

# **Influence Of Monitoring And Evaluation Of Agriculture For Food Security**

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## **Abstract**

*The purpose was to establish the Influence of Monitoring and Evaluation of Agriculture for Food Security in Murang'a County, Kenya. Objective: to determine if Monitoring of agriculture output process has influence on household food security. Methodology of Pragmatic paradigm, descriptive and correlational surveys. Target population 134,654, sample size of 383. (SPSS) version 25 computer program generated frequencies. Hypotheses investigated had significance level of 0.05: The null hypothesis (H<sub>0</sub>); - M&E Input process and Household food security have no meaningful association, hence disproved (P=0.0000.05). The null hypothesis of the relationship between household food security and M&E input process was disproved (P=0.0000.05).*

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## **I. Introduction**

Results bases M&E output process in this study was defined as the process which involves availability of standards and legislative food policies as well as technical assistance and extension services for farm produce. This was the third objective which the study sought to achieve; and the participants were requested to give their opinions on their level of agreements or disagreements with the ten statements of Results bases M&E Output Process on a Likert scale of 1-5 where Strongly agree (SA)=5, Agree(A)=4 Neutral(N)=3, Disagree(D)=2 and Strongly disagree. (SD)=1. The results were analyzed and presented using frequencies, percentage, means and standard deviation for each response in each item.

The item means as well as the standard deviation were also computed and are presented in Table 4.22. Appendix 1

The results in Table 4.22 indicates that the composite mean and composite Standard deviation for the Results Based M&E output Process were 3.71 and 1.21 respectively and that using most participants at least agreed (mean=3.71) that Results Based M&E output Process is due to the key indicators. Similarly, ten statements were developed to measure the extent of Results Based M&E output Process.

Statement (1) on *'availability of food policy standards is important for output processes* had a mean of 3.66 and a standard deviation of 1.35. The results indicate that out of 320 study participants, 115(36.3%) strongly agreed, 85(26.6%) agreed, 49(15.3%) were neutral, 35(10.9%) disagreed and 35(10.9%) strongly disagreed respectively availability of food policy standards are important for output process. The results show that the line statement mean score of 3.66 was lower than the composite mean of 3.71. The implication of the results is that availability of food policy standards is important for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.35 was higher than the composite standard deviation of 1.21 and indicate that there was a divergence opinion among the study participants. The study results support finding by Neil, (2016), found that since early 1990s, food policy was chaotic, mass hunger and malnourishment existed, and agricultural production was in a deep slump Successful food policy formulation is the one that considers the multidimensional nature of food security in the region. Availability of food policy standards are important for output processes, concerted with a set of actions aimed at positively influencing the nutritional status of a given population with increased food availability and food supply. Food policies are generally created at a national level but may also be developed at a regional level based on the degree of harmonization that exists between the countries within the region. There has also been recent and significant growth in trade agreements between countries, as noted by The World Bank, and while this does not always reach to recognizing each country's individual food policies and legislation, it does open the doors to creating a better understanding of individual country needs.

Statement (2) on *'availability of legislative food policies is important for output processes* had a mean of 3.63 and a standard deviation of 1.27. These results indicate that out of 320 study participants, 99(30.9%) strongly agreed, 99(30.9%) agreed, 54(16.9%) were neutral, 42(13.2%) disagreed and 26(8.1%) strongly

disagreed respectively that availability of legislative food policies is important for output process. The results show that the line statement mean score of 3.63 was lower than the composite mean of 3.71. The implication of the results to the study is that availability of legislative food policies is important for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.27 than the composite standard deviation of 1.21 indicate that there was a divergence opinion among the study participants. The study support findings by NFANSPF (2017-2022) who reported that food policy legislation was instrumental in value addition to agricultural produce, for output process, the policies upon proper usage renders the policy helpful for household food security. The availability of legislative food policies is an important factor for output processes. The study found that public policies concerning food supply chain of; agricultural food produced, from harvest, processed, distributed, purchased were not provided nor well-articulated in the agricultural policies. Food and agriculture system operations are influenced with consideration to human health needs, while food policies are aimed at impacting the operation of the food and agriculture system. Policies were not actively instrumental in the inclusivity of ensuring that all areas of food security were catered for in the food policy.

Statement (3) on *‘Technical assistance is essential for farmer’s knowhow for output processes* had a mean of 3.75 and a standard deviation of 1.25. These results indicate that out of 320 study participants, 106(33.1%) strongly agreed, 111(34.6%) agreed, 47(14.7%) were neutral, 28(8.8%) disagreed and 28(8.8%) strongly disagreed respectively that technical assistance is essential for farmer’s knowhow for output process. The results show that the line statement mean score of 3.75 was higher than the composite mean of 3.71. The implication of the results to the study is that technical assistance is essential for farmer’s knowhow for output process and hence positively influence Household food security. The higher line-item standard deviation of 1.25 was higher than the composite standard deviation of 1.21 and indicate there was a divergence opinion among the study participants. The results support findings by WTO (2020), which explains that extension officers help readiness assessment, perception of readiness and barriers towards implementation of Agricultural projects. They collect data which was used to gauge the nature of help the households need from Ministry of Agriculture and other stakeholders. When the finding reveals that the perceived number of factors of readiness as positive, then households are ready to buy into the proposed agricultural project, The Agricultural Extension Officers are tasked with technical assistance which is essential for farmers knowhow for output processes. deal with households in the field. Agricultural Extension Officer advises farmers, agricultural initiatives, and Government on the production, processing and distribution of farmers needs and produce.

Statement (4) on *‘Extension services are essential for food product for output processes* had a mean of 3.61 and a standard deviation of 1.29. These results indicate that out of 320 study participants, 90(28.1%) strongly agreed, 117(36.6%) agreed, 44(13.8%) were neutral, 30(9.4%) disagreed and 35(10.9%) strongly disagreed respectively that extension services are essential for food product for output process. The results show that the line statement mean score of 3.61 was lower than the composite mean of 3.71. The implication of the result is that extension services are essential for food product for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.29 was higher than the composite standard deviation of 1.21 indicate that there was a divergence opinion among the study participants. The results support findings by WTO (2020) which explains that technical assistance helps farmers in readiness assessment and barriers towards implementation of Agricultural projects. The extension services are essential for food product for output processes They collect data which is used to gauge the nature of help the households need from Ministry of Agriculture and other stakeholders. The Agricultural Extension Officers are tasked with technical assistance which is essential for farmers knowhow for output processes deal with households in the field. Agricultural Extension Officer advises farmers, agricultural initiatives, and Government on the production, processing and distribution of farmers needs and produce. When the finding reveals that the perceived number of factors of readiness as positive, then households are ready to buy into the proposed agricultural project.

Statement (5) that *‘Extension services are essential for food security for output processes* had a mean of 3.65 and a standard deviation of 1.30. The results indicate that out of 320 study participants, 98(30.6%) strongly agreed, 113(35.3%) agreed, 44(13.8%) were neutral, 30(9.4%) disagreed and 35(10.9%) strongly disagreed respectively that extension services are essential for food security for output process. The results show that the line statement mean score of 3.65 was below the composite mean of 3.71. The implication of the result was that extension services are essential for food security for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.30 than the composite standard deviation of 1.21 indicate that there was a divergence opinion among the study participants. The results support findings by Sigei (2014) which reported that the contribution of agricultural extension service on household food security in Nandi County, helps to establish the level of access to extension information, its effect on food security and to determine the level of farmers’ accessibility to extension services which is essential for household food security and for output processes. Extension services could find out the level of farmers adoption of inputs and practices recommended.

Statement (6) on *'Methods of value addition in food processing are important for output processes* had a mean of 3.72 and a standard deviation of 1.25. These results indicate that out of 320 study participants, 101(31.6%) strongly agreed, 114(35.6%) agreed, 48(15%) were neutral, 27(8.4%) disagreed and 37(11.6%) strongly disagreed respectively that methods of value addition in food processing are important for output process. The results show that the line statement mean score of 3.72 was above the composite mean of 3.71. The implication of the results is that methods of value addition in food processing are important for output process and hence positively influence Household food security. The higher line-item standard deviation of 1.25 was higher than the composite standard deviation of 1.21 and indicates that there was a divergence opinion among the study participants. The study results support findings by Mani et. al (2017) which showed that methods of value addition in food processing are important for output processes, this enhances a product produced in a manner which adds its value, the value addition thus increases shelf life and the product's price which consumers are willing to pay. Appendix 7 shows that food longevity can be attained and improved by using households' remedies. This can be extended by adding value to services they perform, such as bringing advanced skills such as technology into the workforce. Value addition enables manufacturers to increase the price at which consumer is willing to pay for a product; for example, offering a year of free technical support with a new computer is a real worth feature.

Statement (7) on *'methods of value addition in food process are essential for output processes* had a mean of 3.67 and a standard deviation of 1.32. The results indicate that out of 320 study participants, 103(32.2%) strongly agreed, 109(34.1%) agreed, 41(12.8%) were neutral, 32(10.0%) disagreed and 35(10.9%) strongly disagreed respectively that methods of value addition in food process are essential for output process. The results show that the line statement mean score of 3.67 was below the composite mean of 3.71. The implication of the result was that methods of value addition in food process are essential for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.32 than the composite standard deviation of 1.21 indicate that there was a divergence opinion among the study participants. The results support findings by Ngore, et al (2011), found that the Country of Kenya being in sub-Saharan Africa is not able to feed its population sufficiently, and therefore relies on outside assistance. Many Agricultural projects have been funded by Kenyan government and development partners to mitigate against households' food insecurity.

Statement (8) that *'methods of value addition processing are essential for output processes* had a mean of 3.68 and a standard deviation of 1.34. These results indicate that out of 320 study participants, 113(35.3%) strongly agreed, 91(28.4%) agreed, 52(16.3%) were neutral, 27(8.4%) disagreed and 37(11.6%) strongly disagreed respectively methods of value addition processing are essential for output process. These results show that the line statement mean score of 3.68 was below the composite mean of 3.71. The implication of this result to the study is that methods of value addition processing are essential for output process and hence moderately influence Household food security. The higher line-item standard deviation of 1.34 was higher than the composite standard deviation of 1.21 indicate that there was a divergence opinion among the study participants. The results support findings by Ngugi et. al (2020) who reported that methods of value addition processing are essential for output processes various scopes of value-added agriculture which included portfolio of agricultural practices enabled farmers to align with consumer preferences. These were the agricultural products that provided location, space, time, individuality, and other qualities not typically found in commodities produced from raw materials. Value-addition to agriculture produce focused on components of food security policies such as types of marketing products; percentage of lowering cost of food; types of value addition; types of preservation methods; availability of standards and legislative and number of readiness assessment per year.

Statement (9) on *'amounts of expenditure in food scale is a measure of output process'* had a mean of 3.80 and a standard deviation of 1.31. The results indicate that out of 320 study participants, 134(41.9%) strongly agreed, 75(23.3%) agreed, 54(16.9%) were neutral, 28(8.8%) disagreed and 29(9.1%) strongly disagreed respectively that amounts of expenditure in food scale is a measure of output process. The results also show that the line statement mean score of 3.80 was above the composite mean of 3.71. The implication of the result is that amounts of expenditure in food scale is a measure of output process and hence positively influence Household food security. The higher line-item standard deviation of 1.31 was higher than the composite standard deviation of 1.21 and indicate that there was a divergence opinion among the study participants. The results support findings by USAID (2020) which reported that amounts of expenditure in food scale is a measure of output process according to the Economic Research Service (ERS), corn was the most widely produced feed grain worldwide and when it was value added by milling into several categories, majority of the products were used for feeding livestock and human consumption. Other agricultural produce include cotton which is mature and is used for making cloth, pampers, pads and many other uses. Food added longevity for later use include Tree Nuts, Rice, Soybean and Oil Crops, Sugar, Sweeteners and Vegetables when value is added to the food, this increases value and generate revenue to farmers.

Statement (10) on *'amounts of expenditure on food scale helps farmers produce in output processes* had a mean of 3.78 and a standard deviation of 1.30. The results show that out of 320 study participants, 130(40.6%)

strongly agreed, 76(23.8%) agreed, 50(15.6%) were neutral, 40(12.5%) disagreed and 24(7.5%) strongly disagreed respectively that amounts of expenditure on food scale helps farmers produce in output process. The results also show that the line statement mean score of 3.78 was above the composite mean of 3.71. The implication of the result is that amounts of expenditure on food scale helps farmers produce in output process and hence positively influence Household food security. The higher line-item standard deviation of 1.30 was higher than the composite standard deviation of 1.21 which indicate that there was a divergence opinion among the study participants. The results supports findings by Pornthipa and Kessuvan (2013) who found that the amounts of expenditure on food scale helps farmers produce in output processes food added value gains longevity and it is available for use later, which includes Tree Nuts, Rice, Soybean and Oil Crops, Sugar, Sweeteners and Vegetables when value is added to the food, this increases value and generate revenue to farmers. According to the Economic Research Service (ERS), corn was the most widely produced feed grain worldwide and when it was value added by milling into several categories, majority of the products were used for feeding livestock and human consumption. Other agricultural produce include cotton which is mature and is used for making cloth, pampers, pads and many other uses.

The findings are shown in Table 4.50. Appendix 2

The model summary results suggest that there is a positive multiple correlation( $R=0.284$ ) between moderating influence of Value Addition on the relationship between Results Based M&E output Process Household Food Security. Model 1 without the moderating influence of Value Addition term predicted up to 7.1 %; whereas model 2 with moderating effect of Value Addition term predicted up to 8.0 % of the variance in household food security. The  $R^2$  change in model 2 is 0.009 showing an additional effect of 0.9 % to the model due to the moderating influence of Value Addition. The adjusted R-square indicated that the model with the moderating effect Value Addition as a new term improves the model fit more than expected by chance alone implying that it was a better model in terms of goodness-of-fit for the regression model.

From the ANOVA Table 4.50 both model 1;  $F(1, 319) = 24.248$  and model 2;  $F(2, 317) = 13.864$  were statistically significant with the same  $P\text{-value}=0.000 < 0.05$  and  $P\text{-value}=0.000 < 0.05$  respectively indicating the models significantly improves the ability to predict Household food security.

From the coefficients table, the interaction term between results-based M&E output process and Value Addition and Household food security was statistically significant ( $p = 0.000 < 0.05$ ). Thus, Value Addition have moderation influence on the relationship between results-based M&E output process and Household food security.

Given a model equation of  $\hat{Y} = \beta_0 + \beta_3 X_3 + \beta_m X_3 M_{int}$ .

Where,  $\hat{Y}$  = Dependent variable (Household food security)

$\beta_0$  = Constant of the equation

$\beta_3$  = Constant of the independent variable (results-based M&E output process)

$\beta_m$  = Constant of the Interaction term

$X_3 M_{int}$  = Interaction term between results-based M&E output process and Value Addition in Agricultural Products

The proceeding multiple linear regression model after was as follows:  $\hat{Y} = 3.224 + 0.057X_3 + 0.214X_3M_{int}$ .

### **Correlation Analysis of Results Based M&E Agricultural Projects Output Process and Household Food Security**

The study sought to examine the relationship between results-based M&E output process and household food security. Pearson correlation coefficient was used to test the relationship between results-based M&E output process and household food security at 5% level of significance. The correlations results obtained in the study are shown in Table 4.23. Appendix 3

To test the extent of the relationship between Results Based M&E output Process and household food security; several characteristics of Results Based M&E output Process and household food security were analyzed based on the following hypothesis:  $H_0$ : There is no significant relationship between Results Based M&E output Process and household food security. The corresponding mathematical model for the hypothesis was identified as follows: household food security = f (Results Based M&E output Process and household food security).

The correlation results presented in Table 4.23 show that all the P-values under significant 2-tailed were found to be significant since the P-values  $< 0.05$  : (Statement 1; Respectively availability of food policy standards are important for output processor =0.114,  $P\text{-value}=0.041 < 0.05$  ,Statement 2; Availability of legislative food policies are important for output process;  $r=0.121$ ,  $P\text{-value}=0.030 < 0.05$ , Statement 3; Technical assistance is essential for farmer's knowhow for output process;  $r=0.155$ ,  $P\text{-value}=0.010 < 0.05$ , Statement 4; Extension services are essential for food product for output process;  $r=0.216$ ,  $P\text{-value}=0.000 < 0.05$ , Statement 5; Extension

services are essential for food security for output process;  $r=0.212$ ,  $P\text{-value}=0.000<0.05$ , Statement 6; Value addition in food processing are important for output process;  $r=0.232$ ,  $P\text{-value}=0.000<0.05$ , Statement 7; Methods of value addition in food process are essential for output process;  $r=0.221$ ,  $P\text{-value}=0.000<0.05$ , Statement 8; Methods of value addition processing are essential for output process;  $r=0.116$ ,  $P\text{-value}=0.037<0.05$ , Statement 9; Amounts of expenditure in food scale is a measure of output process;  $r=0.198$ ,  $P\text{-value}=0.000<0.05$  and Statement 10; Amounts of expenditure on food scale helps farmers produce in output process;  $r=0.252$ ,  $P\text{-value}=0.000<0.05$ ).

To determine the correlation between Results Based M&E output Process and household food security Pearson correlation coefficient was run on the scores of each scale. The total scores of the scales were computed as a summation of the individual scores on each item by the respondent at 95% level of confidence. The study found a positive overall correlation ( $r=0.266$ ) which was statistically significant as  $P<0.05$  ( $p=0.000$ ) between Results Based M&E output Process and household food security. This implies that there is a significant relationship between Results Based M&E output Process and household food security leading to rejection of the null hypothesis ( $H_0$ : There is no significant relationship Results Based M&E output Process and household food security) and acceptance of the alternative hypothesis, and hence the research findings conclude that there is a significant relationship between Results Based M&E output Process and household food security. The findings agree with findings by Kusek (2004) who found that Results Based M&E system should show its success by having sustainable leadership which ensures that the project scope, creating standards and legislative documents are attained. Output refers to amount of quantity produced, farm yield in terms of harvest, return, volume, gross national product, or achievement accomplished and solution. It is important to have good field research team which help in the viewing and the execution of projects and an equally strong Government backing at the highest level in to warrant that households' training and technical assistance is worth cause of investing in households for enhanced farm produce.

#### **Regression Analysis of Results Based M&E Agricultural Projects Output Process and Household Food Security**

Simple linear regression was adopted to investigate how Results Based M&E output Process influence household food security. It was necessary to get the views of the participants on the influence of Results Based M&E output Process on household food security. The rationale of using the simple regression model was to establish how Results Based M&E output Process as a predictor significantly or insignificantly predicted household food security.

#### **Model summary of Results Based M&E Agricultural Projects Output Process and Household Food Security**

The model summary sought to determine how Results Based M&E output Process is a predictor significantly or insignificantly predicted household food security. The regression model summary results are presented in Table 4.24. Appendix 4

The model summary shown in Table 4.24 show that there is a positive correlation ( $R=0.266$ ) between Results Based M&E output Process and household food security and those predicted by the regression model. In addition, 7.1% of the variation in the household food security is explained by Results Based M&E output Process. The results are consistent with the findings of a study by Ngore et. al (2011) who found that it is mandatory action in building result Based M&E process which help to formulate output and objectives which choose output indicators in order to monitor and collect baseline information on the present term and set particular targets in order to attain timelines for fulfilling the data collection for measuring the targets being analyzed and outcomes reported in their recommendation, participate must be involved in planning and implementation for purposes of ownership and sustainability. The recommendation would be useful for agricultural projects planners, policy makers, donors, and stakeholders in areas of project design and sourcing funds and sustainable households' food security projects.

#### **ANOVA of Results Based M&E agricultural projects Output Process and Household food Security**

The study sought to establish if the regression model is best fit for predicting household food security after use of Results Based M&E Output Process. The ANOVA results are presented in Table 4.25. Appendix 9

The ANOVA results from Table 4.25 indicate that ( $F\text{-statistics}(1,319)=15.420$ ) is significant since the  $P\text{-value} 0.000<0.05$  implying that the predictor co-efficient is at least not equal to zero. and hence the regression model results in significantly better prediction of Household food Security.

#### **Coefficients for Regression of Results Based M&E Agricultural Projects Output Process and Household Food Security**

The study sought to establish whether there was influence of results based M&E output Process on

household food security. The regression coefficients results are presented in Table 4.26. Appendix 8.

The simple linear regression coefficients result from Table 4.26 indicated that there was significant influence of results-based M&E output process on household food security. The coefficient of the constant term ( $\beta_0 = 3.332$ ; P-value=0.000 < 0.05) and results-based M&E output process ( $\beta_3 = 0.244$ ; P-value=0.000 < 0.05) were statistically significant. The regression model for results-based M&E output process was  $y=3.332 + 0.244X_3$  implying that for each unit of results-based M&E output process, household food security marginally changed by 0.244 units other predictors held constant. It was therefore concluded that results-based M&E output process on household food security were positively and linearly related. The results are consistent with the findings of a study by USAID, 2), (2018), who found out that results-based M&E activities process on household food security. It is a continuous exercise of gathering and analyzing information on vital indicators and comparing real outcomes to envisaged outcomes. It targets attention on attaining outcomes essential to the household in the provision of food security. Result Based M&E activities process facilitates holding of monthly meetings for households' members provides timely, regular information to the researcher and assists in ascertaining aims and outcomes of the project. It permits the field team to establish and take necessary action to rectify weaknesses and support the development memorandum shifting higher towards accountability in the provision of household food security.

## II. CONCLUSION AND RECOMMENDATION

In conclusion, the study found that the many times spent in Result Based M&E output process training geared toward empowering households resulted in ultimate improved agricultural produce. The study found strong relationship between Result Based Monitoring and Evaluation output process and households' food security with coefficient of determination indicating that Result Based Monitoring and Evaluation output process explain huge variation in household's food security. This relationship was found that Result Based Monitoring and Evaluation output process had significance influence on households' food security in Murang'a County. The study recommendations have significant implications on the policy and government, researchers, civil society and M&E practitioners, civil society organizations, policy, and the Government. The study output process in Standards and legislative food policies. Technical Assistance Extension services. Methods of value addition processing and the amount of expenditure on food scale were considered indicator in evaluating the extent of facilitating households in embracing food security initiatives which would be a catalyst to the Government of Kenya and non-governmental organizations moving towards implementation of various aspects of projects towards attaining household food security in Muranga County, Kenya.

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