Value Chain Analysis of Butter and Cheese: The Case of Loma Woreda, Dawuro Zone, Southern Ethiopia

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Abstract

This study was conducted with the main objective of identifying butter and cheese value chain actors and their respective functions, estimate benefit distribution among the actors, identify determinants of farmers' market participation and level of participation; and identify the constraints and potential opportunities of butter and cheese production and marketing in the study area. About 138 smallholder butter and cheese producers were selected randomly from six Kebele administrations proportionally. Both qualitative and quantitative types of data were used. Primary data was collected by using both close ended and open ended (semi- structured) questionnaire and personal interview, focus group discussion and key informant interview was used to collect the data. Descriptive statistics and Heckman two stage models were used to analyze the data. Marketing margin analysis method was used to analyze the benefit distribution among the butter and cheese value chain actors. According to the result obtained; input supplier, producers, local collectors, wholesalers, retailers and consumers are the direct butter and cheese value chain actors whereas extension service providers, credit and saving service providers, trade and industry office and non-governmental organizations are the indirect actors thereby play the crucial role as service providers. The result revealed that the total share of gross marketing margin and share of profit margin of producer is 62.5% and 54.2% respectively. The share of profit margin of local collectors, wholesalers and retailers were 18.8%, 12.1%, and 14.75% respectively from the sales of 1 KG butter. Out of 138 respondents, 85% revealed that the main reason for most farmers not participating in credit were limited supply of credit, bureaucracy, unavailability of credit agents and high interest payment especially to take credit from Omo micro finance institution. On average **2,070**.5KG of butter are supplied by sample respondents. In addition to butter production, on average 30,420 KG of cottage cheese were supplied to the same market center in study area in 2016/2017. In general, policy initiatives aiming at increasing farmers' improving market information, road, access extension service, access to credit and cooperative development are recommended to step up the development of dairy sector particularly butter and cheese value chain in the study area.

Keywords: Marketing Margin, Benefit Distribution, Value Chain Actors

1. INTRODUCTION

1.1. Background of the Study

Currently the cattle population is estimated to be about 52 million (MoA, 2010), out of which female cattle (cow or heifers) constitute about 55.4 percent. About 99.28% of the total cattle are local breeds and the remaining are hybrid and exotic breeds (CSA, 2009). Ethiopia holds the largest livestock population in Africa estimated to about 52.13 million cattle, 24.2 million sheep and 22.6 million goats (CSA, 2012). The total annual national milk production in Ethiopia comes from about 10 million milking cows and is estimated by 3.2 billion liters that is, 1.54 L/cow on average (CSA, 2012). About 83% of the total milk production in Ethiopia is from cows and the remainder is from goats and camels in certain regions particularly in pastoralist areas (LDMPS, 2007). As dairying plays significant role in the lives of the urban and peri-urban poor households (Yitaye *et al.*, 2007), promotion of the dairy sector in Ethiopia can therefore contribute significantly to poverty alleviation as well as availability of food and income generation.

In Ethiopia, dairy value chain entailed about 500,000 smallholder rural farmers who produce about 1,130 million liters of milk of which 370 million liters of raw milk, 280 million liters of butter and cheese and 165 million liters is consumed by the calves (Mohammed, 2009).The private sector to the increased demand for dairy is expected to be significant, the small-scale household farms in the highlands hold most of the potential for dairy development (Mohammed *et al.,* 2004). Jabbar (2009) stated that the analysis of a value chain encompasses wider issues than supply chain, which only shows the physical flow of goods or services from production to consumption through intermediate stages of value addition.

The SNNPR has 23.5% of Ethiopia's milking cows and produces 27 of the Percentage Share of Milk Production. The processing and trade of dairy products, especially soured butter, dominates the dairy sector. Some of the butter is used for home consumption, and the surplus is for sale to small traders who transport it to urban areas for distribution by wholesalers and retailer butter traders. Ayib, a soft cottage cheese, is produced on the farm from sour buttermilk, for home use and for sale (LMD, 2013). Dawuro Zone is one of SNNPR with the livestock resource of 411.54 thousand cattle, 168.02 thousand sheep's 125.08 thousand goats, 39.08 thousand equines and 219.87 thousand poultry.

1.2. Statement of the Problem

The livestock sector in general and the milk production in particular do not provide the expected contribution to the national income despite their large numbers due to several factors. The development of the milk sector in the country is hindered by a number of technical, institutional and socio-economic constraints. The growth in milk production has been slow and the annual milk production is estimated to be 1,089,488,251 litters (MoARD, 2007) which don't meet even the domestic demand for milk production. The traditional milk production system, which is dominated by indigenous breeds of low genetic potential for milk production, accounts for about 97 percent of the country's total annual milk production (Felleke, 2003). Ethiopia's dairy value chain is thus constrained by low milk productivity at the farm level, inefficient logistics to link producers and processors, and low real demand even if demand does exceed supply (LMD, 2013).

Promoting on-farm value addition to milk products is believed to be useful for poverty reduction through creating income generating opportunities to the rural poor. Nevertheless, farmers' participation in milk value addition is perceived to be generally low (Berhanu et al; 2011). Lemma et al. (2008) and Yilma et al. (2011) reported weak linkages among the different actors in the dairy value chain are some of the important factors that contribute to the poor development of Ethiopia's dairy sector. Loma Woreda is the areas in which this research was conducted. Dairy is one of potential sector in Loma Woreda in Dawuro Zone which has a significant contribution to the livelihood of small scale farmers in the area thereby contributing to the income of the majority of smallholder producers as well as ensuring of food security. Since value chain contributes to the reduction of poverty through the improvement of household incomes; this study was attempted to contribute by filling the information gap along butter and cheese value chain in the study area. This is quite necessary for the policy intervention and improvement of rural economic sector especially rural livelihood and social welfare there by contributing to the rural income generation. This study was attempted to address the objective of identifying actors with their functions, analyze benefit distribution among the actors and identify constraints and opportunities along butter and cheese value chain.

1.3. Definitions and Basic Concepts

Value chain actors: Are actors those involved in supplying inputs, producing, processing, marketing and consuming agricultural products (Getnet, 2009). They can be those that directly involved in the value chain (rural and urban farmers, cooperatives, processors, traders, retailers, cafes and consumers) or indirect actors who provide financial or non financial support services, such as credit agencies, business service and government, researchers and extension agents.

Marketing margin: Knowledge about distribution of profits and margins along value chains provides information to policy makers about potential opportunities for improving the welfare gains from activities performing along value chain, identifying points of entry for mechanisms that influence from the concept of design of production to end consumers and it used to know the contribution the activities on local and national economies. Marketing performance can be evaluated by analysis of costs and margins of marketing agents in different channels. A commonly used measure of system performance is the marketing margin or price spread. Margin or spread can be useful descriptive statistics if it used to show how the consumers' food price is divided among participants at different levels of marketing system (Getachew, 2002). Marketing margin is the difference between retail price and farm gate price (Cramer and Jensen, 1982).

Marketing costs: Marketing costs includes handling cost (packing and unpacking, costs of searching for a partner with whom to exchange, screening potential trading partners to ascertain their trustworthiness, bargaining with potential trading partners and officials to reach an agreement, transferring the product, monitoring the agreement to see that its conditions are fulfilled, and enforcing the exchange agreement (Holloway *et al*., 2000). Thus, measuring costs and margins enables the researcher to determine how pro-poor a value chain is. Studying actual costs and margins should be considered when a researcher aims to find out whether a value chain is a good source of income for the poor and, secondly, whether a value chain is accessible for the poor. Historic costs and margins, on the other hand, enable a researcher to find out what the financial trends have been in the value chain and whether the chain has potential to grow in the future (Michael *et al*., 2004).

2. METHODOLOGY OF THE STUDY

2.1. Description of Study Areas

The Dawuro Zone covers total area of 4436.7 sq.km^2 and lies between 6.59-7.34 degree north latitude and 36.68 to 37.52 degree east longitudes, with an elevation ranging 501-3000m (Mathewos, 2008). The zone has 5 Woredas' (Mareka, Loma, Essera, Tocha and Gena Bossa Woredas) with a total population of 398,796. Regarding the Agro-Ecology, 55.6% is *kolla*, 41.4% is *Weyna-Dega* and 3% is *Dega*. The annual mean temperature ranges between 15.1 to 27.5^{o}c. The average annual rainfall ranges from 1201 to 1800mm. The livestock resource of the zone was estimated to be 313,094 cattle, 113,554 sheep, 45,703 goats, 7,081 horses,

1,934 mules, 5,064 donkey, and 157,996 chicken and 28,557 traditional hives (CSA 2006). This study was conducted in *Loma Woreda* of *Dawuro* Zone, Southern Nation Nationalities and People Region (SNNPR). Altitude ranges or lies between 1160 and 2300 m above sea level and receives 1400 mm-1600 mm rainfall annually. The mean temperature ranges from 15.1˚C to 27.5˚C (DFEDD, 2013).

2.2. Sampling Procedure and Sample Size Determination

Multi-stage sampling technique was used to conduct this study. Dawro zone has five Woreda administrations and one town administration. Loma Woreda was selected purposively as the study area based on the extent of farmers' participation on butter and cheese marketing. Six kebele administrations were selected purposively. These are Yallo , Gessa, Mida zalo, Loma balle, Tula kae and Fulassa Balle kebele adminstration. Finally, 138 sample households were determined by using the simple random sampling techniques. In addition to these, 24 traders and 12 consumers were selected randomly from the study area. Total of 174 respondents were selected from the study area. Thus, for the populations that are large, Cochran (1963:75) developed the Equation 1 to yield a representative sample for proportions.

$$n = \frac{z^2 p(1-p)}{d^2}$$ .... *(1)*;

Where n_0 is the sample size, Z^2 =3.84 is the abscissa of the normal curve that cuts off an area α at the tails (1 - α equals the desired confidence level, e.g., 95%)' d is the desired level of precision which is 0.05, p is the estimated proportion of an attribute that is present in the population at 10% or 0.1 and q is 1-p (1-0.1) =0.9. The value for Z is found in statistical tables which contain the area under the normal curve. This can be estimated as:

$$N = \frac{1.96^2 0.1(1-0.1)}{0.05^2} = 138$$

Table 1: Sampling for producers

Kebele Administrations	Dairy producer households	Proportion	Sample household
Dissa	540	0.17	23
Tulema	568	0.18	24
Mida zalo	504	0.160	21
Loma balle	517	0.16	21
Tula kae	448	0.14	19
Fulassa Balle	603	0.19	25
Total	3180		138

Source: Own computational work (2017)

2.3. Types, Sources and Method of Data Collection

Both quantitative and qualitative data were used. Quantitative data permit a more objective assessment and facilitate an assessment of larger-scale patterns, trends and relationships among different value chain actors. The qualitative research tools were used to check the reliability of data collected by questionnaire. The secondary sources of data were journals, books, Internets browsing, Reports of national policy, regional, zonal and woreda CSA. Generally, well-developed structured questionnaire and check lists were prepared.

2.4. Methods of Data Analysis

2.4.1. Descriptive statistics

Data collected through structured and semi-structured questionnaire survey were coded, entered, edited and analyzed by using SPSS version16. Descriptive statistics such as frequency, percentage, mean and standard deviation were used to analyze the survey data collected from smallholder dairy farmers, assemblers, wholesalers, processors, retailers and consumers. Inferential statistics such as hypothesis testing, Chi-Square test, t-test, pseudo R^2 and p-value will be used to test statistical significance of regression parameters.

Identification of actors with their function along value chain

According to (Kaplinsky and Morris, 2001), value chain analysis approach were used to analysis the actors with their functions along dairy value chain. Value chain analysis approach depends on the research question.

Estimation of benefit distribution of actors along the value chain

Marketing margin is the difference between retail price and farm price (Cramers and Jensen, 1982).Computing the total gross marketing margin (TGMM) is always related to the final price paid by the end buyer and is expressed as a percentage (Mendoza, 1991). According to Mendoza (1995), high marketing margin could sometimes refer little or no profit or loss for the particular actor in the chain because it depends on cost associated with marketing together with the buying and selling prices.

$$TGMM = \frac{End\,buyer\,price - first\,seller\,pricen}{End\,buyer\,price} \times 100$$ -------------------------------- (2)

Where, TGMM is total gross marketing margin. It is useful to introduce the idea of 'producer's participation', 'farmer's portion', or 'producer's gross margin (GMMP)' which is the portion of the price paid by the consumer that goes to the producer.

The producer's margin is calculated as a difference:

$$GMMp = \frac{End\ buyer\ price - marketing\ gross\ margin}{End\ buyer\ price} \times 100 \text{---------------------- (3)}$$

Where, GMMp is the producer's share of consumer price

$$NMMp = \frac{Gross\ marketing\ margin - marketing\ cost}{End\ buyer\ price} \times 100 \text{--------------------- (4)}$$

Thus, the marketing margin in this study should be understood as gross marketing margin (Scott, G.J., 1995; cited in ILCA, 1989). Accordingly, in this specific study as it is difficult to obtain precise cash and imputed marketing cost for butter and milk marketing chains, marketing margin (even the calculated net marketing margin) should be understood as gross marketing margin.

3. RESULT AND DISCUSSION

3.1. Butter and Cheese Value Chain Actors and Their Function in Study Area

Milk and milk products were the major income generating and poverty alleviation tools for small holder dairy farmers in the study area. Producers and traders are direct actors and benefit from marketing of fluid milk, butter and cheese in the Loma Woreda.

3.1.1. Direct actors along butter and cheese value chain in study area.

Input suppliers: The major input suppliers are Agricultural Office, Livestock and Fisheries Development Office, Trade and Industry Office and Households asset building program in the study areas. They play immense task to improve milk production and productivity along the chain. Inputs which are supplied by input suppliers in study area are artificial insemination, synchronization, improved dairy cows, improved feed and veterinary service.

Producers: They are farmers and the first actors of producing butter and cheese mainly along dairy value chain in study area. They are using inputs like elephant grass for feed to improve the shortage of feed in the study areas. In addition to this, farmers use tuber of false banana as one of the feed sources for animals during the shortage of feed. Activities such as rearing of dairy cows, watering, feeding, milk processing and packaging, storing are mainly accomplished by producers at farm level. Producers are processing milk and producing butter and cheese in the study area. 100% of respondents revealed that activities such as storing, quality control, packaging, and marketing activities are mainly performed by women. The average price of 1KG of butter during summer and winter season is **150** and **175** ETB respectively. Women play the dominant role in processing, packaging, quality controlling, packaging and marketing of dairy products.

Local collectors: They purchase the small size of butter which is called as Sha'diya in local language from local market. They enlarge the size of the butter in to (locally known as Gu'piya) with average weight of **4.5** KG and stored in wooden box until it will be matured partially to sell for wholesalers, retailers and consumers. Purchasing, packaging, storing, quality control, grading and marketing activities are performed by local collectors. The average price of **1KG** of butter during summer and winter season is **180** and **195** ETB respectively.

Wholesalers: These are actors purchasing large portion of butter and cheese from local collectors and small proportion from producers. The average selling price of local collectors is the average purchasing price of wholesalers. Finally, the average price of 1KG of butter at summer and winter season is **200** and **215** ETB respectively.

Retailers: Their purchasing capacity was less than that of wholesalers and local collectors because of shortage of initial capital. They purchase butter from producers in large proportion in optimum price and local collectors, wholesalers in small proportion thereby sold to consumers, hotels and cafeterias by average price of **225** ETB. Consumers are the end users of dairy products. They consume dairy products either purchasing or producing. In dairy value chain from the design of production to the distribution of dairy products to consumers, it is important to carry out the demand of the products based on consumers' preference. This implies consumers are one of the most important customers of producers, wholesalers and retailers. But in study area the survey results out of **12** respondents of consumers, **55%** of the respondents revealed that dairy products are not produced based on consumers preference. The reason is producers lack skills value addition. The finding of this result agreed with Kohl (2001) observed that consumer tastes and preferences will be a key factor driving food distribution systems.

3.1.2. Supportive service providers along butter and cheese value chain in Loma Woreda

According to Martin *et al*. (2007) access to information, knowledge, technology and finance determines the state of success of value chain actors. Thus, there were different supportive service providers in study areas.

Extension service providers: These are agricultural office, agricultural products marketing case team, cooperative office and household building in agricultural program. They provide training on dairy cows feeding, management and market linkage

Credit service providers: Some times Omo micro finance is the only credit serving institution for farmers in study area. Banks are collateral based and accessing credit for dairy expansion was impossible in study area. This is in line with Embaye (2010) asserts farmers and dairy products traders could obtain credit from micro credit institutions, and informal lenders such as farmers and traders. However, the credit system was not well developed. Out of 138 respondents, 85% revealed that the main reason for most farmers not participating in credit were limited supply of credit, bureaucracy, unavailability of credit agents and high interest payment especially to take credit from Omo micro finance institution. The survey result of respondents (100%) revealed that dairy producers and dairy product traders have obligatory to save 20% of money in Omo microfinance before get credit from institute and pay back with the interest rate of 8%.

License providers: Trade and Industry office and marketing case team work processing play important role in providing license for the traders in study areas. Trade and Industry office was give the license of trading where as marketing case team work processing was give license of presence of quality controlling mechanism which was taken as criteria to be fulfilled by traders to keep the quality of products.

3.2. Demographic Characteristics of Sample Households of Producers

As the result of survey data, the education level of the households 58.7%, 20.3%,13.5%, 16.7% were illiterate, read and write, primary school (1-8) and high school respectively. This revealed that large percent of household were under illiterate with low perception for milk value addition. Average age of household head was 42 years; dominated by younger heads that encourage milk value addition participation decision of farmers. The maximum and minimum family size of the respondents was 8 and 3 respectively. Thus, average family sizes of sample producers during survey were 6. In further, the result reveals that the major income source of the farmers are crop-livestock and crop production which accounts 99.2% and 0.8% respectively. An average land size of sample respondents is 1 ha per households in Loma Woreda. Thus, the average numbers of milking cows per household is 3 in study area. Three liters of milk, out of average 5 liters yield per day was used for value addition. The major milk value added products produced are butter and cheese. About 79.7% of respondents revealed that they added values to milk in the form of butter and cheese where as the remaining 20.3% respondents consume milk in liquid form at household level. Thus, 20.3% of respondents are producing but not participate in milk value addition. On average 15 kg of butter was supplied to market from sampled households. According to the survey result, out of 138 sample households, 36% revealed that value added dairy products in market not meet the consumers' preference. Thus, in study area most of dairy producers add value on milk traditionally through indigenous knowledge. Still there is extension service gap on milk value addition in study area. Out of 138 sampled households, 48% revealed that there was a lack of extension service on milk value addition. According to the result obtained by the respondents' survey from the study area, 73.9% of sample respondents were faced with limited supply of credit. Milk is processed in to butter and cheese for the purpose of income generation and consumption. Thus, milk is processed and marketed by women only in study area. Respondents from the study area revealed that the reason they process milk is to fetch good price and to extend the shelf life of the products which accounts 64% and 36% respectively. Dairy production is labor intensive and the result of respondent survey shows that 100% of labor source of the producers for dairy production family labor. In study area farmers have faced with the problem of infrastructure such as access to main road for market center and transport facility.

Table 2: Income contribution of dairy sector compared to other sectors in study area

S.No.	Source of income for farmers 2016/17/Year	ETB
1	Sales of dairy products	4,000
2	Sales of Sheep and goats	6,000
3	Beekeeping	1,800
4	Sales from coffee	3,000
5	sales from cereal crop	2,500
	Total	14,600

Source: Own survey result (2017)

As the result indicated in Table 2, the major sources of income for producers in study area are sheep and goat, dairy products, coffee, cereal crops and beekeeping respectively.

Demographic Characteristics of Sample Households of Traders

As the survey result indicated in Table 3, sample households of traders revealed that 87.5% of traders were females and the remaining 12.5% were males in study area. This indicates women play a great role in dairy products marketing in study area. On other hand, it is culturally taboo for men to market dairy products in study area. The average age of sampled traders was 32 years old and on average they participated on dairy products marketing for 4.25 years. This may indicate that they have good experience in dairy products marketing. Education level of the traders was important to create awareness for traders on dairy products value addition, market information, builds bargaining power and quality issues of the products which were marketed based on customers demand. The sampled traders' survey result realizes that the education level of traders in study area

was poor. Thus, 54.2% of traders were illiterate implies that traders had poor know how on marketing dairy products based on customers preference.

Table 3: Socio economic data of traders in study area

Variables		Respondents 24(100%)	Mean value	Max	Min
Sex	Male	6 (25)	-	-	-
	Female	18 (75)			
Marital status	Single	3(12.5)		-	-
	Married	11 (45.8)		-	-
	Divorced	4 (16.7)	-	-	-
	Widowed	6(25)	-	-	-
Educational level	Illiterate	10 (41.7)			
	Primary school	14 (58.3)	-	-	-
Age	-	24 (100)	36	46	26
Family size			5	10	0

Source: Own survey result (2017)

3.3. Source of capitals for traders along butter and cheese value chain in study area

Most of traders have been using their own capital and some have been using capitals in the form of loan from omo micro finance with the interest rate of 8% in study area. As the survey result revealed, 80%, 10% and 7% of the respondents were used their own capital and loan from (omo micro finance and rural job creation office) respectively. As the result obtained from 12 sampled households of consumers availability of dairy products in study area fluctuates from season to season. This implies throughout the year dairy products available but the volume of availability varies from season to season. The reason is in summer season there was availability of feeds for dairy cows thereby large volume of butter and cheese were supplied to the market.

3.4. Butter and cheese marketing in the Loma Woreda

The analysis of marketing channels is intended to provide a systematic knowledge of the flow of goods and services from their origin to their final destination (Scott, 1995). According to the survey result, five main alternative channels were identified for butter marketing in study area. It was estimated that on average **72,000** KG of butter were marketed in Dissa, Gessa, Loma Balle and Yallo markets in 2016/2017 where as on average **2,070.5**KG of butter are supplied by sample respondents. The main marketing channels identified from the point of production until the product reaches the final consumer through different intermediaries were depicted in Figure 1.

Figure 1: Butter marketing channels in study area

Cheese is one of the second important value added dairy product in Loma Woreda. It has three marketing channels in study area. It has lacked long marketing channel outside the Woreda because of its perishable nature there is shortage of storage facility in study area. In addition to butter production, on average 30,420 KG of cottage cheese were supplied to the same market center in study area in 2016/2017. Out of total quantity supplied, on average 1500 kg of cottage cheese were supplied to market by sampled households. As the result indicated in Figure 2, the large and small volume of cottage cheese were sold to consumers through producers-consumers and producers-retailers-consumers that carry the volume of 1325KG and 175KG respectively.

Producers ⟶ consumers (1325KG)
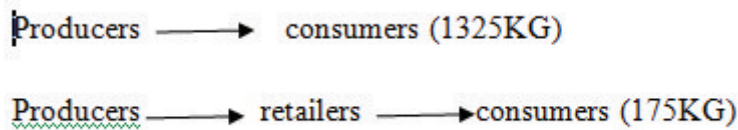
Producers ⟶ retailers ⟶ consumers (175KG)

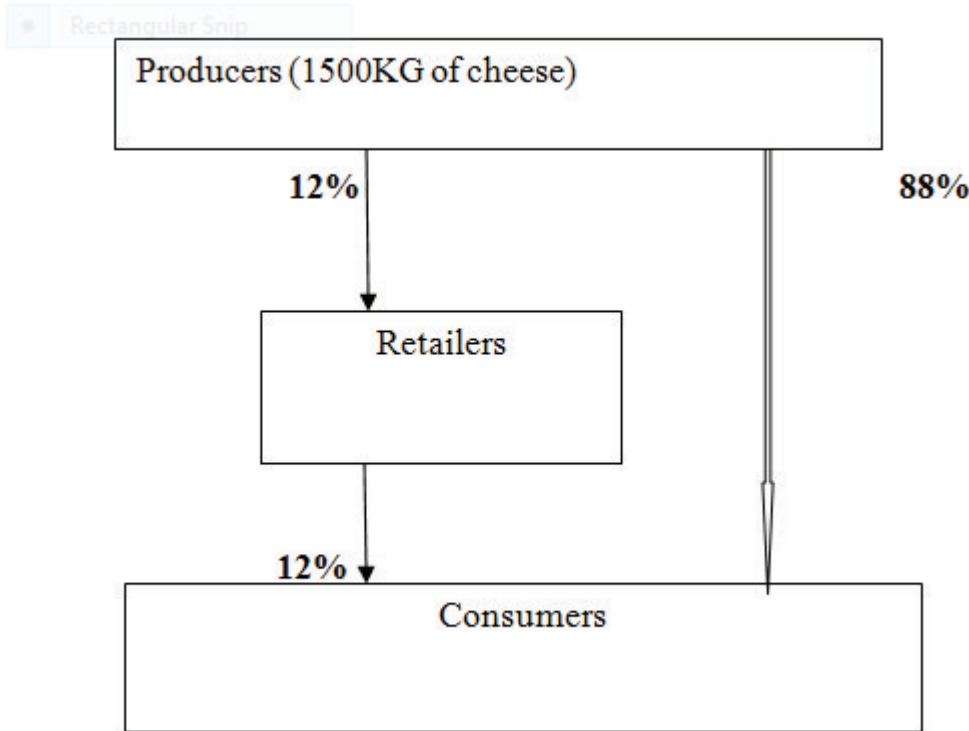Figure 2: Cheese marketing channels in study area

Figure 2: Cheese distribution along marketing channel in study area

3.5. Cost and benefit distribution along butter and cheese value chain actors

According to Armagan and Ozden (2010) most of the entrepreneurs aim at earning high profit and value in their dairy farms and add value to their dairy output in order to capture greater margins from the market. That is, through the analysis of margins and profits within the chain, one can determine who benefits from participation in the chain and which actors could benefit from increased support or organization. According to the survey result indicated in Table 4, the estimated average production cost incurred by producers to produce 1KG butter from both local and cross breed cow is 100 ETB. Dairy cows management and product processing is labor intensive and producers used family labor during production, processing and marketing dairy products. The cost as well as benefit associated with owning dairy cows was not included in benefit distribution among the actors. This indicates farmers are not benefited along butter and cheese value chain. The result revealed that the total share of gross marketing margin and share of profit margin of producer is 62.5% and 54.2% respectively. Next to producers, local collectors got highest gross marketing margin with the share value of 21.5%. The share of profit margin of local collectors, wholesalers and retailers were 18.8%, 12.1%, and 14.75% respectively from the sales of 1 KG butter. This asserts that local collectors benefit more than other actors in marketing of butter.

Table 4: The benefit distribution along butter marketing among actors

Items (Birr/ 1KG butter)	Producers	Local collectors	Wholesalers	Retailers	Horizontal sum
Purchasing price	-	162.5	187.5	207.5	557.5
Production cost	100				100
Marketing cost					
• Rope	2	2.5	2	-	6.5
• Packaging material cost	2	2	2.10	1.50	7.6
• Transport cost	5	2	2	1.25	10.25
• Labor cost		-	2	-	2
Total cost	109	169	195.6	210.25	683.85
Revenue	162.5	187.5	207.5	225	782.5
Gross marketing margin	**62.5**	**25**	**20**	**8.75**	116.25
% Share of margin	53.8	21.5	17.2	7.5	100
Profit margin	**53.5**	**18.5**	**11.9**	**14.75**	98.65
% Share of profit	**54.2**	**18.8**	**12.1**	**15**	100

Source: Own survey result (2017)

Table 5: An average benefit distribution in cheese marketing among actors

Items (Birr/KG of cheese)	Producers	Retailers	Horizontal sum
Purchasing price	-	70	70
Production cost	30	-	30
Marketing cost			
• Packaging material cost	3	3	8
• Transport cost	2	2	12
• Labor cost	2	-	2
Total cost	37	75	112
Revenue	70	85	155
GMM	40	15	55
% Share of margin	72.7	27.3	100
Profit margin	33	10	43
% Share of profit	76.7	23.3	100

Source: Own survey result (2017)

3.6. Constraints and opportunities of butter and cheese value chain in Loma Woreda

Out of 138 respondents, 42% revealed that lack of information among actors constrains dairy production and its products marketing in study area. The survey result indicated in Table 10 reveals that dairy production, processing and marketing among actors in butter and cheese value chain constrained by the following factors.

Table 6: Major constraints identified along butter and cheese value chain in study area

Major constraints	Frequency	Percent	Rank
Lack of milk value addition experience	16	11.6	5
Poor milk and milk products processing facility	30	21.7	2
Shortage of improved feeds	10	7.2	6
Lack of flow of information among actors	42	30.4	1
Lack of well developed dairy farmers cooperatives	21	15.2	3
Lack of access to credit	19	13.8	4

Source: Own survey result (2017)

The major opportunities enhancing the production, processing and marketing in study area were increasing demand of butter and cheese, availability of grazing land, access of input supply, absence of milk collection center and access of extension service which accounts 27.5%, 23.9%, 21.7%, 16.7% and 10.1% respectively. Because of the absence of milk collection center milk was processed at household level thereby butter and cheese were produced.

Table 7: Major opportunities identified along butter and cheese value chain in study area

Major opportunities	Frequency	Percent	Rank
Increasing demand of butter and cheese	38	27.5	1
Availability of grazing land	33	23.9	2
Absence of milk collection center	23	16.7	4
Access of input supply	30	21.7	3
Access to extension service	14	10.1	5

Source: Own survey result (2017)

4. SUMMARY CONCLUSSION AND RECOMMENDATIONS

4.1. Summary and Conclusion

This study was aimed with specific objectives of identifying actors with their functions along butter and cheese value chain, estimating cost and benefits distribution along butter and cheese value chain and to identify the constraints and opportunities along butter and cheese value chain. Thus, data were gathered from both primary and secondary sources. The primary data were collected from individual interview using pre-tested semi-structured questionnaire and checklist. The primary data for this study were collected from 138 producers, 24 traders and 12 consumers from Loma Woreda, Dawuro Zone Southern Ethiopia. Descriptive statistics and marketing margin formula were used as method of data analysis.

According to the result obtained; input suppliers, producers, local collectors, whole sellers and retailers were direct actors along butter and cheese value chain in study area. As the result indicated; the large and small volume of cottage cheese were sold to consumers through producers-consumers and producers-retailers-consumers. Local collectors have the better share of profit margin next to producers than wholesalers and retailers from the sales of 1 KG butter. Next to producers, local collectors got highest gross marketing margin. In the study area most of dairy producers add value on milk traditionally through indigenous knowledge. Still there is extension service gap on milk value addition in study area. According to the survey result, five main alternative channels were identified for butter marketing in study area. It was estimated that on average **72,000** KG of butter were marketed in Dissa, Gessa, Loma Balle and Yallo markets in 2016/2017 where as on average **2,070.5**KG of butter are supplied by sample respondents.

In addition to butter production, on average 30,420 KG of cottage cheese were supplied to the same market center in study area in 2016/2017. Out of total quantity supplied, on average 1500 kg of cottage cheese were supplied to market by sampled households. The result revealed that the total share of gross marketing margin and share of profit margin of producer is 62.5% and 54.2% respectively. Next to producers, local collectors got highest gross marketing margin with the share value of 21.5%. The share of profit margin of local collectors, wholesalers and retailers were 18.8%, 12.1%, and 14.75% respectively from the sales of 1 KG butter.

The opportunities and constraints were identified in butter and cheese value chain in study area at farm level. Accordingly, out of 138 producers, 42% of the respondents assert that lack of information among actors constrains dairy production and its products marketing in study area. The major opportunities enhancing the production, processing and marketing in study area were increasing demand of butter and cheese, availability of grazing land, access of input supply, absence of milk collection center and access of extension service which accounts 27.5%, 23.9%, 21.7%, 16.7% and 10.1% respectively. However, the government policy dimension on commercialization of agriculture and major emphasis on dairy sector stimulates the intensive involvement of small-scale farmers as well as traders in butter and cheese value addition and marketing.

4.2. Recommendations

The result of this study revealed that farmers' market participation in cheese marketing is very low in the study area. This is because of family size at households level is under dependent age group thereby consuming cheese at households' level. There are poor storage facility of cheese and easily perishable if stored for long time. Local collectors of butter and cheese more benefits along the value chain thereby pro-poor strategies should be taken to benefit producers at farm level. Furthermore, training value chain actors on value addition; dissemination of improved milk processing facilities, creating access to improved feed, access to market information, establishing new farmers cooperatives and strengthening the exiting farmers cooperatives are recommended to step up the development of dairy sector particularly butter and cheese value chain in the study area. In addition to this; handling of dairy products to increase consumers preference towards value added milk products are key to the development of the dairy value chain thereby improving butter and cheese production system. Further, examining on economic analysis of fluid milk consumption at household level and butter and cheese marketing at farm level in-depth and constraints and opportunities in cheese marketing in commercialized way for along the whole value chain should get attention.

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