, and inputs are optimally utilized. He concluded that higher productivity enables an organization to reduce price and gain competitive advantage both in terms of price and quality.

Kiprotich *et al.*, (2018) did a research to examine the influence of Total Quality Management practices and operational performance of Kenya Revenue Authority. Primary data was collected using self-administered questionnaires with both open-ended and close-ended questions. Secondary data was also sourced from quality assurance reports, Government economic reports, customer satisfactory survey reports, journal articles and related academic research papers. Data was analyzed using both quantitative and inferential statistics. The study established that there is a positive relationship between employee training, continuous improvement and system automation and operational performance of KRA. Mutua (2014) carried out a research to establish the relationship between quality management practices and financial performance of cement manufacturing firms in Kenya. He used a descriptive research design to carry out the study. The data was analyzed using descriptive statistics. Findings revealed that most cement manufacturing firms that implemented quality management practices recorded high sales turnover leading to organizational performance.

Diagrammatically, conceptualization was as follows



The independent variable in this study is strategic innovation practices. It is considered as the driver of coffee cooperative performance; in this study these practices will be looked in terms of extent of industry product rating, number of certifications and size of investments in quality management. The dependent variable in this study is organizational performance and it will be conceptualized in terms of market share, operational efficiency and return on investment.

Industry product rating

The common element of the business definitions is that the quality of a product or service refers to the perception of the degree to which the product or service meets the customer's expectations. Quality has no specific meaning unless related to a specific function and/or object. There are many aspects of quality in a business context, though primary is the idea the business produces something, whether it be a physical good or a particular service. These goods and/or services and how they are produced involve many types of processes, procedures, equipment, personnel, and investments, which all fall under the quality umbrella (Zeng, Zhang, Matsui, & Zhao, 2017).

Number of certifications

Product certification or product qualification is the process of certifying that a certain product has passed performance tests and quality assurance tests, and meets qualification criteria stipulated in contracts, regulations, or specifications (sometimes called "certification schemes" in the product certification industry). Most product certification bodies (or product certifiers) are accredited to or aligned with ISO/IEC 17065 Conformity assessment (Zeng, Zhang, Matsui, & Zhao, 2017).

Size of investments in quality management

Quality management requires substantial investments. Organization invest in quality management and this is measured through cost of quality which is as a methodology that allows an organization to determine the extent to which its resources are used for activities that prevent poor quality, that appraise the quality of the organization's products or services, and that result from internal and external failures (Parvadavardini, Vivek, & Devadasan, 2016).

3.0. Research Methodology

This section outlines the methodology used in this study.

3.1. Research Design and Area of Study

The study used an explanatory survey research design. The study was conducted in five counties of the former Nyanza province where coffee is grown. These areas included Kisumu, Homa-Bay Migori, Kisii and Nyamira counties found in the western part of Kenya.

3.2. Target Population, Sampling Techniques and Sample Size

The target population for this study was 1,239 respondents drawn from all the 51 coffee cooperative societies and the relevant government departments. The study was conducted in 51 coffee cooperative societies in 21 sub counties. Each of the designated sub counties had 1 cooperative officer and 1 agricultural officer giving a total of 21 cooperative officers and 21 agricultural officers respectively.

Table 3.1: Target Population

Categories	Total Respondents
Societies staff	585
Management committee	459
Supervisory committee	153
Cooperative officers	21
Agricultural officers	21
Total	**1,239**

Source: Annual Report (2018), Ministry of Cooperative Development

For this study the sampling frame consisted of cooperative societies' employees, management committee and government employees. Stratified sampling was used to select the respondents from the strata that were relevant to the study. The study sampled a total of 303 respondents from the target population of 1,239, however, the sample size was adjusted by 30% to take care of the non-response. This resulted into 394 respondents for the study. This sample size was considered adequate since similar studies conducted by Thurston *et al.*, (2000) used between 200 and 450. A formula by Nasiuma (2000) was used to derive the required sample size.

$$\frac{(NCv^2)}{Cv^2 + (N-1)\, e^2Cv^2}$$

Where

N- Target population (1239)

Cv - Coefficient of -0.5

e - Tolerance at 95% confidence level which is normally 0.05

$$\frac{\mathbf{1239 \times (-0.5)^2}}{\mathbf{(-0.5)^2 + (1239-1)\,(0.05)^2(-0.5)^2}}$$

$$= \frac{\mathbf{1239 \times 0.25}}{\mathbf{0.25 + (1238)\,(0.0025)\,(0.25)}}$$

$$= \frac{\mathbf{309.75}}{\mathbf{1.02375}}$$

$$= \mathbf{302.56}$$ **(this figure rounded off to 303 respondents)**

$$\approx \mathbf{303}$$

To cater for non-response, the study increased sample size by 30% to the main sample.

0.30*303 = 90.9

91+303=394

Table 3.2: Sample Size

Categories	Population	Sample Size
Societies staff	585	186
Management committee	459	146
Supervisory committee	153	48
Cooperative officers	21	7
Agricultural officers	21	7
Total	**1239**	**394**

Source: Field Data, (2020)

From the sample size calculations, the study respondents were 394 comprising of management committees, supervisory committees, society employees, cooperative officers and agricultural officers. This sample size represented more than 20% of the target population which was appropriate for the study to be carried on as it was above the minimum threshold of 10% of the target population as required and also as argued out by different scholars (Saunders et al., 2007; Kerlinger, 1986; Kothari, 2009). Therefore a 32% sample size was sufficient and reliable for data analysis because it provided desired levels of accuracy for testing significance of differences between estimates.

3.3 Design of Survey Instruments

Quantitative data was collected from primary and secondary sources. Primary data was collected by use of self-administered questionnaires. The researchers personally visited the cooperative societies' offices and the line ministries to collect secondary data which were extracted from the available documents. Self-administered questionnaires were personally delivered to the respondents at their respective societies by the researchers and research assistants, after which they were collected after two weeks for analysis. Further, a letter of introduction was obtained from Kisii University to facilitate the data collection process. Another important document used was the research permit that was obtained from the National Council of Science, Technology, and Innovation (NACOSTI). These documents served as authorization documents that showed that the research was approved and was meant for academic purposes only.

3.4. Reliability and Validity of Research Instrument

To test reliability of the instrument, a pilot study was carried out in Bungoma County. According to Beck *et al*., (2003), a pilot study is a small scale version, or trial run, done in preparation for a major study. In this study, questionnaire was tested to ensure that it was relevant and effective. Reliability was tested using questionnaires duly completed by 30 randomly selected respondents.

To ensure face validity of the instrument, the questionnaire was subjected to supervisors' and colleagues' scrutiny. Further, the questionnaire was pre-tested for coherency and comprehensiveness. Five raters were used to rate the questions. Each of the five raters had a specific focus according to the main sections of the questionnaire, that is, product diversification, strategic innovation, quality management, strategic leadership and organizational performance.

The researchers used the content validity index (CVI); a scale developed by computing or rating the relevant items in the questionnaire by checking their clarity and meaningfulness in line with the objectives of the study then dividing by the total number of items in the questionnaire. The rated findings were used to calculate content validity index (CVI) using the following formula:

CVI =K/N

Where: K = Total number of items in the questionnaire declared valid by both raters/ supervisors, N = Total number of items in the questionnaire.

The computed content validity index was compared with the standard CVI of 0.70 for validity. Evidence of validity was reported as a validity coefficient, which ranged from 0 to +1.00. The validity scores approaching 1 provided strong evidence that the tests scores were measuring the construct under investigation (Kurpius & Stafford, 2006).

3.5. Data Collection

Data collection is a process of gathering specific information to prove or refute facts in a study (Kombo & Tromp, 2011). In this study, a survey questionnaire was used because it provided an unobtrusive and inexpensive method of data collection (Zikmund, Babin, Carr, & Griffin, 2010; Kothari & Gaurav, 2014, Mugenda & Mugenda, 2009). Quantitative data was collected from primary and secondary sources. Primary data was collected by use of self-administered questionnaires. The researchers personally visited the cooperative societies' offices and the line ministries to collect secondary data which were extracted from the available documents.

3.6 Data Analysis and Presentation

Burns and Grove (2003) define data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researchers. According to De Vos (2002) data analysis is a creative process characterized by an intimate relationship of the researchers with the participants and data generated. Both descriptive statistics and inferential statistics were used in data analysis.

The collected data were examined for completeness and consistency. The analytical techniques for data analysis was determined in line with the characteristics of the research design and the nature of data gathered as suggested by Zikmund, Babin, Carr and Griffin (2013). Descriptive statistics namely percentages, mean, standard deviation and variance were used to analyze the data. The results were presented using tables, graphs.

Inferential statistics is concerned with the cause-effect relationships between variables and uses various tests of significance for testing hypotheses. Inferential statistics and Pearson's correlation were used to analyze the data. Multiple regression analysis was used to explore the relationship between the variables. Pearson's correlation coefficient was also calculated to analyze the strength and direction of association between the dependent and the independent variables. The results were presented using tables.

To test the hypotheses, simple and multiple regressions were used. The model took the form of an equation that contains a coefficient β_2 for each predictor, which indicated the individual contribution of each predictor model. The coefficient β_2 showed the relationship between the independent variable and each predictor. A positive value of β_2 represented a positive relationship between the predictor and the outcome variable whereas a negative β_2 represented a negative relationship.

At each level of predictor variables, the variance of the residual terms was expected to be constant, meaning that there is homoscedasticity. If variances were unequal it was considered to be heteroscedastic (Field, 1990). Heteroscedasticity is a systematic pattern in the errors where the variances of the errors are not constant (Gujarati, 2003). Heteroscedasticity makes ordinary least square estimators not efficient because the estimated variances and covariance of the coefficients (βi) are biased and inconsistent and thus, the tests of hypotheses are no longer valid.

Pearson product moment correlation (r) was derived to show the nature and strength of the relationship among the variables in the study. The square of the correlation coefficient, the coefficient of determination (R^2) was used to determine goodness of fit of different models and measure the amount or degree of variation in the dependent variable(s) attributed to the predictor variable(s). A multiple linear regression was adopted to establish the linear relationships among the variables. To determine the effect of strategic management practices on the performance of coffee cooperative Societies in Nyanza region, simple and multiple regression analyses was done with direct and indirect relationships. Direct model was used to test the relationship that exists between quality management and cooperative performance as shown in model (iii).

$$\mathbf{Y = \beta o + \beta_3 X_3 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots iii}$$

Where:

Y = Cooperative Performance,

β_o = Constant (coefficient of intercept),

β_3= change in cooperative performance for each 1 increment change in X_3, that is, quality management

X_3 = score on quality management which predicts the value of cooperative performance,

ε = the error term reflecting other factors that influence cooperative performance.

4.0 Research Findings and Discussion

The objective of the study was to determine the influence of quality management on performance of coffee cooperative societies in Nyanza region. The findings are presented table 4.1.

Table 4.1 Descriptives for Quality Management

	N	Minimum	Maximum	Mean	Std. Deviation
The cooperatives' products are bought all over the country	337	1.00	5.00	3.78	1.61
The cooperatives' products dominate the market	337	1.00	5.00	3.95	1.52
Product surveys have never found the cooperatives product wanting	337	1.00	5.00	3.98	1.43

The cooperative has an ISO quality certification	337	1.00	5.00	3.86	1.39
The firm is in possession of a systems certification	337	1.00	5.00	3.93	1.49
The cooperative has an environmental safety certification	337	1.00	5.00	3.72	1.59
There is a quality management dedicated to promoting quality in the organization	337	1.00	5.00	3.83	1.52
There are funds for quality management that take a considerable share of capital	337	1.00	5.00	2.92	.99
AVERAGE MEAN				**3.75**	**1.44**

Source: Field Data, (2020)

From the results, it was established that cooperatives' products are bought all over the country (Mean = 3.78, SD = 1.61). This is an indication that the cooperative management has taken into consideration on improving and managing their products. This is evidenced by the notion that cooperatives' products dominate the market (Mean = 3.95, SD = 1.52). Other than that, Product surveys have never found the cooperatives product wanting (Mean = 3.98, SD = 1.43). Further findings revealed that the cooperative has an ISO quality certification (Mean = 3.86, SD = 1.39). Moreover, the firm is in possession of a systems certification (Mean = 3.93, SD = 1.49) and the cooperative has an environmental safety certification (Mean = 3.72, SD = 1.59). There is also a quality management dedicated to promoting quality in the organization (Mean = 3.83, SD = 1.52). There are however concerns with regard to availability of funds for quality management that take a considerable share of capital (Mean = 2.92, SD = 0.99).

With an overall mean of (Mean=3.75, SD=1.44), the findings showed that quality management impacts heavily on coffee cooperative societies performance in Nyanza region.

The study also analyzed the descriptive statistics for cooperative performance using minimum, maximum, mean and standard deviation. Table 4.2 below highlights the findings on cooperative performance.

Table 4.2 Descriptives for cooperative performance

	N	Minimum	Maximum	Mean	Std. Deviation
The firms products dominate the market	337	1.00	5.00	3.68	1.24
The firm serves the largest market in most regions in the country	337	1.00	5.00	4.16	1.19
The firms market share is on the rise	337	1.00	5.00	3.28	1.74
The firm has sufficient reserves to cushion it in hard economic times	337	1.00	5.00	3.88	1.48

The firms is able to re-invest earnings	337	1.00	5.00	3.78	1.60
The firms book ratios show a strong financial position	337	1.00	5.00	3.97	1.47
The firm is able to pay dividends to shareholders	337	1.00	5.00	3.50	1.40
The firm meets obligations to employees and suppliers	337	1.00	5.00	4.14	1.36
The cooperative is able to meet its obligations	337	1.00	5.00	3.38	1.53
AVERAGE MEAN				**3.66**	**1.41**

Source: Field Data, (2020)

Basing on the findings, the firms products dominate the market (Mean = 3.68, SD = 1.24). Also, the firm serves the largest market in most regions in the country (Mean = 4.16, SD = 1.19). Further, the firms market share is on the rise (Mean = 3.28, SD = 1.74). In addition, the firm has sufficient reserves to cushion it in hard economic times (Mean = 3.88, SD = 1.48). The firms are also able to re-invest their earnings (Mean = 3.78, SD = 1.60) and the firms book ratios show a strong financial position (Mean = 3.97, SD = 1.47). As well, the firm is able to pay dividends to shareholders (Mean = 3.50, SD = 1.40) and the firm meets obligations to employees and suppliers (Mean = 4.14, SD = 1.36). Additionally, the findings showed that the cooperative is able to meet its obligations (Mean = 3.38, SD = 1.53). Overall, the items on cooperative performance summed up to a mean of 3.66 and standard deviation of 1.41. The implication is that strategic management practices could be important in enhancing coffee cooperative performance.

Principal component analysis (PCA) for quality management was conducted using SPSS version 25. Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were applied and finally factor analysis was carried out to calculate the eigenvalues. Table 4.3 illustrates the factor analysis for quality management.

Table 4.3 Factor Analysis for Quality Management

	Component	
	1	**2**
Product surveys have never found the cooperatives product wanting	0.87	
There is a quality management dedicated to promoting quality in the organization	0.90	
The firm is in possession of a systems certification	0.70	
The cooperatives' products are bought all over the country		0.56
The cooperatives' products dominate the market		0.70
The cooperative has an environmental safety certification		0.81
The cooperative has an ISO quality certification		0.56

There are funds for quality management that take a considerable share of capital		0.70
Total Variance Explained		
Initial Eigenvalues	2.99	2.38
% of Variance	37.37	29.79
Cumulative %	37.37	67.16
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.744
Bartlett's Test of Sphericity Approx. Chi-Square		1474.962
Df		28
Sig.		.000

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The 8 items for quality management were subjected to principal components analysis using SPSS version 25.Prior to performing PCA, the suitability of data for factor analysis was assessed. Factors with factor loadings of above 0.3 were retained for further data analysis. All items met this criterion and none was dropped. Therefore, the 8 items were retained for further analysis. The Kaiser-Meyer-Olkin Measure value was 0.744 exceeding the recommended value of 0.6 (Kaiser 1970, 1974) and Bartlett's Test of Sphericity (Bartlett 1954) was significant with p value less than 0.000 (Bartlett's test=1474.962, $p<.05$) indicating the manifestation of factorization of 2 factors for quality management.

Principal components analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 37.37% and 29.79% of the variance respectively. An item is considered to belong to a factor component if its factor loading corresponds to that particular component and is relatively higher than its factor loadings in the other factor components. This was further illustrated using the scree plot in (Appendix VI) which indicates that screes started to develop at factor 2 showing that only 2 factors explain quality management. The two components explained a total of 67.16 % of the variance.

Cooperative performance was tested using exploratory factor analysis. The results of this factor analysis, with the assumption of extracting via principal components method and rotating via varimax were presented in table 4.4.

Table 4.4 Factor Analysis for Cooperative Performance

	Component	
	1	**2**
The firm has sufficient reserves to cushion it in hard economic times	0.70	
The firm is able to pay dividends to shareholders	0.76	
The firm serves the largest market in most regions in the country	0.70	

The firm meets obligations to employees and suppliers	0.84	
The firms market share is on the rise	0.54	
The firms is able to re-invest earnings	0.63	
The firms products dominate the market	Dropped	
The firms products dominate the market		0.57
The cooperative is able to meet its obligations		0.73
Total Variance Explained		
Initial Eigenvalues	3.26	2.28
% of Variance	36.19	25.28
Cumulative %	36.19	61.48
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.805
Bartlett's Test of Sphericity Approx. Chi-Square		1590.232
Df		36
Sig.		.000

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Source: Field Data, (2020)

The 9 items for cooperative performance were subjected to principal components analysis using SPSS version 25.Prior to performing PCA, the suitability of data for factor analysis was assessed. Factors with factor loadings of above 0.3 were retained for further data analysis. One item however failed to meet this criterion and was dropped. Therefore, 8 items were retained for further analysis. The Kaiser-Meyer-Olkin measure value was 0.805 exceeding the recommended value of 0.6 (Kaiser 1970, 1974) and Bartlett's Test of Sphericity (Bartlett 1954) was significant with p value less than 0.000 (Bartlett's test=1590.23, $p<.05$) indicating the manifestation of factorization of 2factors for cooperative performance.

Principal components analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 36.19% and 25.28% of the variance respectively. The two components explained a total of 61.5% of the variance.

The researchers ran the correlation matrix to check the relationship between the variables. The study used Pearson product moment correlation coefficient (r) to establish a correlation between quality management and cooperative performance. Correlation coefficient shows the magnitude and direction of the relationship between the variables under study.

Table 4.5: Correlation matrix

		Quality Management	Cooperative Performance
Quality Management	Pearson Correlation	1	
	Sig. (2-tailed)		
Cooperative Performance	Pearson Correlation	.554**	1
	Sig. (2-tailed)	.000	
	N	337	

The results showed that there is a significant positive relationship between quality management and performance (r=.554, p<.01). This implies that an increase in quality management improved the performance of cooperative societies.

Regression Analysis

The objective of the study was to find out the influence of quality management on performance of coffee cooperative societies in Nyanza region, the study predicted that quality management has no statistical significant effect on performance of coffee cooperative societies in Nyanza region. Simple regression model was used to determine the relationship between quality management and coffee cooperative societies' performance. This model tested hypothesis as follows.

$$\mathbf{Y = \beta o + \beta_3 X_3 + \varepsilon \ldots\ldots\ldots iii}$$

Table 4.6a Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.650[a]	.422	.420	.56540

a. Predictors: (Constant), Quality Management

Source: Field, Data, (2020)

Results in Table 4.6a showed that quality management had (R^2 = 0.420), implying that, quality management, explain up to 42% of the changes in the coffee cooperative societies' performance (dependent variable)

The ANOVA results were presented in table 4.6b.

Table 4.6b ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	78.254	1	78.254	244.792	.000[b]
	Residual	107.091	336	.320		
	Total	185.346	337			

a. Dependent Variable: Cooperative Performance

b. Predictors: (Constant), Quality Management

The ANOVA model showed model fitness for influence of quality management on cooperative performance was statistically significant (F = 244.792, p<0.05). Thus, the model was fit to predict cooperative performance using strategic innovation.

The regression coefficients in table 4.6c established the mean change in cooperative performance for one unit of change in the strategic innovation.

Table 4.6c Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.395	.156		8.927	.000
	Quality Management	.652	.042	.650	15.646	.000

a. Dependent Variable: Cooperative Performance

Source: Field, Data, (2020)

Hypothesis 1 (H_{o1}) stated that there is no statistically significant influence of quality management on performance of coffee cooperatives in Nyanza region. The study findings showed that quality management had coefficient of estimate which was significant basing on $\beta_3 = 0.678$ (p-value < 0.05). The null hypothesis was thus rejected and it was concluded that quality management had a significant effect on performance of coffee cooperative societies in Nyanza region. This suggested that there was up to 0.599 unit increase in quality management for each unit increase in cooperative performance.

The effect of quality management was more than 15 times the effect attributed to the error; this was indicated by the t-test value = 15.646. Based on the above results the results derived the following simple linear regression model as shown below.

$$Y = 1.395 + 0.652\,X_3 + \varepsilon$$

The study findings agree with those of Mahmood (2014), whose results clearly demonstrated that product quality dimensions affect organizational performance. Further, Nguyen *et al.,* (2018) results found four quality management practices that have significantly positive impact on sustainability performance: top management support for quality management, design for quality, quality data and reporting, and continuous improvement. Furthermore, the study found significant moderating effects of three contextual factors on the relationship between quality management practices and sustainability performance. Similarly, Maletič *et al.,* (2014) findings showed that quality management orientation dimensions are positively related to maintenance performance. By testing the impact of quality management orientation on maintenance performance, the study showed that strong foundation on quality management orientation is an effective way of improving maintenance performance. The findings are also in tally with that of Cakmaka and Tasb (2014), which concluded that there is a relationship between quality management and the number of customers. Further support to the study findings is by Ndungu (2017) who concluded that higher productivity enables an organization to reduce price and gain competitive advantage both in terms of price and quality. The findings are also in conformity with that of Kiprotich *et al.,* (2018) which established that there is a positive relationship between employee training, continuous improvement and system automation and operational performance. Undoubtedly, quality management is essential in improving cooperative performance.

5.0 Conclusion and Managerial Implications

On quality management, product rating as a quality measurement metric is key to coffee cooperatives performance. Cooperatives enable farmers to improve coffee quality and ultimately their income. This is done by use of strategies that ensure farmers in the cooperatives have higher returns for their produce if they produce quality. Quality management has also enabled cooperatives' products dominate the market and that coffee cooperatives have earned ISO quality certification, possession of a systems certification, environmental safety certification and there is a quality management dedicated to promoting quality in the organization. However, there were concerned with regard to funds for quality management. The study concludes that quality management enhanced performance of coffee cooperative societies. The study recommended that management of cooperatives societies should allocate enough funds to enhance the quality of coffee; at the onset and that the cooperative societies should lobby marketing agencies to ensure that coffee prices are not in any way destabilized.

References

Abdul, T. B. & Esam, M. A. (2012). Impact of Total Quality Management on Innovation in Service Organizations: International Academic Journal of Innovation, Leadership and Entrepreneurship Vol.3, (6). Pp. 152-166.

Kamau (2014). Assessment of the Impact of Quality Management on Performance of Hotel Industry in Kenya. International Academic Journal of Human Resource and Business Administration, vol. 5(12), 116-119.

Kaynak, H. (2015). The Relationship between Total Quality Management Practices and their Effects on Firm Performance. Journal of Operations Management. European Journal of Management, Vol. 30. Issue, 2. P. 218-235.

Kiprotich, C. W. (2014). Effect of Total Quality Management Practices on Organizational Performance in Kenya: A Case of Tertiary Institutions in Uasin Gishu County. International Academic Journal of Human Resource and Business Administration, 2(4), 306-328

Mahmood, M. H. (2014). The Effect of Product Quality on Business Performance in Some Arab Companies. Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 5(5):498-508.

Maletic, D. & Gomiscek, B. (2014). The Impact of Quality Management Orientation on Maintenance Performance. International Journal of Production Research, vol. 52, no. 6, pp. 1744-1754.

Nguyen, M. H., Chi, A. P. & Matsui, Y. (2018). Contribution of Quality Management Practices to Sustainability Performance of Vietnamese Firms. Science Journal of Business and Management; 7(2): 102-132

Terziovski, M. (2016). Quality management practices and their relationship with customer satisfaction and productivity improvement. Management Research News, Vol. 29, No. 7, pp. 14-24.