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Factors Affecting Market Participation Decision and Intensity of Participation of Cow Milk Producers in Gemechis District, Ethiopia

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Abstract
Cow milk is a daily produced high value product that plays a significant role for both home consumption and income generating. However, in the selling of raw milk marketed supply, the producers do not attain potential gains. Thus, this study attempted to identifying factors affecting farmers' decision to participate and determinants of the level of cow milk marketable surplus supply in Gemechis district. Both primary and secondary sources were used to collect data. Data were collected from a sample of 152 cow milk producers were analyzed through STATA ver. 15. Double hurdle model was applied. The first-hurdle model estimation result demonstrated that education level, distance to district market, the proportion of land allocated for forage production, size of milk output per day, access to milk market information, and frequency of extension contact influences farmers' decision to participate in cow milk market. The second-hurdle model results investigated that children under six years, the proportion of land allocated for forage production, size of milk output per day and access to credit were significantly affects the level of cow milk marketable surplus supply. Therefore, the study recommends that emphasis should have to give on encouraging flow of milk market information, intensification of land use, and enabling farmers as they produce more through improving production and productivity of cow.
Keywords: Cow milk, Double hurdle, Gemechis district
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INTRODUCTION

Ethiopia has one of the largest livestock populations in Africa and ninth in the world (FAO, 2019). Livestock plays a determining role in poverty reduction (Bainesagn, 2016). It also serves as a store of wealth and determines the social status of the community (Awoke, 2019).

In livestock production, its population is estimated at 60.39 million cattle, 31.30 million sheep, 32.74 million goats and 1.42 million camels of livestock population. Among dairy cows are estimated to be around 6.66 million or about 11.03% of the total cattle population (CSA, 2018).

Cattle were found to account for about 78% of the milk produced annually (Shapiro *et al*., 2015). It produces over 3.8 billion liters of milk per year (FAO, 2018). Rearing of dairy cow is one of the most important investments a farmer can make to improve their socio-economic condition (Rahman *et al*., 2019).

According to Getachew *et al*. (2018), cow milk constituted 45 percent of total consumption of dairy products. The dairy sector serves as a base for accelerating rural development (SNV-EDGET, 2017).

Gemechis district is a high potential of milk production for home consumption and market as well as ranked first district in livestock population in the zone. Despite, the district's cow milk producing potential and proximity to zonal town, cow milk producers do not attain potential gains from selling raw cow milk. Besides, none of similar studies conducted in the area.

Hence, this study has aimed to identify factors affecting farmers' decision to participate and level of cow milk marketable surplus supply of cow milk producers in the study area.

METHODOLOGY

Description of the Study Area

The study was conducted in the Gemechis district of West Hararghe Zone. The altitude of the district ranges from 1300 to 3400 m.a.s.l. The district has 181,780 cattle, 123,665 goats, 17,410 sheep, 44,950 equine, 243,723 poultry, and 18,595 honeybee colonies of livestock populations. The district ranked first in a total livestock population (611,528) followed by Daro Lebu district (583,500), Oda Bultum district (454,522) and Doba district (449,166) (GDLF, 2019; WHLFO, 2019).

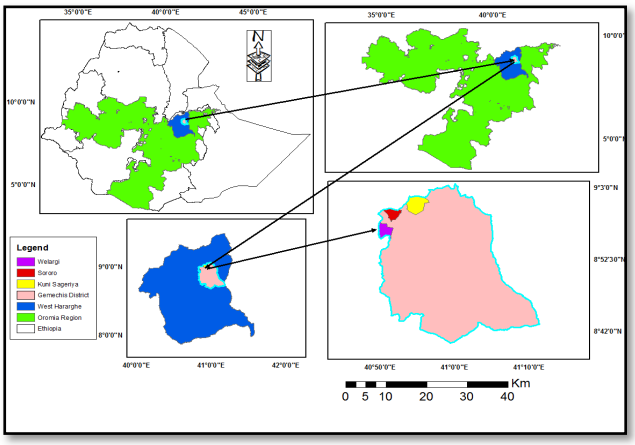

Figure 1: Map of the study area
Source: Own sketch from GIS data, 2020

Data Types, Sources, & Methods of Collection
The study has employed both qualitative and quantitative data collected from primary and secondary sources using structured questionnaire as a reference for the 2018/19 production season. The major data collection methods used was formal survey and focus group discussions (FGD).

Sampling and Sample Size Determinations
Multi-stage sampling technique was employed. Firstly, the 38 *kebeles* of the district (35 rural *kebeles* and 3 urban *kebeles*) stratified into three: highland, midland and lowland. In the 2nd stage, 3 *kebeles* (2 from the 14 highland *kebeles* and 1 from the 10 midland kebeles) were selected based on their potential of dairy production and market access. In the 3rd stage, households of the 3 *kebeles* stratified into two categories: cow milk producers and non-cow milk producers. Finally, a total of 152 sample farmers were selected in a simple random sampling method and allocated for the three *kebeles* in respective to the proportion to population size.

Sample size was determined according to Kothari (2004). In this study 5.27% level of precision was used to determine the sample size.

$$n = \frac{Z^2 pqN}{e^2(N-1) + Z^2 pq} = 152 \quad (1)$$

Where n is the sample size, N is the total cow milk producers, Z is the standard cumulative distribution; p is the estimated proportion (i.e. 3118/24850 = 0.13); q = 1- p that is 0.87 and e is the desired level of precession.

Table 2: Number of sampled households

Kebeles	Total dairy households	Sample taken	
		Frequency	%
Walargi	1200	59	38.8
Kuni Segariya	1253	61	40.1
Sororo	665	32	21.1
Total	**3118**	**152**	**100**

Source: Own computation, 2020

Method of Data Analysis
Descriptive statistics were used to explain the basic characteristics of the sample respondents. Qualitative data were also analyzed and presented through narration and explanation. Furthermore, independent t-test and chi-square tests were conducted.

Econometric analyses were used to examine factors affecting producer's decision to participate in cow milk marketing and volume of marketable surplus supply. For this study double hurdle model was used for analysis. A specification of the model used was as discussed by Cragg (1971). Based on his specification, the two hurdles for a farmer can be written as:

$$d_i = \alpha Z_i + v_i \quad (2)$$

$$y_i^* = \beta x_i + \varepsilon_i \quad (3)$$

Where, $d_i = 1 \ if \ d_i^* > 1, \ and \ is \ 0 \ \ if \ \ d_i^* \leq 0$

d_i is the observable variable, y_i* is the latent variable, and d_i and y_i are their observed counterparts, respectively. Also, z_i is the vector of variables explaining whether farmer participants in milk marketing, x_i is a vector of variables explaining volume of milk supply, and v_i and ε_i are the error terms.

The two error terms of the model were jointly normal and correlated,

$$\left(v_i, \quad e_i\right) \sim \mathrm{N}\left(0, \Sigma\right) \tag{4}$$

The likelihood function for the double hurdle model is:

$$L = \prod_0 \left[1 - F_2\left(Z_i\alpha, \frac{X_i\beta}{\alpha}, \rho\right)\right] \prod_+ \Phi\left(\frac{Z_i\alpha + \rho/\sigma(y - X_i\beta)}{\sqrt{1-\rho^2}}\right) \frac{1}{\sigma}\phi\left(\frac{y - x_i\beta}{\sigma}\right) \tag{5}$$

Where, Φ and ϕ are the standard normal cumulative distribution function and density function, respectively.

Before running the specified model, the explanatory variables were checked using the VIF (Mean VIF = 1.24). Robust method was employed for correcting the problem of heteroscedasticity. Besides, Tobit model was tested against the double hurdle model in a standard log-likelihood ratio test and Akaike's Information Criteria. Accordingly, AIC of Double hurdle is 370.662 while Tobit is 403.410. Heckman two-step procedure was tested against the Double hurdle model using inverse mills ratio (IMR) (Mills lambda= 0.1139, P>|z|=0.176).

Table 3: Summary of the dependent and independent variables used in the model

Variable	Types	Values/Unit	Hypothesis	
Dependent variable			Participation decision	Marketable surplus supply
Sell milk	Dummy	0 = no, 1 = yes		
Quantity sold	Continuous	Liter		
Independent variable				
Sex	Dummy	0 = male, 1 = female	+	
Livestock	Continuous	TLU		+
Distance	Continuous	Number	–	–
Household size	Count	Number	+	+
Milk produced	Continuous	Liter	+	+
Children Less 6 years	Count	Number	–	–
Dairying experience	Continuous	Year	+	+
Land proportion allocated	Continuous	Number	+	+
Extension contact	Count	Number	+	+
Credit access	Dummy	0 = no, 1 = yes	+	+
Education status	Dummy	1 = literate, 0 = otherwise	+	+
Market information	Dummy	1 = access to information, 0 = otherwise	+	+

Sources: Empirical studies reviewed, 2019

RESULTS AND DISCUSSIONS

The Results of Descriptive Analysis

In the study area, cow milk is consumed as a raw state or whole milk, milk coffee, and milk tea (*Hoja*). According to FGD held in each *kebele*, only a limited number of sampled respondents' process cow milk into milk products such as butter and cheese. Hence, cow milk has a great role in improving smallholder farmers' livelihoods.

T-test was conducted to compare means among the two groups. Accordingly, the result of the t-test shows that numbers of children less than six years, distance to district market, dairy farming experience, proportion of land allocated for forage production, quantity of milk produced per day per cow and extension contact were statistically significant at a different significance level in between milk market participants and nonparticipants (Table 4).

Table 4: Demographic and socio-economic characteristics of sample respondents

Variable	Market participation (N=123)		Non-milk market participation (N=29)		Total Mean	t-test
	Mean	St. dev	Mean	St. dev		
Household size (numbers)	5.71	1.93	5.17	2.04	5.61	1.330
Children under six years (numbers)	.82	1.05	1.21	1.15	.89	-1.751*
Livestock owned (TLU)	2.99	1.14	2.63	.74	2.93	1.620
Distance to district market (hours)	.72	.66	.95	.75	.76	- 1.675*
Dairy farming experience (years)	13.40	10.73	9.52	10. 80	12.66	1.751*
Proportion of land allocated for forage production	.13	.15	.04	.09	.11	3.524***
Size of milk output per day (liters)	2.69	1.23	1.53	.63	2.47	4.936***
Frequency of extension contact (numbers)	3.40	3.18	2.03	1.59	3.14	2.240**

***, ** and * were significance level at 1 %, 5% and 10% respectively.
Source: Survey result, 2020

Table 5: Chi^2-test for demographic and socio-economic characteristics for dummy variable

Variables	Characteristic	Market participation%	Non-market participation%	Overall %	Pearson chi^2
Sex	Male	36.59	31.03	35.53	0.316
	Female	63.41	68.97	64.47	
Education level of the household head	Illiterate	52.85	72.41	56.58	3.658*
	Literate	47.15	27.59	43.42	
Access to credit	Yes	29.3	13.8	26.3	2.898*
	No	70.7	86.2	73.7	
Access to milk market information	Yes	81.3	58.6	77	6.811***
	No	18.7	41.4	23	

***, ** and * were significance level at 1 %, 5% and 10% respectively.
Source: Survey result, 2020

The education level of the households was categorized as illiterate and who attended formal education (literate). As seen from Table (5) above, 52.85% and 72.41% of the market participants and non-market participants were not attended formal years of education (illiterate) while 47.15% and 27.59% were followed at least one year of formal education, respectively. The chi-square test indicated that there is a statistical significance difference in the educational status among the market participants and non-market participants at 10% significance level. That means there is a difference in education level between market participants and non-market participants (Table 5).

The majority of sampled farmers (73.7%) had no access to credit from the different sources and only 26.3% had access to credit from formal financial institutions, money lenders, and relatives or friends within the last three years (Table 5).

The result of this study indicates that the accessibility of credit for market participants was 29.3%, while for non-market participants was 13.8% and the rest have not got the credit. The result of the chi-square test shows that accessibility of credit was statistically significant at a 10% significance level, meaning that the existence of the difference between access to credit in between cow milk market participants and non-market participants.

Access to market information is needed for farmers to set prices, forecast demand, and general market conditions. As Table (5) above result indicates that 81.3% of market participants got accessibility of market information, while 18.7% did not get market information. On the other hand, 58.6% of non-market participants got market information, while 41.4% did not get market information. The overall access to milk market information status of sample respondents accounted for 77% and the remaining 33 % did not have access to milk market information. The result of the chi-square test shows that access to market information of sampled households was statistically significant at a 1% significance level. This meaning that access to market information was affects the participation of sampled households.

Econometric Results

In this section factors affecting decision of market participation and volume of cow milk market supplied of producers are presented and discussed.

Double hurdle model was used to identify factors affecting decision of participation and level of cow milk

market supply. Diagnostic tests for multicollinearity, heteroscedasticity and normality were made using the variance inflation factor (VIF), Breusch-Pagan/Cook-Weisberg and Skewness/kurtosis test, respectively. The result indicated there is no serious problem of multicollinearity among explanatory variables since VIF was less than 10. This is because, the values of VIF of all variables were less than 5 and tolerance values (1/VIF) greater than 0.1; and the mean VIF was equal to 1.24. The result of Skewness and Kurtosis for the truncated part (Joint Prob>chi2 = 0.2016) revealed that residuals was normally distributed. However, the tests of the Breusch-Pagan/Cook-Weisberg test showed the existence of heteroscedasticity problems in the model. Hence, Cragg hurdle regression (churdle stata command) was used to analyze the data set.

Double hurdle model was better over the Heckman's two stages model when there is no selectivity bias in the data set. The existence of selection bias occurred when mills lambda became significant. In this study, the mill's lambda was insignificant which indicated that there was no selectivity bias in the model. Hence, the Heckman two-stage model was found inappropriate for the data set of this study as evident from the econometric model output.

A standard log-likelihood ratio test and Akaike's information criterion test were used for appropriateness between the Tobit and the Double-hurdle models. The result of this study indicated that the value of Akaike's information criterion of double hurdle was lower compared to the Tobit model. Thus, a double hurdle was found to fit better than Tobit for the analysis, and it was employed for this study.

Before the analysis model fitness or reliability and appropriateness were tested using the maximum likelihood method. The Likelihood Ratio (LR) of the model is significant (LR chi2 (11) = 163.68 Prob>chi2 = 0.0000) indicating the model is adequate because coefficients are jointly significant. This is an indication that all the explanatory variables included in the model jointly influenced households' likelihood to participate in selling cow milk. Based on the above measures of the model reliability and appropriateness (i.e. goodness of model fitness), it concluded that the double hurdle model was reliable and appropriate for the data set.

Factors affecting farmers' decision to participate in cow milk marketing

Factors that affect farmers' decision to participate in cow milk marketable surplus were estimated using a double hurdle model (probit) since the majority of respondents used for this study supplied their milk to the market. Of the hypothesized variables, six were found significant in influencing farmers' decision to participate in cow milk market at 1%, 5%, and 10% significant levels. Those variables include education level, distance from district, the proportion of land allocated for forage production, size of milk output per day, access to milk market information, and frequency of extension contact (Table 8).

Education level

Education plays an important role to enables a household to get updated demand and supply information on milk. It has positive effect on probability of dairy household cow milk market participation decision at 5% significance level. The positive and significant relationship indicates that education improves the dairy household capacity to have better skills and better access to information to process production related and market related information, which in turn improves bargaining position. The marginal effect indicates that being a household is educated, the probability of dairy household cow milk market participation rise by 18.85%, keeping other factors constant. This is in line with previous studies conducted by Bedilu *et al*. (2018) who found that education increased the household likelihood of selling the camel milk to consumer.

Distance to district market

This variable as expected, it negatively associated with farmer's likelihood to participate on cow milk market and found to be statistically significant at 1% significance level. The negative relationship indicates that the farther is a household from the district milk market, the more difficult and costly it would be to get involved in the milk market. The marginal effect result revealed that a one-hour walking increase in milk market distance from the dairy farm household reduces the probability of participation in milk market by 16.9%. In other words, as the dairy households become closer to district milk market by one hour walking distance, the probability of his/her participation in milk market rises by 16.9%.

Proportion of land allocated for forage production

The proportion of land allocated for forage production of a household head is one of the factors affecting cow milk market participation. As the probit part of a model indicates the proportion of land allocated for forage production of the household head had a positive and significant influence on the market participation of cow milk at a 1% significance level. This shows that being farmers increases the proportion of land allocated for forage production in one unit cow milk market participation increases in 126.59% when all other factors are held constant. The larger land allocated for forage production enables those farmers to produce more milk which leads to more participation in cow milk market. This result is consistent with the findings of Mohammed *et al*. (2019) who found that as

households allocate less of their land for grazing/pasture purposes less participate in milk market supply because of they were more involved in other alternative agricultural cropping activities. Similarly, the findings of Diriba *et al*. (2018) and Yiamoi (2019) found that an increase in the size of land owned by the dairy farmers increases their willingness to joining in dairy production/ organization.

Size of milk output per day

As hypothesized the quantity of milk produced per day per cow had a positive and strongly significant relationship with the probability of participating in the market of cow milk at a 1% level of significance. The model result indicates that as the milk produced increases by one litter, the probability of market participation of cow milk increases by 29.64% keeping the effects of other variables constant. The result implying that farmers with more cows' milk produced households are more likely to devote a significant amount of milk to the market than those households with less cow milk produced. The result obtained in this study coincides with the findings of Balirwa and Waholi (2019).

Access to milk market information

As anticipated, this variable was positively and significantly influenced market participation of cow milk of farmers at a 1% level of significance. The result of probit regression indicates that being farmer's access to milk market information the probability of their market participation increases by 26.25%. The result implies that farmers who access to milk market information were more confident to participate in milk marketing as compared to those farmers who did not get access to milk market information. This study agreed with the study conducted by Hailay *et al*. (2020) and Chamboko *et al*. (2017). Similarly, Diriba *et al.* (2018) on the determinants of dairy product market participation identified those households obtained information participates more in market participation.

Table 6: Results of Double hurdle model estimation of participation decision and level of participation in cow milk market

Variable	Probability of participation			Level of cow milk market supply			
	Coefficient	Std. Err.	dy/dx		Coefficient	Std. Err.	dy/dx
Sex	-.0965	.4292	-.0218	Livestock owned	.0315	.0607	.0239
Education level	.8353**	.4202	.1885	Education level	-.1123	.1432	.0594
Household size	.1286	.1183	.0290	Household size	-.0030	.0403	.0200
Distance to district	-.7489***	.2575	-.1690	Distance to district	-.0646	.0846	-.1787
Children less 6yrs	-.2108	.2021	-.0476	Children less 6yrs	-.2022***	.0698	-.1900
Dairy experience	.0312	.0204	.0070	Dairy experience	-.0050	.0069	.0016
Land proportion	5.6092***	1.9607	1.2659	Land proportion	.7990*	.4579	1.5777
Milk output	1.3133***	.3412	.2964	Milk output	.4566***	.0582	.5739
Market information	1.1633***	.4195	.2625	Market information	-.1896	.1653	.0575
Extension contact	.3311***	.1231	.0747	Extension contact	-.0061	.0228	.0527
Credit access	.1128	.5553	.0255	Credit access	.4447***	.1452	.3570
Constant	-4.9163***	1.3134		Constant	1.0519**	.4129	
Lnsigma	-.3584***	.0698	Number of obs = 152		LR chi2(11) = 163.68(0.0000)		
Sigma	.6988	.0488	Pseudo R2 = 0.3434		Log likelihood = -156.44707		

*, ** and *** indicate significant difference at 10%, 5% and 1% probability levels, respectively.
Source: Survey result, 2020

Frequency of extension contact

As expected, the first stage double hurdle (probit) model results indicated that the number of frequency of extension contact is associated with cow milk market participation of households positively and significantly at a 1% significance level. The extension worker was one among the major sources of information regarding milk production and marketing for farmers. The result of the marginal effect indicated that the household probability to participate in cow milk market participation decision was increase by 7.47% as frequency of extension contact increase by one. These results coincide with the findings of Mohammed *et al*. (2019). Similarly, Chamboko *et al*.

(2017) found that access to extension services provides information on technologies for farmers which are necessary to improve management and hence improved milk production and enhanced market participation decisions.

Determinants of level of cow milk market supply

The second stage of the double hurdle model shows that children under age of six years, the proportion of land allocated for forage production, size of milk output per day and access to credit was significantly affects the level of market participation of cow milk marketed supply.

Children under age of six years

Milk is traditionally considered as a food item that is essential for children due to its nutritional benefits. A household owning child less than six years old decreases the chances of increasing the quantity of cow milk sold. The results of truncated part of double hurdle model indicates that the children under the age of six years of the respondent had a negative and statistically significant effect on the quantity of cow milk market supply by smallholder farmers at a 1% significance level. The marginal effect result indicated that when all other variables are constant, as the number of children less than six years increases by one, the level of cow milk marketed supply decreases in 19%. This implies that household those had more numbers of children less than six years was participate in less quantity than other households that had less or do not have. Household's allocation of fresh milk is majorly based on number of infants in house followed by numbers of children while elders were less considered (Benyam and Zekarias, 2017).

Proportion of land allocated for forage production

As expected, the proportion of land allocated for forage production was positively and significantly influence the level of cow milk marketable surplus supply at a 10% level of significance. The result of truncated part of Double hurdle indicates that farmers who devoted more proportion of land for forage production supply more quantity of cow milk to market than less/ not devoted households. The marginal effect of the model indicated that as one more hectare increase in farmers land allocation for forage production increases the level of cow milk marketable surplus supply by 157.77% keeping the effect of the other variables constant. This result is consistent with the findings of Mohammed *et al*. (2019) found that as land allocated for grazing increases the extent of milk market participation also increases.

Size of milk output per day

The second stage double hurdle model (truncated) supported that the household quantity of milk produced per day of a cow had positively and significantly affected the quantity of cow milk marketable surplus at a 1% significance level. This implied that keeping other explanatory variables at their mean level, an increase in the quantity of milk produced per day of a cow by one liter would increase the level of cow milk marketable surplus supply by 57.39% (Table 8). It indicates that households that produce more quantity of cow milk had also supplied more liters of cow milk to the market. The reason behind this is that farmers cannot store raw milk for longer time due to its perish-ability unless he/she wants to process. This result is in line with the finding of Birhanu (2017) who found that milk yield per day is a very important variable affecting milk market participation of a household. It also confirmed by the findings of Tsega *et al*. (2017) found that more surplus milk in the family following increased production that could increase the volume of value-added products.

Access to credit

The result of truncated part of double hurdle model shows that access to credit service was positively and significantly influences the level of cow milk marketable surplus supply for farmers who have got credit service within the last 3 years at a 1% significance level. The marginal effect implied that households whose access to credit can supply 35.7% more than those who do not have access to credit, other things remaining constant. The findings agree with Yiamoi (2019) who found that the availability of credit for dairy farmers have positive effects on their participation in the dairy organization. The right institutional incentives for farmers, enhance the financial capacity of the farm households to purchase the necessary materials to increases output and commercialize their dairy enterprises (Berem *et al*., 2015; Hawlet *et al*., 2019).

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary and Conclusions

Ethiopia is known by having the largest livestock populations in Africa, which makes the country to have high potential in milk production. Milk production plays a great role in the alleviation of food insecurity problems of the nation through as food or sources of income generation. Despite the large potential in milk production, its productivity is low.

The study was undertaken with the objective of identifying factors affecting farmers' decision to participate and level of participation in cow milk market. To address the objectives of the study, both qualitative and quantitative data types were used. Quantitative data were collected through personal interviews from 152 respondents using structured questionnaires. Qualitative data were also collected through focus group discussions.

Descriptive statistics and econometric models were used to analyze the collected data. The double hurdle model was computed to analyze factors affecting market participation decisions of cow milk producers and the level of market supply. The finding of this study was summarized as follows.

Among the cow milk producers interviewed, female had domination in cow milk production. During the survey time, 80.9% of cow milk producers participated in cow milk market. The results revealed that the mean of dairy farming experience, livestock owned, milk output per day, extension contact and land proportion for forage production of cow milk producers were 12.66, 2.93, 2.47, 3.14 and 0.11, respectively. In addition, 26.7% and 77% of sampled farmers had accessibility of credit and milk market information, respectively. Of sampled farmers 47.15% were followed the formal education.

Econometric result of the probit part of double hurdle model indicated that education levels, proportion of land allocated for forage production, size of milk output per day, access to milk market information and frequency of extension contact was significantly and positively affected cow milk producers decision to participate in market. While, distance to district market was significantly and negatively affected cow milk producers decision to participate in market.

The econometric result of the truncated part of double hurdle model indicated that the proportion of land allocated for forage production, size of milk output per day and access to credit were significantly and positively affects the level of market participation of cow milk market. But, numbers of children under the age of six years was significantly and negatively affect the level of market participation of marketable surplus of cow milk. Finally, cow milk market participation in marketable surplus supply was the common practice in the study area. In cow milk production and trading, women constitute the lion share.

Recommendations

Based on the findings of this study the following recommendations are drawn for policy makers, development actors, and researchers who a have strong interest in promoting cow milk production and marketing.

Policy-makers should have to focus more on intensification use of land for forage production practice through mixed farming strategies wisely.

Government should have to encourage and empower smallholder milk producers through making active exchange of experiences, effective extension services, and other related services to offer home-to-home advisory services.

Concerned bodies need to give attention to benefit dairy farmers in solving their financial constraints through the provision of better credit access in terms of either in cash, in-kind, aid, or in revolving funds to improve the quantity and quality of milk marketable supply.

Governments should strengthen the investing in infrastructures like rural road which reduces transportation costs and milk wastages.

Market information services have to be established or encouraged to promote farmers' knowledge of milk production and marketing in the quality requirements of the product.

Concerning body have to be strengthened to enable farmers produce surplus cow milk for markets through accessing of crossbreed cows.

Finally, in the study area producers utensil used for storage was plastic jak. There is a problem with storage and other utensils. To solve these problems facilitating utensils for producers by regarding body would be very important to reduce loss and quality deterioration producers to faces.

DECLARATIONS

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Ethical Approval

Ethical approval does not relevant for this study. And also this article does not contain any studies with human participants performed by any of the authors.

Author's contribution

Birhanu Angasu: Conceived and designed the analysis; collected the data; contributed data or analysis tools; performed the analysis; wrote the paper.

Alelign Ademe: Conceived and designed the analysis; contributed data or analysis tools; performed the analysis.

Saleamlak Fentaw: Conceived and designed the analysis; contributed data or analysis tools; performed the analysis.

Conflict of Interests
The authors have not declared any conflict of interests.

Data availability
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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