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Effects of Operational Efficiency on Financial Performance of Cut-Flower Farms in Nakuru County, Kenya

Paula Jelagat Koross

Masters Student, Kabarak University, Kenya

Philip E. Ragama

Senior Lecturer, School of Computer and Bioinformatics, Kabarak University, Kenya

Dr. Richard Bitange Nyaoga

Lecturer, Faculty of Commerce, Egerton University, Kenya

Abstract:

Cut-flowers and potted plants have an almost 80 percent share of the world trade among ornamental plants. The main aim of the study was to determine effect of operational efficiency on financial performance of cut-flower farms in Nakuru County, Kenya. Specifically, the study established the effect of inventory management efficiency and production efficiency on Return on Equity and Return on Asset as measures of financial performance. This study was guided by Conventional Economic theory, Efficient Market Hypothesis theory and the theory on Constraints. The study adopted descriptive research design. The target population of the study was the 41 managers who are Production/Operations Managers from the 41 cut flower farms in Nakuru County. The study used structured questionnaire as the main data collection tool to collect data from the 41 Managers. A pilot study was conducted in among the 5 cut-flower farms in Laikipia County. The reliability of the research instruments was determined by use of Cronbach's alpha coefficient which was 0.893. The study was conducted in Nakuru County in the months of January and February 2018. The findings showed that inventory management efficiency has significant effect on financial performance of cut-flower farms in Nakuru County, Kenya. The study concluded that in the inventory management efficiency, there is adequate stock handling equipment and the inventory management system is in place. The packaged stem flowers are stocked just for few hours before dispatched to the airport and the stock re-order level is strictly followed. In addition, the stock level is updated immediately and the stock is stored just for short period before being used. In terms of production efficiency, the farm production efficiency is very high and the inbound stock is matched with production requirement as the farm uses little input to achieve high production. There is an existing production plan which is strictly followed by all the flower farms on the study.

The study recommends that the flower farm management should maintain adequate stock handling equipment and efficient and effective inventory management system. The farms should also have a production plan that is strictly followed to meet the demand for specified contracted market. Since the farm's operation efficiency matches with customer satisfaction, the management should maintain the clarity and accuracy of customer service procedures and the online documentation and information relevant to the customer services. The study also recommends that the operation efficiency should be put in place so as to reduce the expenditure and increase the revenue. It also helps in managing the equity and long term debts, improving the operating expense to operating revenue ratio. Finally, the assets are optimally utilized when operation efficiency in place

Keywords: *Customer service efficiency, just in time, inbound logistics, inventory management efficiency, operation efficiency, production efficiency, financial performance.*

1. Background

One of the most imperative aims of a company's management is to maximize the present and future financial and operational performance because they impact the market price per share and consequently, shareholders' wealth (Gill, Singh, Mathur, & Mand, 2014). According to Bhagavath (2009), the operational efficiency concept has become of concern due to increased competition, business processes and new technology evolution. Operational efficiency is the proficiency of a firm to curtail the unwelcome and maximize resource capabilities so as to deliver quality products and services to customers. Relatively, more efficient firms tend to maintain more stability levels in terms of output and operating performance compared to their other industry peers (Mwangeti, 2012). Efficiency scores obtained for organization can be used to formulate operational strategy to enable a firm meet its business objectives and goals by enhancing allocation of available resources in order to maximize outputs of the firm (Reid & Sanders, 2006). According to Berger and Humphrey (1997), statistical based "efficient cost frontier" tactics would measure efficiency more accurately.

The operating performance of corporations has long been at the center of academic research and has received a substantial amount of attention. This is primarily due to the fact that operating efficiency is of particular interest for both managers, whose aim is to improve the performance of their financial firms, and policy makers, whose task is to assess the

effects of market structure on performance and, therefore, to safeguard the stability of the financial system. Customers are continually demanding higher quality, so many organizations design strategies to deliver guaranteed high-quality products. The ability to change operations and meet specific customer requirements brings in flexibility. Flexibility comprise four aspects of ability to change the volume of production, ability to change the time taken to produce, ability to change the mix of different products or services produced, the ability to innovate and introduce new products and services (Jayaram &Kefeng, 2016)

Financial performance is a measure of how well a firm can use its resources from its most primary business to generate returns. For a firm to improve overall performance, it should aim at minimizing risk and well prepare for uncertainty at this time it is a prerequisite for firm to know about the determinants of working capital and the appropriate intensity (Mwangi, 2013).

Return on equity (ROE) displays the amount of net income reimbursed as a percentage of shareholders equity by revealing how much profit a company generates with the money shareholders have invested. ROE is expressed as a percentage and calculated as the ratio of Net Income to Shareholder's Equity. Another measure of financial performance is Return on Assets (ROA) which explains a firm's ability to make use of its assets and return on sales (ROS) reveals how much a company earns in relation to its sales (Ndolo, 2015)

Horticulture sub-sector in Kenya is one of the top foreign exchange earners for the country generating approximately US \$ 1 billion annually. In 2016, the horticulture sub-sector contributed about 1.6% to the national GDP while 1.1% was from the flower industry. It has grown in significance to a vibrant flower industry worldwide. It has recorded growth in volume and value of cut flowers exported every year from 10,946 tons in 1988 compared to 86,480 tons in 2006, 120,220 tons in 2010, 136,601 tons in 2014 and 133,658 in 2016. According to Horticultural Crop Directorate (HCD) in 2016, the floriculture industry earned Kenya Shillings 70.8 billion. On the global front, a growth of 5% is anticipated every year over the next five years. To be a part of this opportunity, Kenya is going to continue investing and expansion in growth rate than previous years.

1.1. Statement of the Problem

Operation efficiency is achieving the management purpose to combine people, process and technology to deliver organizational goal through a lean production so that the production cost is optimally managed. The global cut flower industry provides a vital income for many people in countries like Kenya and Colombia. In Kenya, agricultural sector is the second income earner after tourism. Flowers are the major exports in the sector among other such as tea and vegetables. This shows how vital flower farming is to the Kenyan economy. The cut-flower companies are faced with higher power cost, cost of fuel and farm inputs that poses cost of production to be higher. This cannot be afforded by most flower farms that are doing their best to produce up to standard flowers for the internal and external market (Theuri, 2018). Other challenges facing the smooth operations of the cut flower farms in Nakuru County include: Quality packaging by competitors, Competition for transport challenges, Quality standard of products, Threat of new entrants to the market, Market dominance by strong competitors, unique products by the competitors, Rivalry within the industry, price wars within the industry. Studies above on the operational efficiency of firms show mixed conclusions on the relationship between operational efficiency and financial performance. Some show negative relationship, others positively significant relationship and others no relationship at all. Some studies measure the relationship between efficiency and profitability and not specifically financial performance. Therefore, literature is apparently lacking Operational efficiency and financial performance among the cut-flower firms as it can be confirmed. Consequently, this study will bridge this gap to specifically answer the question: Does Operational efficiency have an effect on financial performance of cut-flower farms?

1.2. Objective of the Study

The study was directed by the following objectives:

- To establish the effect of inventory management efficiency on financial performance of cut-flower farms in Nakuru County, Kenya.
- To determine the effect of the level of production efficiency on financial performance of cut-flower farms in Nakuru County, Kenya.

2. Literature Review

2.1. Conceptual Framework

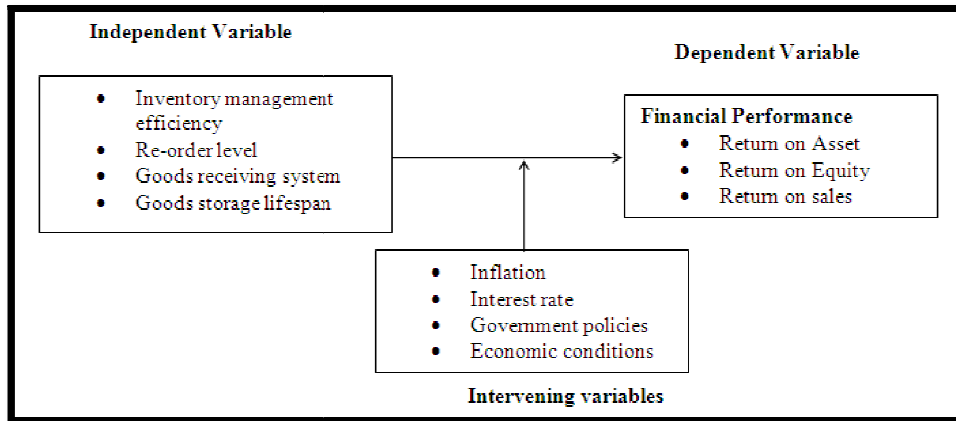


Figure 1: Conceptual Framework

This study conceptualized that the independent variables could influence financial performance of cut-flower farms in Nakuru County, Kenya. financial performance was measured in terms of return on asset, return on equity and return on sales

3. Research Design

The study adopted a descriptive research design. Descriptive research was concerned with conditions that already exist, practices that are held, processes that are ongoing and trends that are developing. Descriptive survey research design is appropriate when the purpose of study was to create a detailed description of an issue (Mugenda & Mugenda, 2003).

3.1. Target Population

Target population for the study comprised of 41 flower firms. The study targeted the Production/Operations Managers. This category was selected since they are involved in crafting, implementing and evaluating strategies used by the flower firms in Nakuru County. The target population therefore is 41 Managers.

3.2. Sample Size and Sampling Procedure

According to Mugenda and Mugenda (1999), in a descriptive survey, a sample enables a researcher to gain information about the population. Given that the population was small and the researcher can conveniently collect data from all the flower firms, the respondents was the Production/Operations Managers from all the 41 flower firms in Nakuru County. The unit of analysis was the individual cut-flower firm.

4. Research Findings and Discussion

4.1. Inventory Management Efficiency

Inventory management is pivotal in effective and efficient organization. It is also vital in the control of materials and goods that have to be held (or stored) for later use in the case of production or later exchange activities in the case of services. The finding is presented in Table 1

Inventory Management efficiency	SD	D	NS	A	SA	CHISQ	P>CHISQ
There is adequate stock handling equipment	9.09	3.03	9.09	30.3	48.48	23.8	<.001
There is inventory management system in place	3.03	9.09	6.06	39.39	42.42	24.4	<.001
Stock level is updated immediately	3.13	15.63	6.25	34.38	40.63	18	<.001
Stock is stored just for short period before being used	6.06	6.06	9.09	48.48	30.3	23.5	<.001
Packaged stem flowers are stocked just for few houses before dispatched to the airport	12.5	3.13	6.25	31.25	46.88	22.1	<.001
Stock re-order level is strictly followed		14.81		18.52	66.67	14.78	<.001

Table 1: Inventory Management Efficiency

In terms of inventory management efficiency, the Table 1 indicates that the majority of the respondents strongly agreed that there is adequate stock handling equipment (48.48, $\chi^2 = 23.8, P \leq 0.001$) and that there is inventory

management system in place ($42.42, \chi^2 = 24.4, P \leq 0.001$). They also strongly agreed that the packaged stem flowers are stocked just for few houses before dispatched to the airport ($40.63, \chi^2 = 18.0, P \leq 0.001$) and also agreed that the stock re-order level is strictly followed ($48.48, \chi^2 = 23.5, P \leq 0.001$). In addition, the results also indicate that some the respondents were also strongly agreed that the stock level is updated immediately ($46.88, \chi^2 = 22.1, P \leq 0.001$) and that the stock is stored just for short period before being used ($66.67, \chi^2 = 14.78, P \leq 0.001$). The chi-square (χ^2) statistic were found to be insignificant at $p < .05$ indicating that the responses did not indicate any significant differences. This finding corroborates with that of Ogbo, Onekanma and Ukpere (2014) who found out that that flexibility in inventory control management is an important approach to achieving organizational performance. It was found that organizations benefit from inventory control management by way of easy storage and retrieval of material, improved sales effectiveness and reduced operational cost. The study also found that there is a relationship between operational feasibility, utility of inventory control management in the customer related issues of the organization and cost effectiveness technique are implemented to enhance the return on investment in the organization. Effective inventory control management is recognized as one of the areas management of any organization should acquire capability. It is recommended that organizations should adopt the inventory keeping method that best suit their operations

4.2. Production Efficiency

Since the demand for fresh flowers and plants is increasing world-wide over the coming years, there should be a logistical system that enables production to move fast into the market. Analysis of firms' production efficiency is presented in Table 2

Production Efficiency	SD	D	NS	A	SA	CHISQ	P>CHISQ
Cut-flower is produced for specific contracted market	6.25	9.38	12.5	43.75	28.13	15.8	<.01
The farm uses little input for high production	6.06	6.06	9.09	54.55	24.24	28.4	<.001
Inbound stock is matched with production requirement	6.06	3.03	12.12	51.52	27.27	26.2	<.001
There is an existing production plan which is strictly followed	6.06		6.06	48.48	39.39	19.5	<.001
Farm production efficiency is very high	3.03	9.09	6.06	51.52	30.3	28.1	<.001
Production is automatically matched with orders	9.38	9.38	9.38	43.75	28.13	15.5	<.01

Table 2: Production Efficiency

In terms of production efficiency, the respondents from the findings in Table 4.3 show that the majority of the respondents agreed that the farm production efficiency is very high ($51.52, \chi^2 = 28.1, P \leq 0.001$). In addition, the respondents also agree that the inbound stock is matched with production requirement ($51.52, \chi^2 = 26.2, P \leq 0.001$) and the farm uses little input for high production ($54.55, \chi^2 = 28.1, P \leq 0.001$). The results also show that they also agreed that the cut-flower is produced for specific contracted market ($43.75, \chi^2 = 15.8, P \leq 0.001$), and the production is automatically matched with orders ($43.75, \chi^2 = 15.5, P \leq 0.001$), also that there is an existing production plan which is strictly followed ($48.48, \chi^2 = 19.5, P \leq 0.001$). The chi-square (χ^2) statistic were found to be insignificant at $p < .05$ indicating that the responses did not indicate any significant differences. On the other hand, all the other aspects had chi-square (χ^2) statistics significant indicating that the respondents demonstrated significant differences in their responses. These findings agree with Ndolo (2015) who also found that operational efficiency positively impacts on the ROA of the firms listed at NSE. The effect of operational efficiency on ROA is statistically significant at 5% level. The study therefore concludes that operational efficiency has a statistically significant relationship with ROA.

4.3. Financial Performance in Terms of Operations Efficiency

Financial performance is the dependent variable of the study. The findings indicated in the Table 3 show the summary of the results of financial performance in terms of operations efficiency.

Operation Efficiency	SD	D	NS	A	SA	CHISQ	P>CHISQ
Expenditure has reduced due to operation efficiency in place	9.09	3.03	9.09	45.45	33.33	22.3	<.0001
Revenue has increased due to operation efficiency in place	9.09	3.03	6.06	51.52	30.3	28.1	<.0001
Equity and long-term debts are well managed in our farm due to due to operation efficiency in place	3.03	15.15	3.03	45.45	33.33	23.5	<.0001
Asset have grown due to operation efficiency in place	9.09		6.06	57.58	27.27	22.2	<.0001
Assets are optimally utilized due to operation efficiency in place	3.03	9.09	6.06	48.48	33.33	26.2	<.0001
Operating expense to operating revenue ratio has improved due to operation efficiency in place	9.38	12.5	3.13	37.5	37.5	17.1	<.001

Table 3: Financial Performance in Terms of Operations Efficiency

According to Table 3, the respondents agreed that the expenditure has reduced due to operation efficiency in place (45.45, $\chi^2 = 22.3$, $P \leq 0.001$), and that revenue has increased due to operation efficiency in place (51.52, $\chi^2 = 28.10$, $P \leq 0.001$). They also agreed that equity and long term debts are well managed in our farm due to operation efficiency in place (45.45, $\chi^2 = 23.5$, $P \leq 0.001$) and that the assets have grown due to operation efficiency in place (57.58, $\chi^2 = 22.2$, $P \leq 0.001$), Operating expense to operating revenue ratio has improved due to operation efficiency in place (48.48 $\chi^2 = 26.2$, $P \leq 0.001$). On the other hand, the results indicate that the respondents strongly agreed that the assets are optimally utilized due to operation efficiency in place (37.50 $\chi^2 = 17.10$, $P \leq 0.001$). The chi-square (χ^2) statistic were found to be insignificant at $p < .05$ indicating that the responses did not indicate any significant differences. However, all the other aspects had chi-square (χ^2) statistics significant indicating that the respondents demonstrated significant differences in their responses. This study concurs with Matar and Mohammad (2018) who affirm that financial performance can be measured by growth in profitability, production capacity, sales growth and utilization of the capital and financial resources. As suggested by Tailab (2014) an affiliation's execution is evaluated in three estimations: effectiveness, profitability, and business part premium.

4.4. Regression Analysis on the Effect of Operations Efficiency on Financial Performance

In order to test the effect of operational efficiency on financial performance of the cut-flower farms in Nakuru County, regression model below was used.

$$y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where;

Y= Financial performance

α =constant

$\beta_1 \dots \dots \beta_{4d}$ = parameter estimates

X_1 = Inventory Management efficiency

X_2 = The level of production efficiency

ε is the error of prediction.

Dependent Variable: Return_Equity_pc						
Analysis of Variance						
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F	
Model	3	123.0263	41.00876	1.86	0.1793	
Error	15	330.2996	22.01997			
Corrected Total	18	453.3259				
Root MSE	4.69254	R-Square	0.2714			
Dependent Mean	1.34947	Adj R-Sq	0.1257			
Coeff Var	347.7315					
Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Variance Inflation
Intercept	1	1.4816	4.09154	0.36	0.72ns	0
X ₁	1	-1.30748	0.56144	-2.33	0.03*	9.27308
X ₂	1	1.06491	0.51219	2.08	0.05*	8.31327

Table 4: Regression Analysis

Ns - Not Significantly Different ($P > 0.05$)

*- Significantly Different ($P < 0.05$)

According to the model summary on Table 4, the coefficient of correlation (R) is .2714 which portrays a weak relationship between the variables. The coefficient of determination Adjusted R-Square is 0.1257 (12.57%) which shows that the above independent variables explain 12.57% of the changes in the financial performance at a 95% confidence level. This means that other factors or in this case other determinants not discussed in this study contributed 87.43% variation in the return on equity.

The ANOVA (Analysis of Variance) results on Table 4, shows that the F value of 1.86 was not statistically significant at 0.1793, which was higher than 0.05. Additionally, the F-statistic for the moderated regression model posted a lower value, 1.86. It was, therefore, be concluded that although models were not statistically significant, the moderated model posted a higher explanatory power and better fit than in the regression model. The above results also show that the independent variables (Inbound/Outbound logistics efficiency, Inventory Management efficiency, level of production efficiency and customer service efficiency) used were not statistically significant in predicting the financial performance at 95% significance level.

This is utilized in reference of research study to evaluate and analyse the results with the goal being to either accept or reject the null hypothesis. Terms used include test statistic which means that the decision whether to accept or reject the null hypothesis is made based on this value; therefore, if the calculated test statistic value is less than the critical value, we fail to reject the hypothesis; otherwise, we reject the hypothesis (Pernet, 2016). Another term is the level of significance, which is the confidence at which a null hypothesis is accepted or rejected, which is sometimes also referred to as test of significance of data. The deciding factor in all the tests was that if the P value observed was less than the set alpha at a confidence level of 0.05, then we reject the null hypothesis, and fail to reject the null hypothesis if the P value observed was greater than the set alpha of 0.05. Thus, to establish the relationship between operational efficiency and financial performance of the cut-flower farms in Nakuru County, the following equation was modeled.

$$y = 1.4816 - 1.30748X_1 + 1.06491X_2$$

The study will use the findings in Table 4, in testing the hypotheses.

In H0₁: Inventory management efficiency does not have significance effect on financial performance of cut-flower farms in Nakuru County, Kenya. The study established that the Beta and p-values were negative and significant

($\beta = -1.30748$, $P \leq 0.03$); the study therefore rejects the null hypothesis as the p-value of 0.03 is less than 0.05. The t-test value of -2.33 depicts that the variable is statistically significant.

In H0₂: The level of production efficiency does not have significance effects on financial performance of cut-flower farms in Nakuru County, Kenya. The coefficient results highlighted on Table 4 above indicate that there exists a positive and statistically significant effect on the financial performance. The Beta value of 1.06491 and p-value of 0.05 was significant as it was equal t 0.05. The study therefore rejected the null hypothesis

5. Conclusions

From the study therefore, we can conclude that in the inventory management efficiency, there is adequate stock handling equipment and the inventory management system is in place. The packaged stem flowers are stocked just for few hours before dispatched to the airport and the stock re-order level is strictly followed. In addition, the stock level is updated immediately and the stock is stored just for short period before being used. In terms of production efficiency, the farm production efficiency is very high and the inbound stock is matched with production requirement as the farm uses little input to achieve high production. The cut-flower is produced for specific contracted market, and the production is automatically matched with orders. There is an existing production plan which is strictly followed by all the flower farms on the study.

5.1. Recommendations

- The study recommends that the flower farm management should maintain adequate stock handling equipment and efficient and effective inventory management system. The farms should also have a production plain that is strictly followed to meet the demand for specified contracted market. Since the farm's operation efficiency matches with customer satisfaction, the management should maintain the clarity and accuracy of customer service procedures and the online documentation and information relevant to the customer services.
- The study also recommends that the operation efficiency should be put in place so as to reduce the expenditure and increase the revenue. It also helps in managing the equity and long-term debts, improving the operating expense to operating revenue ratio. Finally, the assets are optimally utilized when operation efficiency in place

5.2. Areas for Further Research

- It is recommended that further research on the cut-flower farms to be carried out in other counties in Kenya.
- The research can also be extended to other public institutions and corporation e.g. universities and banks because they are also confronted by issues of operational efficiency

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