

ASSESSMENT OF CHALLENGES AND PROSPECTS OF LOCAL MILK SUPPLY ON MARKET PERFORMANCE: A CASE OF ETHIOPIA, HORN OF AFRICA

¹Gada Gizachew Wakjira and ²Dr. Shashi Kant*

¹ Research Scholar (PhD), Department of Marketing Management, College of Business and Economics, Bule Hora University, Ethiopia, Horn of Africa

² Assistant Professor, Department of Management, College of Business and Economics, Bule Hora University, Ethiopia, Horn of Africa

*Corresponding email: shashi.kant@bhu.edu.et

ABSTRACT

The study aims at exploring the challenges and prospects of local milk supply in West Guji Zone. The study was conducted in three local administration of West Guji Zone; namely Bule Hora, Dugda Dawa, and Surro Bargudda. Milk was the most important dairy product marketed in the areas, so, the study was focused only on milk. Dairy Farmers from each local administration were selected using Proportional Probability to Size (SPSS version 22). The research was designed with cross sectional survey design for the small holder dairy farmers and census design for the Local Milk suppliers. Data were collected from 118 small holder House hold dairy farmers and 71 Local Milk suppliers and Small Holders Farmers 24 Totally 213 respondents Distributed questionnaire. Survey data collected from three local administrations was analyzed by using descriptive analysis.

Keywords: local milk, dairy farmers, market performance

INTRODUCTION

Background of the Study

The majority of the world's estimated 1.3 billion poor people live in developing countries. They depend directly or indirectly on livestock for their livelihoods (WB, 2008 and FAO, 2009). Globally, livestock contributes about 40 percent to the agricultural gross domestic product (GDP) and constitutes about 30 percent of the agricultural GDP in the developing country (WB, 2009). Ethiopia has a large livestock population which is estimated to be 50.8 million cattle, 25.9 million sheep and 21.9 million goats (CSA, 2010). Despite the relatively huge livestock population with high potential for meat and milk supply, a number of factors slowed down the development of livestock sub – sector in Ethiopia. Reduction of grazing area due to population pressure and urbanization

becomes challenges for local milk supply in most of the land in pastoral supply marketing like, Bule hora, Dugda dawa and Surro bargudda Woreda's, West Guji Zone, Oromia Region. This finding is contradict to the finding of (Woldemichael, 2008) who found in the area of Bule hora, Dugda dawa and Surro bargudda Woreda's of West Guji Zone. Formal milk markets do exist in urban and pre-urban dairy system.

Statement of the Problem

Globally, numbers of cattle, goats, and sheep increased from 1979 to 2009, with percentage increases of 14 % (cattle), 93 % (goats), and 1 % (sheep) observed. The continents of Africa and Asia experienced the largest percentage increases in cattle numbers, whereas Europe had the largest percentage decrease. In Africa, Asia, North America, and Oceania the numbers of goats at least doubled; only Europe had a decline in

goat numbers. Sheep numbers were about 50 % higher in 2009 for Africa, Asia, and Central America/Caribbean, but about 50 % lower for Europe, North America, and Oceania and 25 % lower for South America. Increasing incomes in emerging economies of Africa and Asia, as well as increased urbanization on these continents, are driving these changes in global patterns of livestock production due to greater amounts of animal protein in human diets (FAO 2017).

In Ethiopia, the fast movement of people from countryside to live in cities, following increase in human inhabitants and standard of living of the urban population especially the regional town as well as the three woreda's of West Guji Zone, Bule hora, Dugda dawa and Surro barguda can be a good opportunity for the expansion of dairy in the area (Sintayehu, et al., 2008).

However, the literature in this particular field lacks the knowledge about what Challenges and Prospects of local Milk Supply and Marketing Dairy Farms use in this modern day and age to compete against other Local Milk Suppliers and Small holder farmers. The study is crucial to provide essential information on the operation of dairy production and contribute in filling the demand and supply gap of dairy products by exploring the challenges and opportunities of dairy products in the, Bule hora, Dugda dawa and Surro bargudda Woreda's of West Guji Zone.

Research Objective

1) To identify major determinants of local milk supply on marketing performance in the study area; 2) To examine the relationship between challenges and prospects (Access to Credit, Number of Milking Cow, Financial Income, High Rate Insemination, Artificial Insemination and Veterinary health) of local milk supply on marketing performance; 3) To investigate the relative of challenges and prospects of local milk supply of (Access to Credit, Number of Milking Cow, Financial Income, High Rate Insemination, Artificial Insemination and Veterinary health) on marketing performance.

RELATED LITERATURE REVIEW

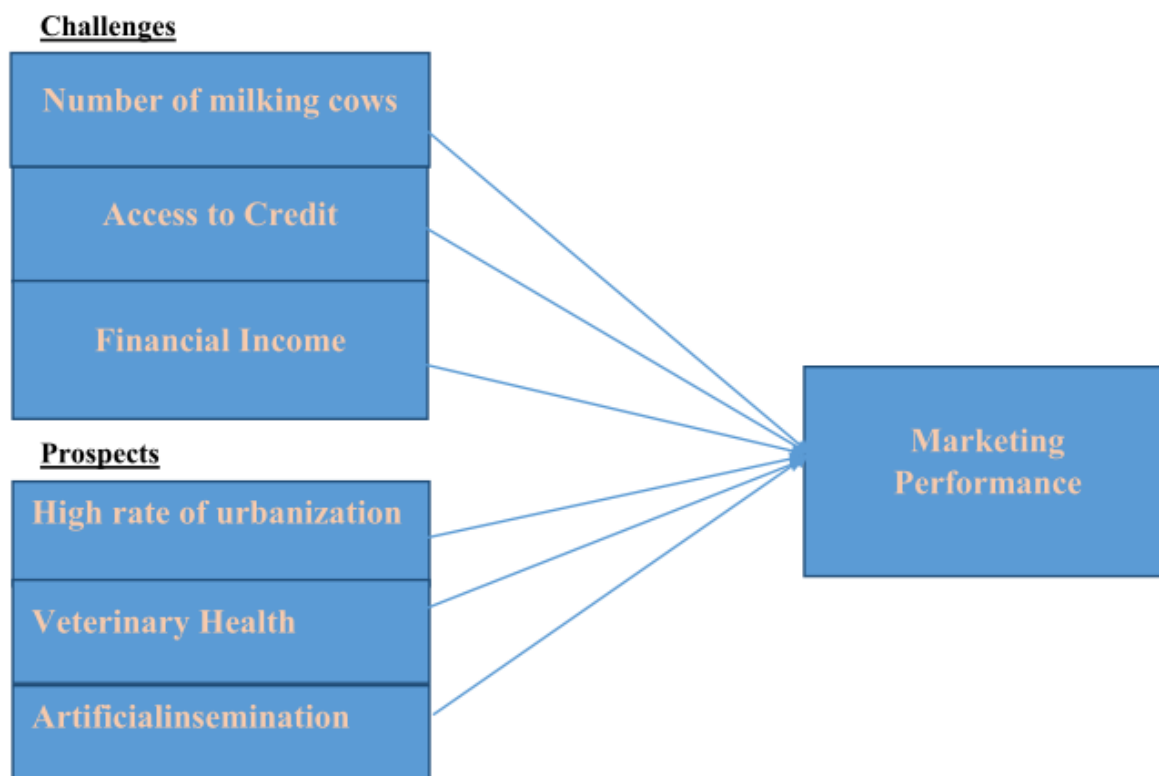
Production was characterized by smallholders with few numbers of cows and low productivity of milk per cow per day. Cow breed and lack of access to credit were identified as critical resource and the most constraint that hinder production improvement. Marketing relationships among the chain actors were characterized as lacking long-term market orientation and were mostly on the spot and transaction based. The assessment on the enabling environment indicated further need of support from governmental and non-governmental stakeholders to build the capacity of chain actors, particularly the farmers. The study indicated significant amount of milk losses in the milk chain.

Lack of immediate acceptors, milk carrying tools used, means of transport used, and ineffective communication with other partner in the chain were identified in order of severity as important problems causing milk losses in the study area. Based on the study results and review of others' work in similar contexts, this study argued for SCM to be part of solution in improving this dairy chain. (Received 25 August 2015)

Research Gap

Researchers have been studied Challenges and Prospects of local Milk Supply and Marketing for quite some time. However, the literature in this particular field lacks the knowledge about what Challenges and Prospects of local Milk Supply on Marketing Performance of Dairy Farms use in this modern day and age to compete against other Local Milk Suppliers and Small holder farmers. The Challenges and Prospects of local Milk Supply and Marketing Performance by dairy farmers and small holders are planned for a Milk Handling and Processing. In Ethiopia short they operate in a localized manner and, therefore, the challenges and prospects used are incomprehensible to be measured for competitiveness.

Conceptual Framework



RESEARCH METHODOLOGY

Research Design and Approach

Both descriptive and explanatory research design have been included in this study. Descriptive survey research design method is assessed which is convenient for data collection and interpretation (Ghosh, 1992). It is designed to collect systematic descriptions of existing phenomena in order to describe or explain what is going on; data obtain by direct questioning from sample of respondents.

For this purpose, mainly both quantitative and qualitative data has to be collected from representative samples. Explanatory design using quantitative approach of data collection and analysis so as to capture the details and adequate information has to be used under the study.

The researcher under this study has implemented Explanatory research with cross-sectional survey design. Explanatory

research attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon. Moreover, the above study approach enables independent and dependent variables to be measured at the same point in time by using a single questionnaire. That is, it helps to show a relationship between two variables on a specific period in time.

From 420 target population respondents the researcher 205 respondents have selected based a formula provided by Yemane, (1967) as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where, n has the sample size, N has the population size, and e has the level of precision. By using this formula at 95% confidence level and 5% level of precision the sample size obtained as follows:

$$\frac{N}{1 + N(e)^2} = \frac{450}{1 + 450(0.05)^2} = 213$$

Table 1. Distribution of Population under the Study

SN	Sample Unit	Number of target population	Number of sample size
1	Small holder Dairy farmer	250	$213 \times 250 / 450 = 118$
2	Local Milk suppliers	150	$213 \times 150 / 450 = 71$
3	Pastoralist office Officers	50	$213 \times 50 / 450 = 24$
Total		450	213

Reliability Test

Table 2. Measurement of Reliability

Variables	Number of items	Cronbach's Alpha
Access to credit	4	.843
Number of milking cows	4	.853
Financial income	4	.857
High rate of urbanization	4	.743
Artificial insemination	4	.713
Veterinary healthy	4	.830
Marketing Performance	6	.907

Source: Survey result, 2022

Cranach 's alpha coefficients of all the variables are greater than .70. So, the variables were kept for further analysis since they have satisfactory reliability test results. A low Alpha coefficient less than .70 simply

indicates that the factor is less likely to present itself if the study is to be repeated when subjected in a different application setting.

INFERENTIAL ANALYSIS

Correlation Analysis

Table 3. Correlations results between Local Milk supply and Marketing Performance

Correlation results		Marketing Performance	Strength of Relationship
Marketing Performance	Pearson Correlation	1	
	Sig. (2-tailed)	.000	
	N	202	
Access To credit	Pearson Correlation	.797**	Very strong
	Sig. (2-tailed)	.000	
	N	202	
Number of Milking Cows	Pearson Correlation	.794**	Very strong
	Sig. (2-tailed)	.000	
	N	202	
Financial Income	Pearson Correlation	.809**	Very strong
	Sig. (2-tailed)	.000	
	N	202	
High Rate of urbanization	Pearson Correlation	.480**	Moderate
	Sig. (2-tailed)	.000	
	N	202	
Artificial Insemination	Pearson Correlation	.381**	Moderate
	Sig. (2-tailed)	.000	
	N	202	
Veterinary Health	Pearson Correlation	.790**	Very Strong
	Sig. (2-tailed)	.000	
	N	202	

** Correlation is Significant at the 0.01 level (2-tailed)

Source: Field Survey (2022)

The highest Correlation is signified by Financial Income ($r=0.809^{**}$), in between Access to credit ($r=0.797$), between Number of Milking Cows ($r=0.794$), correlation in between Veterinary Health ($r=0.790$), correlation in between High Rate of urbanization ($r=0.480$) and correlation in

between Artificial Insemination ($r=0.381$). In general, based on the Pearson Correlation shown in the table 4.7 Local Milk supply dimensions are positively and significantly correlated with Marketing Performance. This means the Local milk supply provides and Marketing Performance has been improved.

Multiple Regression analysis

Table 4. Multicollinearity Test

	Collinearity statistics	
	Tolerance	VIF
Access To credit	.253	2.760
Number of Milking Cow	.415	2.830
Financial Income	.433	2.549
High Rate of Urbanization	.301	1.962
Artificial insemination	.430	2.430
Veterinary Health	.425	1.834

Source: Questionnaire 2022

Variance and inflation factors (VIF) More than 1 value less than 10. Which includes less correlation of the variables (Pallent, 2018).

Regression analysis of the Local Milk Supply Dimension and Marketing Performance

Determination of the Model goodness of fitness

Table 5. Model summary Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.852 ^a	.726	.717	.43495	1.834

a. Predictors: (Constant), High-Rate Urbanization, Artificial Insemination, Access To Credit, Number of Milking Cow, Financial Income, Veterinary Health

b. Dependent Variable: Marketing Performance

Based on Table 2.9 (Access to credit, Number of Milking Cows, Financial income, High rate of urbanization, Artificial insemination, and Veterinary Health). In this case, R-Square is 0.726; this means that

85.2% change can be explained, which is consider very large. On the other hand, the remaining 14.8% of the variation of Local Milk Supply cannot be explained by the model.

Table 6. ANNOVA Model Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.590	6	16.265	85.975	.000 ^b
	Residual	36.891	195	.189		
	Total	134.480	201			

a. Dependent Variable: Market Performance

b. Predictors: (Constant), High-Rate Urbanization, Artificial Insemination, Access To Credit, Number of Milking Cow, Financial Income, Veterinary Health.

The above shows that the F-test value is 134.480 with a significant level of 0.000. This indicates that the overall model was reasonable fit. From the above table, it is also identified that the value of F- Calculated =

85.975, $df = 6/195$, and $p < 0.05$, indicating that the F- calculated is much larger than the F- tabulate. The Greater the F- ratio, the more Variance in the dependent Variable is explained by the independent variable

Regression Coefficients Analysis

Table 7. Coefficients of the Six Independent Dimensions of local Milk Supply

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.131	.403		7.773	.000
Access To Credit	.245	.067	.223	2.148	.000
Number of Milking Cow	.157	.058	.227	2.691	.003
Financial Income	.286	.071	.276	2.598	.008
High Rate Urbanization	.102	.036	.117	2.754	.000
Artificial Insemination	.105	.026	.118	2.940	.001
Veterinary Health	.085	.070	.056	.499	.219

a. Dependent Variable: Market Performance

The unstandardized coefficients B column, gives us the coefficients of the independent variables in the regression equation including all the predictor variables as indicated below: Predicted performance score $.9.088 + .286$ (Financial Income) + $.245$ (Access To Credit) + $.157$ (Number of Milking Cow) + $.102$ (Artificial Insemination), 105 (High Rate Urbanization) and 085 (Veterinary Health) .Table 4.11 further shows that, all the explanatory variables included in this study can significantly explain at 95% confidence level to the variation on the dependent variable. The standardized beta coefficient column shows the contribution that an individual variable makes to the model. The beta weight is the average amount the dependent variable increases when the independent variable increases by one standard deviation (all other independent variables are held constant).

Normality Assumption of Histogram Test of the Data

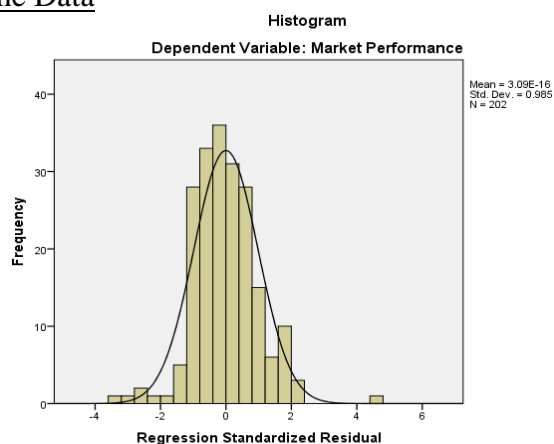


Figure 1. Histogram for Normality Test of the Data

Normal P-P plot for normality

Normal P-P Plot of Regression Standardized Residual

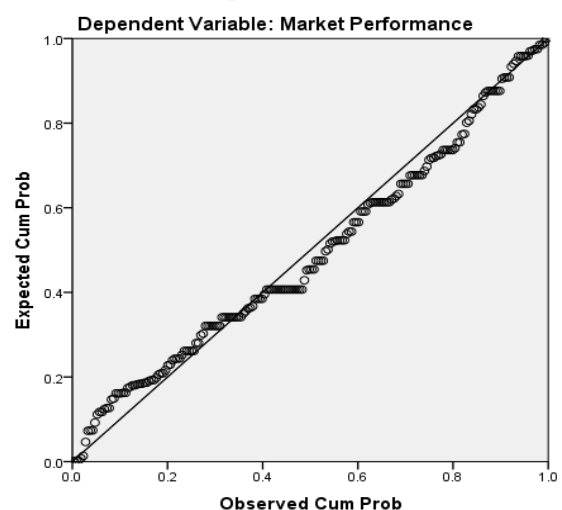


Fig. 2. Normal P-P plot for normality

Homoscedasticity assumption

Means that the variance around the regression line is the same for all variables. This is also known as homogeneity of variance. The assumption could be checked using scatter plot between residual and predicted or independent variable.

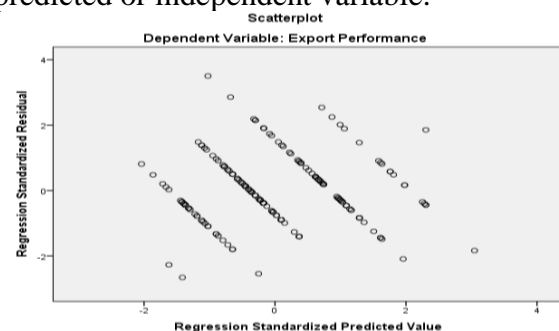


Fig .4.3. Scatter plots of the residuals for homoscedasticity

Source: Researcher's survey, (2022)

Hypothesis Testing

Table 8. Summary of the overall outcome of the Research Hypotheses

Hypotheses	Independent Variables	Dependent Variable	Sig.	H Accepted or Rejected
Challenges				
H1: There is positive significant relationship between Milking Cows and marketing performance	Access to Credit	Marketing Performance	.000	Accepted
H2: There is positive significant relationship between Access to credit and marketing performance	Number of Milking Cows	Marketing Performance	.000	Accepted
H3: There is positive significant relationship between financial income and marketing performance	Financial in come	Marketing Performance	.003	Accepted
Prospects				
H4: There is positive significant relationship between High rate of Urbanization and marketing performance	High rate of Urbanization	Marketing Performance	.008	Accepted
H5: There is positive significant relationship between Artificial Insemination and marketing performance	Artificial Insemination	Marketing Performance	.001	Accepted
H6: There is positive significant relationship between Veterinary Health and marketing performance	Veterinary Health	Marketing Performance	.219	Rejected

Source: Researcher's survey data (2022)

CONCLUSION

In order to address the research objectives of the study, the researcher came up with mixed approach and Cross-sectional research design. The source of the data was both primary and secondary source. Instruments of data collection tools in this study are structured questionnaire (Close-ended Questioners) and Semi-structured interview. To collect response from the Pastoralist Office officers and Local Milk suppliers and Small Holders Farmers of Local Milk supply, Fully Confederation Was paid towards the Respondents.

From the study it was noted that the existing milk production systems were affected by many constraints. The major constraints for dairy development in the area includes shortage of feed, high costs of feeds, inadequate land for dairy expansion and preparation of feeds, seasonality of milk demand occurred due to fasting season, lack of improved breed animals with affordable

price, less access for credit, AI problem, shortage of water and knowledge gap in identifying quality cross breed. The rapid urbanization, extensive population growth and change in the living standard of the societies in the study area, to generate income as it is highly demanded product, highly profitable sector accessing animal health service, AI, extension and training services is an opportunity for the development of dairy in the area. Dairy development in the studied areas to be encouraging private investors and cooperatives to establish dairy processing plant, and thereby pre-urban and urban producers could be encouraged to enter into milk collection systems can be improved.

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