

The Effect of Marketing System on Sales Volume of Mango Fruit: A Case of Selected Kebeles in Assosa Woreda, Benishangul Gumuz Regional State

Bezawit Lema Abera
Lecturer in the Department of Management and Director of Entrepreneurship and Cultural Center, Assosa University

Sponsored by Assosa University, Ethiopia

Abstract
The major objective of this study is assessing the effect of marketing system on sales volume of mango fruit. Among 74 rural kebeles found in Assosa Woreda, 19 of them have been selected based on the presence of mango fruit production which is 25% of total population. Data were collected from 369 mango producing households through questionnaire. OLS (Multiple linear regression model) was used to analyze factors that affect sales of mango fruit. Finally, it was found that all specified independent variables (price, distribution, and promotion) and selected extraneous variables determine sales volume of mango fruit.
Keywords: marketing system, price, distribution, promotion

1. Introduction

1.1. Background of the Study

Mango is a highly seasonal tropical fruit which is very popular for millions of people in the tropics. It also occupies a prominent place among the best fruits of the world. However, it is in constant demand, there is a pre-harvest scarcity and at times a post-harvest glut for this fruit. In Sub-Saharan Africa (SSA), growing both domesticated and wild fruit species on farms diversifies the crop production options of small-scale farmers and can bring significant health, ecological and economic revenues (FAO, 2009).

Mango is a tropical/sub tropical fruit with a highly significant economic importance. Mango consumers are convinced by its good flavor, delicacy and nutrient value so that its domestic demand is strong. Mango producers tend to increase production due to the sustained and favorable income generation. There is the potential to increase mango exports to many countries, with strong demand for mango products in the Middle East and Europe. Marketing plays an important role not only in stimulating production but also in accelerating the pace of economic development (Nega, Teshale, and Amanuel, 2011). Therefore, the main purpose of this study is to analyze the effect of marketing system on mango fruit sales volume in selected kebeles of Assosa woreda.

1.2. Statement of the Problem

Mango (*Mangifera indica* L.), belonging to the Anacardiaceae family, is widely found in tropical and subtropical regions. It is one of the most important worldwide commercial crops in terms of production, marketing and consumption (Morton, 1987). Mango serves as a fruit and subsistence crop for family farms. As it ripens at the end of the dry season and at the start of the rainy season, the mango is a fundamental source of nutrition for rural populations **(**Vayssières , 2012).

Today, mango marketing has contributed to the economic development for all countries whether they are developed or developing ones. Mango marketing helps different countries to gain large profits and valuable foreign exchange, and promotes economic and industrial development. Mango is one of the main fruit crops produced in Ethiopia. But, its production in Ethiopia is in fluctuated conditions, because of the occurrence of diseases, lack of proper management and also weather conditions (Desta, 2005).

There are research results which indicate problems of mango fruit marketing that affect sales of mango fruit: unstable price of mango was the first rank problem of mango marketing in Bangladesh (Karim and Hasan, 2008).

Efficient marketing system usually ensures higher level of producer's share, reducing the number of middlemen and restricting the marketing charges, mal-practices during marketing of farm products. It is, therefore, essential to explore the efficient marketing channels and to suggest the producers the channels for obtaining optimum prices of their farm produce (Mahmood, 2005).

A research result in Ghana indicates that the major post harvest problems of mango are inadequate and unskilled labor for harvesting , high incidence , pests and diseases , lack of cold storage facilities, mechanical injuries due to improper handling, bad road network , inappropriate transport , poor packaging , and few processing plants (Agyapong,2013).

However, as per the knowledge of researcher, very few mango researches have been done, especially on marketing aspects of mango in Benishangul Gumuz regional state. In addition to this, even though it is in another case area most of research results identify problems of mango marketing, but they lack to show their relationship

with sales volume. As a result, it inspires the researcher to see the current marketing system of mango fruit and its effect on sales volume in selected kebele of Assosa Woreda, Thus, the study proposes to examine the relationship between marketing system and sales volume of mango fruit in Assosa Woreda rural kebeles.

1.3 Research Questions

As per different literatures, the following questions are developed;

- What is the relationship between marketing system elements and mango fruit sales volume?
- Which independent variable exceedingly affects sales volume than others?

1.4 Objectives of the Study

The general objective of this research is to analyze the effect of marketing system on sales volume of mango fruit in the case of selected rural kebeles of Assosa Woreda.

The specific objectives of this research are to:

- ✓ Assess the relationship between marketing system elements and sales volume of mango fruit.
- ✓ To identify which factor exceedingly affect sales volume among all independent variables

1.5. Scope of the Study

This study is delimited on selected items from marketing systems (pricing, distribution channel, and promotional tools, with extraneous variables) of mango fruit and its effect on sales volume. The study is also geographically bounded in selected rural Kebeles of Assosa Woreda, Benishangul Gumuz regional state, Western Ethiopia.

2. Review of Related Literature

2.1 Introduction

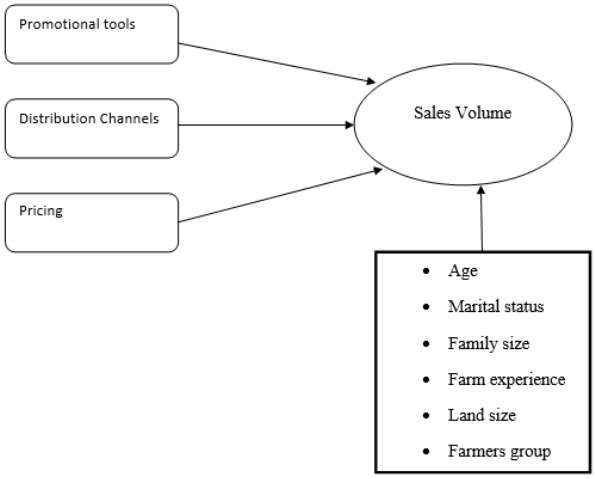
Mango is one of the second potential fruit crops produced in Ethiopia next to banana, which is the first fruit crop produced in large quantity mainly in west and east of Oromia, SNNPR, Benishangul Gumuz and Amhara regional states. Currently, mango sub-sector is a good entry point for tackling poverty and that the market for mangoes in Ethiopia is significant and growing. Thus, mango values chain is spurring development, introduces technologies, creates employment and reduces poverty among the communities. Moreover, mango fruit crop has significant importance with a potential for domestic and export markets and industrial processing (Honja, 2014).

2.2 Mango Marketing Constraints

Gopalakrishnan S. (2013) identifies constraints that hinder marketing of mango post harvesting practice -as the method of harvesting in mango is by hand picking, harvesting, by climbing on the tree, harvesting with a notched stick, and having a pouch. Accidental falling of fruits, results in bruising and cracking of fruits and losses are estimated to a maximum of 15 % in mango. Those constraints include:

- ➢ Numerous intermediaries in the marketing channel
- ➢ High level of wastage accounting to 20 to 40% (high cumulative wastages across the supply chain
- ➢ Lack of transparency in prices, availability, demand and customer preferences etc.
- ➢ Poor infrastructure – storage, packaging, transportation, cold chain etc.
- ➢ Poor linkage in the marketing channel.

2.3 Conceptual Framework



Source: from literatures

3. Methodology of the Study

3.1 Description of the Study Area

The study area is located in Benishangul - Gumuz regional state which is found at 661 kms west from Addis Ababa, the capital city of the country. Assosa Zone is one of the 3 zones found in the region where the study area, Assosa Woreda exists. Assosa Woreda has 4 kebeles in the town land 74 kebeles in the rural area.

3.2 Research Design

The study has employed descriptive research design to describe the background of respondents. In addition, Causal research design has been used to determine the cause and effect relationship between the variables.

3.3 Data Type and Sources

The study has employed primary and secondary types of data from different sources. The primary data sources were producers of mango fruit (farmers) in selected kebeles of Assosa Wored/Zone. Secondary data were collected from Assosa Woreda Agricultural office.

3.4 Sample Design

3.4.1 Sample Size Determination

Based on mango producers, the researcher classifies kebeles in Assosa Woreda as those who are under mango fruit cooperative and out of cooperative. There are 74 rural kebeles in Assosa Woreda, 28 of them are included under mango fruit cooperatives and the remaining 46 kebeles are not. As 25% of total population is representative, the researcher selects 19 kebeles among 74 which means:

74/4 = 18.5 ≈ 19 kebeles.

To determine number of kebeles selected in each group, the researcher used ratio as follows:

Kebeles included Under mango fruit cooperatives

74=100%

28=? $\frac{28*100}{74}$=37.8≈38%

19 kebeles*38%= 7.22 ≈ **7 kebeles** from kebeles included under cooperative

Kebeles who are not included in mango fruit cooperatives

74=100%

46=? $\frac{46*100}{74}$= 62.16≈62%

19 kebeles*62%= 11.78 ≈ 12 kebeles

According to data available from Assosa woreda Agricultural office (2015/2016 E.C.), there are 4783 households under selected 19 kebeles, and 2005 are from kebeles included under cooperative, and the remaining 2,778 are out of cooperative.

This study has used a simplified formula provided by Yemane (1967) to determine the required sample size at 95% confidence level.

$$n.= \frac{N}{1 + Ne^{2}}$$

$$n = \frac{4783}{1+4783*.05^{2}} \quad =369$$

Where:

n- Is the sample size

N- The population size (number of farmers who produce mango in different kebeles)

e- The level of precision.

To determine number of households in each group

From Kebeles Under cooperatives

4783=100%

2005=? $\frac{2005*100}{4783}$ = 41.91 ≈ 42%

369*42%= 154.98 ≈155 household

From kebeles Out of cooperatives

4783=100%

2778=? $\frac{2778*100}{4783}$ = 58.08 ≈ 58%

369*58% = 214 households

Sample size from each kebele was calculated proportionally.

3.4.2 Sampling Technique

Stratified random sampling method was used, because there are two groups of mango fruit producers (farmers who Incorporated in the cooperative and the others not) they are not homogenous. Intentionally the researcher wants to include both groups. Simple random sampling is also used to select respondents from the strata because bias is generally eliminated and the sampling error can be estimated in this sampling technique (Kothari, 2004).

3.5 Method of Data Collection

The primary data were collected using structured questionnaires.

3.6 Method of Data Analysis

The survey data was encoded to MS-Excel file, and transferred to SPSS version 20. Both descriptive statistics and inferential statistics were employed.

4. Results and Discussion

4.1 Instrument Validity and Reliability Analysis

Before piloting the questions, validity was checked by experts. Adjustments were made regarding readability, relevance, language and comprehension. To confirm the internal reliability, the statistical software package, SPSS, were used to determine the Cronbach's alpha values, and it becomes 71.5. And the reliability is considered as good (Zikmand, 2005).

4.2 Analysis of demographic information

Majority of respondents lie under the age of 42-49 and they are at adult stage. The remaining households aged 35-42, 49-56, 56-63, 28-35, 63-70, 70-80, and 21-28 in descending order. We understand that most of respondents are at productive age.

Among respondents 46 of them were female and the remaining 323 were male households.

Among 369 households majority of them which is 87.5% were married, the remaining 7%, 3.8%, and 1.6% were died, divorced, and single respectively.

More than half (51.8%) of respondents were illiterate or have no formal education and the remaining 48.2% were literate.

Greater parts of respondents have 2-5 family size which is around 33.1% of the respondents. The remaining 30.4%, 21.7%, 6.2%, 3.8%, 3%, 1.1%, and 0.8% of respondents were have 5-8, 8-11, 11-14, 1-2, 14-17, 20-25, and 17-20 members of family respectively.

22% of respondents have 9-12 years of farm experience which maximum of others and the remaining 17.3%, 17.3%, 14.1%, 8.7%, 8.4%, 7%, 5.1% of respondents have 0-3 years, 3-6 years, 6-9 years, 15-18 years, 18-21 years, more than 20 years, and 12-15 years of farm experience respectively.

More than half of respondents have 1-2 hector land and other 16.3%, 13%, 10.8%, 3.8%, 1.6%, 0.5%, and 0.5% of respondents have 2-3 H, 4-5 H, 3-4 H, 0-1 H, 5-6 H, 6-7 H, and 7-11 H land.

4.3. Results of Inferential Statistics

4.3.1 Correlations

		Sales volume	Promotional tools	Distribution channel	price
Sales volume	Pearson Correlation	1	.294**	.351**	-0.482**
	Sig. (2-tailed)		.000	.000	.000
	N	369	369	369	369
Promotional tools	Pearson Correlation		1	.299**	.560**
	Sig. (2-tailed)			.000	.000
	N			369	369
Distribution channels	Pearson Correlation			1	.159**
	Sig. (2-tailed)				.002
	N				369
pricing	Pearson Correlation				1
	Sig. (2-tailed)				
	N				369

Table5. **. Correlation is significant at the 0.01 level (2-tailed).

The above table shows that all major independent variables promotional tools, distribution channels, and pricing have significant correlation with sales volume at ($P<0.01$).

4.3.2 Results of Regression Analysis

Variables that have strong correlation with dependent variable and variables with insignificant correlation omitted and variables that are free from multicollinearity entered into SPSS to regress variables. The model summary table shows that: Multiple correlation coefficient (R) = .656, R^2 = .430, Adjusted R^2 = .409, and it means that the dependent variable (sales volume) 41% of the variance determined from promotional tools, product pricing, distribution channels, and other extraneous variables which listed in the below table.

In addition to this, Adjusted R^2 tells us that we have fairly good model. The ANOVA table displays that F = 20.605 and it is significant. This indicates that the combination of the independent variables significantly determine sales volume (our model can determine sales volume significantly).

The following table display coefficients:

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	1.877	.138		13.560	.000
	Age	.012	.011	.051	1.136	.257
	Marital status	.073	.019	.182	3.888	.000
	Family size	-.005	.017	-.013	-.260	.795
	Farm experience	.022	.009	.108	2.303	.022
	Land size	.042	.017	.127	2.497	.013
	Farmers group	.208	.030	.319	7.045	.000
	Promotional tools	.154	.029	.240	5.261	.000
	Distribution channels	.342	.039	.466	8.783	.000
	Pricing	.312	.048	.336	6.548	.000

All independent variables including promotional tools, distribution channels, and pricing are significantly contributing to sales volume. The unstandardized coefficient of independent variables shows that the increasing or decreasing of sales volume depend or goes in line with activities of each independent variables.

As per the value that we sought at standardized beta coefficient, distribution or place contribute more to predict sales volume with (beta = .466 & P<0.01). And followed by sales pricing (b= -.336 & P<0.01), farmers group (b= .319 & P<0.01), promotional tools (b= .240 & P<0.01), marital status (b= .182 & P<0.01), land size (b=.127 & P<0.05), farm experience (b= .108 & P<0.05). Age and family size are not significant.

5. Conclusion and Recommendations

As per the findings discussed above, the researcher concludes that promotional tools, distribution channels, and product pricing, marital status, farm experience, land size and farmers group determine sales volume of mango fruit. Among all specified variables, distribution channel has more effect on determining sales volume than other variables that were considered in this research.

Based on the above findings, the following recommendations have been forwarded.

- Central System has to be developed to set price and provide price information for farmers;
- Legalize intermediaries to make them accountable for their doings;
- Benishangul Gumuz regional state also has to initiate investors to invest on mango, and create awareness about Mango production in the region;
- As the area is potential for mango fruit production, government has to work on fulfilling infrastructure especially transportation
- government has to establish central market place for mango fruit sale in each kebeles.

References

- Desta H, (2005). Export potential of Ethiopia processed fruit and vegetables, export promotion department of English, P., S. Jaffee and J.J. Okello.2006. “Exporting out of Africa: The Kenya
- FAO, 2009: Utilization of tropical foods: fruit and leaves. Food and nutrition paper, via delle terme dicaracalla,
- Gopalakrishnan, S. (2013). Marketing system of mangoes in India. World Appl Sci J, 21, 1000-1007.
- H. Takele. (2014). “Review of mango value chain in Ethiopia.” *Journal of biology, agriculture and health care,* Vol. 4, pp. 230-239, 2014.
- Kothari, C. R. (2006). Research Methodology: Methods & Techniques, (1st edition), New Age International Publishers.
- Mahmood. M. A. 2005. Snags in mango available online www.pakissan.com/english/news/newsDetail.php?newsid=6448%20-%20
- Matin, M. A., Baset, M. A., Alam, Q. M., Karim, M. R., & Hasan, M. R. (2008). Mango marketing system

in selected areas of Bangladesh. Bangladesh Journal of Agricultural Research, 33(3), 427-438.

- Maxwell Agyapong, (2013). Evaluation of the post harvest handling of mango fruit(Mangifera indica L.) in the akwapim-south, dangme-west, lower manya and the yilo krobo districts of ghana
- Morton, J. (1987) Fruits of Warm Climates. J.F. Morton, Miami, Chapter Mango *Mangifera indica* L.
- Nega, M., Teshale, W. and Amanuel Z. (2011) Market Chain Analysis of Agro-forestry Products. International Journal of Business and Economics Research, Vol.4 No. 4, august pp. 201-216.
- Vayssières J.F., Sinzogan A.A.C., Adandonon A., Coulibaly O., Bokonon Ganta A... 2012. In: (Eds.) Sudha G Valavi, K Rajmohan, JN Govil, KV Peter and George Thottappilly. Mango vol. 2: cultivation in different countries. Houston: Studium Press LLC, p. 260-279. 00100 Rome, Italy.
- Zikmund, W. (2005).Business Research Methods, (8th ed.). South Western, Bangalore, Thomson Learning Inc.