Economic Analysis of Milk Marketing in Sindh Province: A Case Study of District Dadu

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Abstract

In order to analyze milk marketing in Sindh province, a survey study was carried from distrct dadu, during the year 2014. Primary data were collected from 100 respondents which included 25 milk producers, 25 milk traders, 25 milk hawkers and 25 milk retailers. The results revealed that the average price of milk paid by a milk trader to the milk producer was Rs. 47/liter, while the marketing costs were Rs. 1.45/liter which were incurred on the processing, transportation and taxation etc. Hence, the total outlay of the milk was enumerated to be Rs. 48.45/liter and subsequently sold to milk hawker at the rate of Rs. 51/liter. The marketing margin and net margin of milk trader were estimated at Rs. 4/liter and Rs. 2.55/liter, respectively. The milk hawker sold the milk at the rate of Rs. 56/liter to retailer and the retailer sold at the rate of Rs. 60/liter to the consumer. Marketing expenditures incurred by hawker and retailer were estimated at Rs. 1.55/liter and Rs. 2.25/liter, respectively. Marketing margin and net margin of hawker were found to be Rs. 5/liter and Rs. 3.45/liter. The breakdown of consumer's rupee revealed that 78.33 percent was taken by the milk producer, while the shares of milk trader, milk hawker and milk retailer were 6.67, 8.33 and 6.67 percent, respectively. It was concluded that marketing system for milk was not identical; the marketing structure was found completely non-commercialized. The milk traders were engaged in distinct types of operations; they purchased and processed milk and sold it to milk hawker, and also to the retailer. Similarly, milk hawker purchased milk from producers and also from milk trader, and sold to retailers and also to consumers. Finally, the retailers purchased milk from hawker and also from milk trader and sold it to consumers..

Keywords: Economic analyses, Milk Marketing, marketing system and. Dadu and Sindh

1. Introduction

Milk plays a vital role in building a healthy society and can be used as vehicle for rural development, employment and slowing down the migration of the rural population. Milk is produced for meeting one's own household needs, either in the form of milk or in the form of products made of milk (yogurt, butter milk or lassi, butter/butter oil or ghee); and majority of the rural households possesses milch animals to meet their daily food requirement; and milk or milk products are rarely sold. Milk and milk products provide nearly one third of world's intake of animal protein. This may not be true for Pakistan where milk provides more than half of the 17.4 9 of animal protein available for each person daily. The total milk yield in Pakistan is 33.20 million tons and entire dairy processing industry was using only about 15% of it. The importance of milk as a cash crop is always neglected in the past. While comparing the value of milk with other cash crops, it has been stated that milk has a value about 60% higher as compared to wheat and cotton together. If per capita availability of milk (169 litres) is right then it should be visible in our daily food items. Point to understand is whether our common man is consuming such amount of milk or he is striving for minimum milk quantity needed for daily requirement. It indicates that we are still not self-sufficient in milk. Furthermore, quality of available milk is still a big question.

The gross milk production in Pakistan during the year 2013-2014 was 50,990 thousand tons and the contribution of cow to this total milk production was 18,027 thousand tons and buffalo contributed 31,252 thousand tons. The milk produced by sheep and goat during the current year was 38 thousand tons and 822 thousand tons, and the contribution of camel was 851 thousand tons, respectively (GOP, 2014).

It is acclaimed that Pakistan is at 4th position in milk producing countries of the world. Pakistan is 2nd in buffalo milk production and 12th in cattle milk production (Khan, 2008). Changing production trends, availability of hygienic milk, high prices and increasing demand of this commodity are prime factors which lead towards the formulation of policies for milk value chain. Milk and milk products represent 27% of total household expenditure on food items in Pakistan. Per capita availability of milk in Pakistan is 169 litre/annum. About 80 thousand tons of dry milk, worth rupees 1213.5 million was imported to Pakistan during 1999-2000 to meet local demands of milk. The quantity of imported milk varies during different years. Improper marketing channel is one of the major constraints of dairy sector in Pakistan.

Milk production and marketing in Pakistan is dominated mainly by the informal private sector, consisting of various agents, each performing a specialized role at a particular point in the supply chain. These consist of producers, collectors, middlemen, processors, traders, and consumers. Only 3-5% of total production in the country is marketed through formal channels. The remaining 95-97% is produced and marketed in raw

form by informal agents in the marketing chain.To get a comprehensive understanding of the opportunities and problems associated with the dairy enterprise in Pakistan, it would be important to give here an overview of the role being played by both the informal and formal channels. Most of the dairying process exists at subsistence level in Pakistan and are responsible for 70% of the milk produced. Subsistent farmers maintain 1-5 milk producing animals on his farm. These animals produce milk which is used to fulfill daily household requirements and excessive amount is sold to run daily household activities.

Milk marketing in rural areas is mainly exploited by middlemen and smallholders have to rely on middlemen to market their produce. Middlemen always have a monopolistic approach and can exploit farmers by paying low prices, executing binding sales contracts and not passing on gains when prices are seasonally high in response to lower supply. On the other hand, in their capacity, middlemen also gives the advantage of providing support services in the form of credit, health care and other necessary services to the farmer community to strengthen their contacts. As a result of a complex collection and distribution system, the current milk quality in Pakistan is below international standards. The average milk price is generally associated with the availability and quality of milk as well as the season. Variation of farm gate price is not linked to the quality of the milk. It is rather determined by two factors. One is the financial arrangement between the buyer and seller. The second factor is the geographical location. Currently, there are no policies to regulate milk prices at the farm level. The middlemen, contractors, Gawalas (local milk collection, transportation, and distribution people) processors, processed unpacked milk, loose milk, and processed milk are the segments of the dairy value chain.

Around one third of the total milk produced by the rural families' flows out to urban consumers and processing industries. More than half of the milk collected by urban traders and processing industries comes from small herd families. The family's decision to sell milk and the amount to sell is clearly poverty driven. Small farmers sell milk only because they have no other source of cash income. Milk in urban areas is accessible to common consumers in two ways: loose, unprocessed milk and packed, processed milk. Each has its own price regime. The unprocessed milk passes through the middle persons before it reaches the urban retailer. The price of milk increases by one rupee per litre at every stage of sale. The 'Gawalas' generally have undocumented contracts with farmers for regular milk supply. In view of the facts stated above, the study was carried out to analyze the milk marketing system in Sindh province of Pakistan.

2. REVIEW OF LITERATURE

Okuthe et al. (2004) milk production and marketing in western Kenya highlands and qualitative methods were found to be more flexible and cheaper than the quantitative methods by a ratio of between 2.19-2.0. The two methods were found to complement each other. Qualitative studies could be applied in preliminary studies before initiating more specific follow up quantitative studies.

David and Machado (2005) measured the economic efficiency of Portuguese dairy farms and suggested an average efficiency of 60 to 70 percent. The relationship between efficiency and farm characteristics is explored. Efficiency appears to be positively correlated with farm size, but independent of degree of specialization. The implications of the results for alternative development strategies are considered.

Gowda and Prasad (2005) assessed milk marketing and reported that no consideration was given to milk quality in terms of analysis of macro and micronutrients in the milk, the customer preferred to purchase milk with high fat content and low in price. While considering the effect of type of roughage. Average milk composition also did not differ except that of milk fat which was significantly (4.7 and 4.5%) low in cows fed rice straw. The overall results of this study have indicated that finger millet straw is a better source of dry fodder than rice straw and while feeding rice straw as the sole roughage to dairy cows there is need to supplement additional calcium as this could be one of the limiting nutrients for milk production.

Hasni (2005) studied marketing of milk in Quetta district of Balochistan and concluded that the retailer earned the maximum percentage i.e. 10.01 percent from the sale of milk, while minimum percentage 5.88 percent received by the wholesaler from the sale of milk. The producer received 76.89 percent, wholesaler 15.79 percent and retailer/final seller 7.30 percent share in the consumers' rupee. The analysis of breakdown of the consumers' rupee revealed that the retail price being Rs. 66,197,587 per year paid by consumer. Cost benefit analysis showed that on one rupee investment for milk, the dairy farmer/producer pocketed the highest benefit i.e. Rs.0.38, whereas, wholesaler received the lowest Rs. 0.05. The retailer earned Rs. 0.10 as against the cost Rs.1.00.

Hossain et al. (2005) assessed marketing of dairy milk in Bangladesh and reported that the net return was Tk. 17.7/cow/day from crossbred in the study area and cost benefit ratio was 1: 1.26. Incase of small dairy farming, the farms were facing a lot of problems such as scarcity of feeds and fodder, high price of concentrate and lack of technical knowledge. Although the dairy cow owners face problems, the study observed that there were potentials particularly for the small dairy farmers. The small farmers by keeping 8-10 crossbred cows could earn a modest living by adopting small dairy farming as a profession.

Markand (2005) analysed marketing of milk in district Sukkur and concluded that the gross income per

animal per year remained 52418.09 against the expenditure of Rs. 29139.88 which accumulated the net returns of Rs. 23278.20 per animal per year. Cost benefit analsis showed that farmer earned 1.76 rupees when he incurred one rupee/year/farm and the farmer/producer received back the capital investment in 5.45 years. It was observed from selected farms of Sukkur district during the study year the farmer earned 1.76 rupees when he incurred one rupee/year/farm. The capital turn over on dairy farms is defined as the return of capital investment in time. The data presented in table-19 revealed that he farmer/producer received back the capital investment 5.70 years, 4.84 years, 7.53 years and 3.76 years, years/farm at Sukkur city, Rohri, Pano Akil and Saleh put talukas, respectively. In this way average producer of Sukkur district could turn over the capital within of 5.45 years.

Syed (2005) studied the marketingof milk in Quetta district of Balochistan and reported that milk production per buffalo per day per farm was 11.49 liters on small farms, 11.56 litres on medium farms and 12 litres on large farms. The gross income per month per buffaloes per farms from sale of milk, Farm Yard Manure and young calves was Rs.7016.22 on small farms, Rs.7026.66 on medium farms and Rs.7286.83 on large farms. The net return per month per buffalo was Rs.1489.79 on small farms, Rs.1497.5 on medium farms and Rs.1515.09 on large farms. The analysis of economic efficiency revealed the large dairy farms were economically more efficient amongst the three categories of farms studied.

Demircan et al. (2006) analyzed marketing of milk in Turkey and reported that the profit was not high enough to sustain a farm household's living. In the study area the retail sale price of 1 kg of milk was 0.468 YTL and production cost of 1 kg milk was 0.455 YTL. Hence it could be said that the profit margin (0.013 YTL/kg), defined as the difference between these two prices was small. It was found that besides milk production, the cattle value appreciation increased farm income.

Khan (2006) studied the marketing of milk in D.I.Khan District and reported that the gross income obtained from milk and other sources (sale of FYM, culled animals, empty bags and bulls service charges) were Rs.1031793 /farm/year (37656/ animal/year).The net margin obtained by farmer/ producer averaged Rs.213756/year. The average milk sold by Wholesaler & Retailer was 236146 liter/wholesaler/year and 184986 liter/retailer/year Rs.15/liter and 17/liter respectively. The average net margin obtained by wholesaler and retailer from sale of milk were Rs.6021512/year and Rs.15220788/year respectively. The break down of consumer's rupees analysis on the sale of milk showed, 38 % and 62% share received by wholesaler and Retailer respectively.

Lohana (2006) carried out studies on the marketing of milk in district Jamshoro and found that the gross income per buffalo per farm from sale of milk, farmyard manure and young calves was Rs.48241.20 on small farms, Rs.64195.60 on medium farms and Rs.88367.00 on large farms. The net return per buffalo was Rs.20728.00 per annum on small farms, Rs.28622.00 on medium farms and Rs.44665.6 on large farms. It is conducted that economically, large dairy farms are relatively more efficient than small and medium dairy farms in District Jamshoro. The input output ratio for small medium and large farms was 1:1.75, 1:1.80, 1:2.02 while the cost benefit ratio was 1:0.75, 1:0.80, 1:1.022 respectively. The capital turnover indicates that the dairy farmers in peri-urban area of Jamshoro will receive their capital investment back within 3.83 years at small farms, 6.91 years at medium size farms and 7.84 years at large size farms.

Memon (2006) investigated the marketing of milk in Karachi and reported that the small farmers earned net returns Rs. 33249.09, medium size farmers Rs.35597.42 and large size farms Rs. 34881.03 and net returns on all classes of farms averaged to Rs. 34575.85 per animal which were eventualized on earning gross income of Rs.64659.92 per animal. Thus, the input output ratios were 1:2.20 on small group of farms, 1:2.22, on medium farms, 1:2.04 on large farms and 1:2.15 on all groups of farms, while the cost : benefit ratio was 1:1.20 on small farms, 1:1.22 at medium size farms, 1:1.04 on large farms and 1:1.15 on all classes of farms. The rate of turnover indicated that the entrepreneurs would be able to recoup their investment within 4.72 years on the small farms, 5.32 years on medium farms and 5.17 years on large farms. It is concluded that economically the large dairy farms are high profitable in terms of gross income, input out put ratio, cost benefit ratio and net returns.

Memon and Khushk (2007) examined the marketing of milk in Hyderabad district (Pakistan) and reported that the net return of selected dairy farms were analysed and found that average net return was Rs 67134, 390482 and 1346580 per year. There are number of technical and socioeconomic constraints which limit the productivity of the dairy farms in Sindh such are shortage of feed, high mortality, poor genetic potential, high input cost and inadequate marketing facilities.

Moaeenuddin and Babar (2006) concluded that the buffalo is the preferred dairy animal due to greater milk yields and higher fat contents. Preference for cattle was very low that is only 13%. The overall average of number of dairy animals was 1.8, 5 and 8.4 dairy animals in small, medium and large class respectively. Most of the farmers kept Sahiwal cattle for milk production. The small farmers groups were producing less milk as compared to others. The average milk consumption for domestic needs was 50% of total milk produced. Mostly farmer sell the milk to Dhodi (middle man), village shops and teashop to meet daily household expenditures.

Hanchar (2007) identified the factors that limit the milk marketing ability to achieve above average, but

not necessarily the top milk production. They are able to successfully implement changes to the farm business that address limiting factors, while maintaining costs per cow near average. Although monitoring of all expense items is valuable, results suggest that focusing initially on the following expense items might prove useful: dairy grain and concentrate purchases; hired labor; interest paid; machinery repairs and farm vehicle expenses and replacement livestock purchases.

Alvarez et al. (2008) studied the effect of intensification on dairy farming and classified a sample of dairy farms according to their level of intensification by using a cluster analysis; estimated independent stochastic cost frontiers for each group of farms to calculate their levels of efficiency. The methodology used in this study allowed for the presence of different technologies within a sample, which is a methodological issue frequently avoided in the agricultural economics literature. The empirical results showed that intensive farms were closer to their cost frontier than extensive ones, suggesting a positive relationship between intensification and efficiency.

Kumar (2009) analyzed marketing of buffalo milk in Tando Muhammad Khan district of Sindh province and concluded that the gross income at small, medium and large size buffalo diary farms was Rs. 1,599,000; Rs. 4,598,400 and Rs. 7,925,400/farm and Rs. 69,521.74; Rs. 71,850 and Rs. 72,710.09/ animal, respectively. The net returns at small, medium and large farms were Rs. 492,075; Rs. 1,384,800.50, Rs. 2,461,425/farm and Rs. 21,394.57, Rs. 21,637.50 and Rs. 22,581.88/animal, respectively. The input : output ratios were similar either calculated on the basis of per farm or per animal. The input output ratios were 1:1.44 on small size buffalo dairy farms, 1:1.43 on medium size buffalo dairy farms, 1:1.45 on large size buffalo dairy farms and 1:1.44 on all groups of farms. Similarly, cost benefit ratio on an average, were in the proportion of 1:0.44 on small size buffalo farms, 1:0.43 on medium size farms, 1:0.45 on large farm and 1:0.44 on all classes of farms. Capital turnover indicated that the entrepreneurs would be able to recoup their capital investment within 4.94 years on small size buffalo farms, 4.68 years on medium size farms and within 4.26 years on large size buffalo farms.

Memon (2008) examined the marketing of milk in district Khairpur Mirs and reported that the gross income of milk producers was Rs.780232 per farm per year against the gross expenditure Rs.627588. Thus, it accumulated net returns Rs. 148643 per farm. Gross income per animal was Rs. 53166 against the expenditure of Rs. 42985 which accumulated the net returns of Rs. 10181 per animal per year. The input : output ratio revealed that the farmer earned 0.33 (1:1.33) rupee, on his one rupee investment having cost benefit ratio of 1: 1.24. The capital turnover suggested that the dairy farmer received back his capital investment in 5.64 years.

Buriro (2009) studied the marketing of milk in district Matiari and concluded that the wholesalers sold 75000 litres of milk and retailer 13909 litres on average. The wholesaler paid Rs. 24.76/litre to producer, the retailer paid Rs. 28.36/litre to wholesaler and the end user paid Rs. 34.49/litre to retailer. The wholesaler paid marketing costs Rs. 286500 and retailer Rs. 258000. Price spread between milk producer and wholesaler was 812250 (46.41%), while the price spread between the wholesaler and the retailer was Rs. 937800 (53.59%). The total price spread from producer to retailer was Rs. 1750050 in different areas of Matiari district. In case of marketing margins, retailers earned remarkably highest percentage of marketing margins (17.76%), while the wholesaler received 12.72 % of the marketing margins; and similarly the retailer had the highest level of net margins (72.49 %) over the costs he paid, while the wholesaler had 64.72% net margins. The retailer also received a higher markup percentage (21.61%) over the price he paid for purchasing of milk, while the wholesaler received 14.58 % markup. Moreover, retailer shared 56.39 paisa of the consumer's rupee and wholesaler shared only 43.61 paisa of the consumer's rupee. The cost : benefit ratio of retailer was 1:3.63 and of wholesaler 1:2.83.

Gandapur (2009) investigated the production patterns and marketing of milk in Zhob district of Balochistan and found that the wholesaler sold milk at the price of Rs. 24.25/lit, while the retailer sold milk at the price of Rs. 26.42/lit; and wholesaler after deducting marketing costs, received a net margin of 63.18% of his marketing costs; while the retailer on absolute margin was 72.12% of his total marketing costs. Hence, the retailer got significantly better cost: benefit ratio (1:2.58) than the wholesaler (1:1.71). On spending one rupee marketing costs, the retailer pocketed 2 rupees and 58 paisa, while wholesaler on 1 rupee marketing cost earned benefit of 1 rupee and 70 paisa. The higher profits of retailer and the wholesaler than milk producer were associated with the lesser recurring costs than the milk producer.

Memon (2009) carried out economic analysis of milk production in selected areas of district Tando Allahyar using 41 dairy farms which included 20 small farms, 13 medium size dairy farms and 8 large size dairy farms. The results revealed that the gross revenue at small, medium and large size farms was Rs. 2,144,220/farm (Rs. 73,938.62/animal), 5,186,640/farm (74,094.86/animal) and 8,094,264/farm (75,647.33/ animal), respectively. The level of capital investment at small, medium and large size farms was Rs. 94,374.13; 89,875 and 87,315.42/animal; while the net returns at small, medium and large size farms were Rs. 517,722/farm (15,652.48/animal), 1,329,990/farm (Rs. 17,795.24/animal) and 2,305,809/ farm (Rs. 21,043.53/animal), respectively. The input:output ratios at small, medium and large size diary farms were 1:1.31, 1:1.34 and 1:1.39

averaging 1:1.35, while the cost : benefit ratios were 1:0.31, 1:0.34 and 1:0.39 averaging 1:0.35, respectively. The capital turnover indicates that the entrepreneurs of small, medium and small size farms would be able to recoup their capital investment within 5.28, 4.73 and 4.05 years, respectively.

Chindime et al. (2010) analyzed the current arrangements in the milk marketing structures, conduct performance as well as the competitiveness amongst these markets in Malawi. Emphasis will be on the broader analysis of market system context and incorporation of the elements in the structure, conduct and performance such as trader behavior and market dynamics to allow policy makers and all stakeholders better anticipate daily market responses.

Vedamurthy and Chauhan (2011) carried out studies a) to study the production, consumption and disposal pattern of milk, b) to examine the factors affecting the marketed surplus of milk and c) to workout the marketing efficiency of different milk marketing channels. The study found that 54 per cent of marketed surplus was marketed through un-organised sector. It was also found that marketed surplus was depending positively and significantly on the level of milk production and negatively on the family size and operational land holding. Three marketing channels namely, producer-consumer, producer-vendor- consumer and producer-vendor processor-consumer were found to be operating in the area. The price received by the household and marketing efficiency was highest in the first channel.

3. Materials and methods

The study was carried out to analyze milk marketing in Sindh province during the year 2014. The study describes the method of primary data collection using a questionnaire especially developed for this purpose and field observations. The secondary data were collected and analyzed for marketing analysis in the study area. In view of the objectives, the following methods of study were adopted.

3.1 Survey plan and ground work

Survey is considered as the best method to carry out research in the field of marketing system. The main task of the researcher in marketing is to investigate general conditions prevailing in the field. It is thus said that generalization could best be apprehended through survey method. Survey has so far, proved successful to spell out generalizations with certain aspects. General tendency of the people towards any particular aspect could be judged after recording the interviews with a sample of respondents. Collecting data through questionnaire has the advantage of being systematic, economical, quick and reliable. The major disadvantage of this method is that it focuses upon the pre-designed questions, which may lead to ignoring or non-recording other relevant information arising spontaneously during the interview. To avoid such instances, pre-testing has to be carried out before conducting the actual survey. Therefore, a separate questionnaire was designed for producers and intermediaries, and was pre-tested before finalization. Moreover, the information from secondary sources was also gathered whenever felt necessary.

3.2 Sampling technique

Conversely, in practical surveys, it is unfeasible to collect information from the entire population. Consequently, researchers are often required to make inferences based on information resulting from a representative sample of the population. The range of the sample and the quantity of variation generally affect the quantity and quality of information obtained from the study. The plan is to devise a sampling scheme, which is economical and easy to operate and provides unbiased estimates with little variance. The major characteristics of sampling theory applied in this study are discussed as follows:

The selection of a sample from the population is commonly used in economics, marketing and other disciplines because of limitations of covering the whole population. Barnett (1991) considered that cost is the main constraint in carrying out interviews of the whole population. Given disadvantage of studying population in terms of money, time, efforts and data management, a sample is a more appropriate method. Sampling not only saves cost and time but also gives more accurate results than a census. Because of limited time, finance, data management, and traveling, a decision was taken to interview 25 milk producers (a person who initially produces a commodity is called a producer), 25 milk traders (a person who carries milk from producer and deliver it to milk hawker, retailer, and sometimes a consumer), 25 milk hawkers (a person who receives milk from trader and/or milk producer), and 25 retailers (a person or agency that receives milk from trader and/or hawker). The sample size was considered adequate in terms of depth and accuracy required and in terms of the time and resources available for the research area. The respondents were selected through simple random sampling from the study area. A sample of 100 respondents in district Dadu, province Sindh was selected randomly to have information in different aspects of marketing of liquid milk. Details of agencies involved in marketing of the milk were obtained from 25 functionaries from each category i.e. selected randomly. Information regarding marketing costs, prices paid and received fresh milk by different marketing agencies was collected for the year 2014.

3.3 Data collection

The primary data were collected throughout the year 2014 using a complete set of questionnaire was prepared (pre-tested before finalization) to record the interview of the randomly selected respondents. The questionnaire comprised of the queries about marketing association of milk market, marketing cost incurred by different agencies, buying and selling price of milk through various middlemen in the system and problems faced by a variety of sellers and buyers. Secondary data were collected from various sources of government publications, literature and internet as well.

3.3.1 Marketing margins

Marketing margin is the distinction between sale prices (received price and paid price) of two or more than two agencies for equivalent quantity of a specific commodity. The formula used to calculate the marketing margins is as follows:

$$M_m = P_r - P_p$$

Where, M_m stands for marketing margin, P_r indicates received price and P_p represents paid price.\

3.3.3 Price spread

Price spread (Ps) is a term frequently been used to represent the combined margins of several types of dealers. This term also applied sometimes to designate absolute margin earned by some specific dealer. Price spread analysis helps in examining price levels of particular commodity at various stages of marketing.

Price spread consumption was made after Acharya and Agarwal (1987).

$$Ps = Pr - Pp$$

Where Ps denotes price spread, Pr stands for price received and Pp symbolizes price paid.

3.3.4 Marketing cost

In Sindh province of Pakistan, milk producers of milk think that profit of the value added due to marketing costs are mainly availed by the intermediaries. Prices fo milk, at time, consequently must be identical over physical areas plus or minus the cost of getting supplies from the area of surplus. Therefore, to examine the price efficiency, per unit marketing cost incurred by various agencies was estimated for milk.

Marketing cost is referred as allocate spending incurred by different marketing participants from the time as the milk go away the farm-gate to arrive at marketing agents for processing. Marketing costs were incurred by the produces as well as all the intermediaries participating between producers and consumers in the flow of commodity. The standard components of marketing cost included loading, unloading, transportation, commission and processing and marketing tax. These costs were computed on liter of milk. Every functionary was required regarding the amounts spent on each liter.

3.3.5 Net Margin

The net margin of a specific agency is the net earning, which it earns after paying all marketing costs. Net earnings of different market agencies concerned in the marketing of milk were computed with the following rule:

$$N_m = P_4 - P_p - M_c$$

Where, N_m stands for net margin, P_r indicates sale price, P_p represents buying price and M_e represents marketing costs incurred by the same agency.

3.3.6 Breakdown of consumer's rupee

The term "Breakdown of consumer's rupee" refers to the distribution of one unit of currency (rupee in case of Pakistan) paid by the final consumer for a commodity (in the form of expenses and margins) among producer and various marketing middlemen involved before it reach in the hands of consumer. In other words, it shows the pattern that how various intermediaries have contributed in the marketing chain (like milk trader, milk hawker and retailers etc) and the extent of profits earned by them. The following formula was used to estimate the breakdown of consumer rupee.

$$BD_{cr} = \frac{Ps}{Rp}$$

Where "BD_{cr}" stands for breakdown of consumer rupee spent on specific commodity , "Ps" indicates price spread (Ps or absolute margin both are same) and "RP" represents retail price.

3.3.7 Cost benefit ratio

It is defined as the amount received in the shape of profit on the cost of one rupee is called as cost benefit ratio.

Cost Benefit ratio was computed by the method adopted by Siddiqui et al. (1983).

Cbr	=	Nr ÷ Tc
Cbr	=	Respondents cost benefit ratio.
Nr	=	Stands for net returns.
Tc	=	Denotes total cost.

3.4 Boundaries of the research

The study was specially based on the primary data and also secondary data, the primary data were collected

through the grassland investigation and secondary data from side to side government publications, internet as well as from other literature. Due to the shortage of time and financial constraints, the sample size was set aside limited. All though collected works of data, many troubles were faced. Due to the low literacy rate among the respondents, there were not available written record about their costs and income etc. they were confused and hesitated to provide information regarding personal questions and incomes from milk because of unsure about the purpose of the study. They were explained about study, yet great care was taken to collect reliable information. The information collected was based on the memories and estimates of the respondents.

The data so collected were analyzed and interpreted on the basis of aforementioned formulae. Moreover, in view of the research findings, the conclusions were drawn and suggestions were offered for improvement.

4. Results

In order to analyze milk marketing in Sindh province, a survey study was carried from distrct dadu, during the year 2014. The results presented in this chapter include reviewing the present status of milk production in Sindh province of Pakistan, marketing systems, their strategies, structure, channels, marketing cost as well as margins of milk from survey field.

4.1 Sample size

A sample of 100 respondents in Dadu district of Sindh province was selected randomly to have information in different aspects of marketing of liquid milk. Details of agencies (Table-1) involved in marketing of the milk included 25 milk producers, 25 milk traders, 25 milk hawkers and 25 retailers. The milk producers were especially included in the study to justify the price paid by various liquid milk marketing agencies/intermediaries.

Table-1 Sample size used in the study

Sr#	Market intermediaries	No. of respondents selected
1	Milk producers	25
2	Milk trader	25
3	Milk hawker	25
4	Milk retailer	25
	Total	100

4.2 Situation regarding milk production in the Sindh province

Milk plays key role for the survival and well-being of the resource poor milk producers, who have a long tradition of milk has, however, not been documented properly. In spite of being a traditional production system, it does not find a place in the agenda for livestock development that focuses on progressive activities through modern technologies. To overall objectives, this research describes the structure, channels, systems and functions used in the marketing analysis of fresh milk. Besides, it examines the relationship that exists between the producers and the middlemen with regards to marketing practices of milk. Pakistan is the world's fifths largest producer of milk but has a very small proportion in value-added dairy products.

Sindh province contributes considerably to the total milk supplied in Pakistan from a large herd of cattle and buffalo. There are numerous distortions in its supply structure in Sindh province which disrupt the competitiveness of the industry. There includes the presence of a large herd of milk producing buffalo in the peri-urban areas of Sindh where feed is brought to them from rural areas-with economic, social and environmental costs and a long and inefficient marketing chain that leads to the adulteration of milk where the quality is generally poor. Competitiveness Support Found (CSF) can assist with improving this situation in two aspects: first through promoting and developing buffalo feedlots outside the peri-urban areas of Sindh (i.e. in the feed areas) and by funding in the shape of supply of cooling tanks for the milk producers/farmers in Sindh

4.3 Marketing Information System and Research

Data is needed at all levels in the marketing channel. Before one decided to process and market fresh milk, it is important to locate the potential market with reference to particular product (fresh milk) it is very crucial because consumers may not be able to buy fluid milk unless it is supplied in the right form, place and time. After that it requires securing and utilizing of market information. In the absence of comprehensive marketing information system, such as the case in many developing countries, it may be necessary for each individual/organization to organize the collection and dissemination of such information. Short market surveys and/or consumer studies are useful tool for collecting such information.

4.4 The milk marketing system

There is a need for comprehensive investigation of the markets existed for milk before initiating any research activity. For most milk strategies, the buyer must be relatively close to the site. If not, the moving costs will eat

up potential canings. While shortage in milk production might be because of milk produce without time-honored markets, to overcome this problem, it is likely to develop regional markets of milk over time like vegetable producers, and the fiber industry etc.

In the areas where milk is an ancient custom are likely to have markets for all types of milk products (fluid milk and dairy industries). Without such a milk marketing infrastructure already in place, it is risky to commit to a milk process. New markets will develop in those regions where milk is conventional. It is off-course difficult to predict production planning of milk fro ten years or more in the future. Watchful thoughts must be given not only to the marketing plan, but also to the milk production plan as well.

The sale of the milk can be generated by improving quality and care of the milk (fluid milk or fresh milk) and if intelligently marketed. This part of the planning process requires to advice a milk professional through a government agent or a private consultant. Renumber that milk buyers are expected to have their own best safety in the mind, but producers who want to add value to their milk have some choices. Natural and socioeconomic factors are all available in Dadu district of Sindh to develop milk based industries or forms through increasing fluid milk production. However milk trade is carried out on scientific lines and supply of milk and milk products does adjust ever increasing demand for these products. Increasing growth rate in population has resulted in enhancing per capita consumption of fluid milk.

4.5 Marketing structure exploration

Market structure lies on association of a market, environment of struggle and price activities within market. Moreover, market behaviour studies price policy of a business, aims to follow and useful methods to charging price quantity to be produced and sale encouragement cost incurred. Scherer and Ross (1990) added research in the development of production facilities and legal tacties market performance. They concluded that market performance mostly depends on the parameters like production price, selling cost, and behavior of sellers and buyer etc. market structure refers to the organizational characteristics of a market for the particular purpose, to those characteristic which determine the relationship of sellers and buyers in market to each other (Mohyu-ud-Din, 1998).

4.6 The milk marketing channel

A study of milk marketing system in Dadu district depends on the involvement of the intermediaries between producer and consumer, the following marketing channels were observed as intermediaries.

following marketing channels were observed as intermediaries.
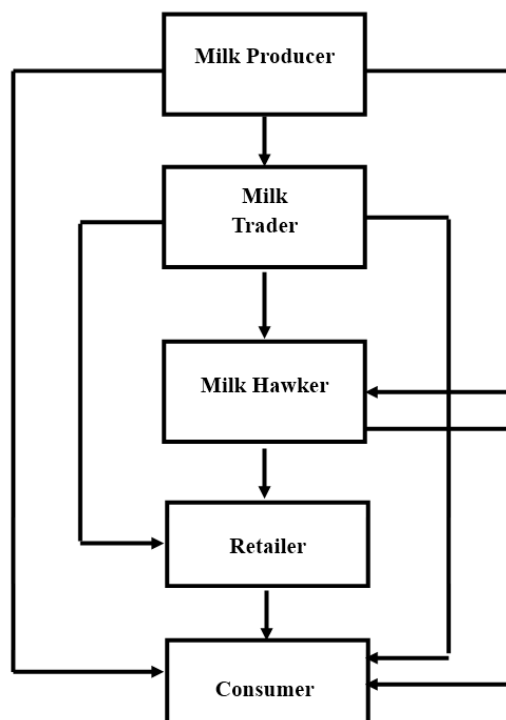
Marketing channels of fluid milk in the peripheral areas of Ghotki town

The number of intermediaries involved will have a bearing on both producer and consumer milk prices. The shorter the channel the more likely that the consumer prices will be low and consequently the producer will get a higher return.

From the consumer point of view, as the marketing chain is short the retail price will be lower and affordable as well. The figure explains the different intermediaries involve in the marketing of fluid milk. The figure shows that milk is distributed from producer to consume directly, or by means of milk traders, hawkers and finally retailer. It is also clear from the figure that mostly 2 to 3 channels lie in the distribution of fresh milk from producer to consumer.

4.7 Marketing margin
In the analysis of milk prices, there are many complications in formulating the standard prices of milk which include day to day variation in milk supply and difference in quality of milk supplied. These problems were solved by collecting segregate data regarding quality, time and region. The information on the price of milk was collected on per liter basis. Information on milk purchase and sale prices at different stages of milk marketing is presented in Table-1.

The results presented in table revealed that overall the milk prices at retailer level Rs. 60.00 per liter were considerably higher than received by the producer Rs.47.00 per liter. The main jumps in milk prices were observed from producer to milk trader, milk hawker and milk retailer. The producer brings production from farm to market and later intermediaries carry milk from market to retailer, consumer or near the door-step of consumer. The purchase price of milk trader to pay the producer for one liter milk was Rs. 47.00, while milk trader paid Rs. 51.00 per liter; while the retailer spent Rs. 56.00 for purchasing one liter liquid milk. However, the consumer paid Rs. 60.00 for purchasing one liter milk from the retailer.

Table 2. Average buying and selling price of milk by intermediaries in the district Dadu of Sindh province

Market intermediaries	Buying price (Rs/liter)	Selling price (Rs/liter)
Milk producer	--	47.00
Milk trader	47.00	51.00
Milk hawker	51.00	56.00
Milk retailer	56.00	60.00

4.8 Price spread
The price spread denotes the differences between the price paid by the consumer and price received by the producer. It involves not only the assessment of actual price at various stages of marketing channels, but the cost incurred in the processes of movement of the product from the farm to the consumer and margin of various intermediaries. The analysis of price spread as reported in Table-3 showed that the price spread between milk producer and the milk trader was estimated to be 30.77 percent; and between milk trader and milk hawker, the price spread was 38.46 percent of the total price spread. However, price spread between milk hawker and milk retailer was estimated to be 30.77 percent of the total price spread.

Table 3. Price spread on marketing of fresh milk for various intermediaries.

Agent	Price paid Rs.	Price received Rs.	Price spread	Percentage
Milk trader	47.00	51.00	4.00	30.77
Milk hawker	51.00	56.00	5.00	38.46
Milk retailer	56.00	60.00	4.00	30.77
Total	-	-	13.00	100.00

4.9 Marketing costs
The price of a product in the market is an important factor influencing consumers demand. Hence, to be marketable, dairy farm of fresh milk must be competitively priced. This implies that the costs involved in the processing, transportation and marketing of fresh milk must be kept as low as possible. Generally, the price of a dairy farm product involves numerous costs. To arrive at a realistic costing of a product, all those elements involved at each stage were carefully calculated on a liter basis. Table-4 opted some of the marketing costs computed at each stage of the marketing chain based on the expenses incurred. Overall, milk trader was found to be spending Rs. 1.45 per liter. Likewise, the marketing costs of milk hawker and retailer were estimated as Rs. 1.55 and Rs. 2.25 per liter, respectively. The marketing costs of retailer were relatively higher than milk trader and milk hawker and associated with involvement of his shop rent, electricity and other fixed costs.

Table 4. Marketing costs (Rs/liter) incurred on fresh milk by middlemen in the district Dadu of Sindh province

Sr#	Market intermediaries	Marketing cost (Rs/liter)
1.	Milk producer	--
2.	Milk trader	1.45
3.	Milk hawker	1.55
4.	Milk retailer	2.25

4.10 Marketing margins

The marketing margins refer to the difference between the values of physical quantity equivalent at different levels of marketing. These actually help in determining the shares received by various agencies for their services in the marketing of some specific commodity. It also helps to formulate and implements appropriate prices and marketing policies. It was estimated firstly by computing the absolute margin, which is essentially same at the difference between the price paid and received by any specific marketing agency. In order to measure the business efficiency, the marketing margins earned by various agencies participating in the marketing of liquid milk in in the district Dadu were calculated and these are shown in Table-5. The table depicted that the milk hawker got more marketing margin/absolute margin i.e. Rs. 5.00 per liter of milk as compared to milk trader and milk retailer who receives equally Rs. 4.00 per liter.

Table 5.   Marketing margins/absolute margin earned by various agents of fresh milk in the district Dadu of Sindh province

Agent	Paid price (Pp)	Received price (Rp)	Marketing margin/absolute margin (Pp−Rp)
Milk Producer	--	47.00	--
Milk trader	47.00	51.00	4.00
Milk hawker	51.00	56.00	5.00
Milk retailer	56.00	60.00	4.00

4.11 Net margins

The net margin of a specific agency is the net earning, which it gains after paying all marketing costs. The net margin of the milk trader was calculated on a per liter basis. Similarly, the net margins of hawker, and retailer were calculated. It can be seen from the data in Table-6 that among all the intermediaries, the milk hawker achieved higher net margin as compared to milk trader and milk retailer.

Table 6.   Net margin earned by various agents of fresh milk in the district Dadu of Sindh province.

Agent	Paid price (Pp)	Marketing cost (Mc)	Received price (Rp)	Net margin (Nm=Rp−Pp−Mc)
Milk Producer	--	--	47.00	--
Milk trader	47.00	1.45	51.00	2.55
Milk hawker	51.00	1.55	56.00	3.45
Milk retailer	56.00	2.25	60.00	1.75

The data in the above table indicate that the average price of Rs. 47.00 per liter was paid by milk trader to the producer; whereas he incurred marketing costs of Rs. 1.45 per liter. The marketing costs include average costs of processing, transportation, marketing tax and others. Milk trader received Rs. 51.00 per liter, thus his net margin was Rs. 2.55 per liter. Likewise, milk hawker and retailer paid Rs. 51.00 and Rs. 56.00 per liter and spent Rs. 1.55 and Rs. 2.25 per liter and finally received Rs. 56.00 and Rs. 60.00 per liter, so their net margins were Rs. 3.45 abd Rs. 1.75 per liter, respectively.

4.12 Breakdown of consumer's rupee

The consumers' one rupee expenditure on a particular commodity is divided between the producer and other marketing intermediaries. This was calculated by expressing the absolute margin of the middlemen as a proportion of the retail price of the specific commodity on per litter basis. When producer sold the milk to trader, his share in consumers' rupee was reported to be greater i.e. 78.33 percent as compared to milk trader, milk hawker and the milk retailer, whose shares were observed to be 6.67, 8.33 and 6.67 percent, respectively (Table-7).

Table 7.   Breakdown of consumers' rupee of producer and other intermediaries for marketing of fresh milk in the peripheral areas of district Dadu of Sindh province.

Producer/Intermediaries	Net return (x) Rs.	Breakdown	
		Per rupee BD=Ps/Rp	BD=PS*100/Rp
Milk producer	47.00	0.783	78.33
Milk trader	4.00	0.066	6.67
Milk hawker	5.00	0.083	8.33
Milk retailer	4.00	0.066	6.67
Total price or Retail price	60.00	1.00	100.00

It can be noted that the prices were calculated on average per liter basis and only explicit cost of each intermediary was calculated but the producers' labour, monthly rents, and investment costs were not included.

4.13 Cost: benefit ratio

The cost benefit ratio is basically a very simple technique for computing the costs with the benefits. It is widely used to examine the farm efficiency. Cost benefit ratio calculated in this study is summarized in Table-8. The results revealed that, on one rupee investment on milk marketing, the milk hawker pocketed the highest benefit i.e. Rs. 2.22 per liter, whereas, milk retailer received the lowest Rs. 0.77 per liter; while the milk trader earned Rs. 1.75 per liter. Relatively lower cost:benefit ratio of the retailer was the result of higher costs involved such as shop rent, electricity bill and others etc. as compared to hawker and trader.

Table 8.   Cost : benefit ratio of intermediaries for marketing of fresh milk in in the district Dadu of Sindh province.

Agent	Net return (x) Rs.	Expenditure (y) Rs.	Cost benefit ratio (x) / (y) = z
Milk trader	2.55	1.45	1: 1.75
Milk hawker	3.45	1.55	1:2.22
Milk retailer	1.75	2.25	1:0.77

4.14 Marketing problems/constraints

The prevailing situations provoke some important questions about the improvement of livestock in the study area. For any breed improvement program genetic and environmental factors to be considered are nutrition, housing, breeding, disease control and prevention. The environmental program includes optimum feeding, standard management, and breeding to improve productivity and adoption of effective disease control measures as well. In the milk price analysis, the comparison of prices of milk with other related products in different seasons was found difficult. The major complication in formulating the standard price was day-to-day variation in milk price.The respondents engaged in the production, processing and marketing of fluid milk were generally from the weaker sections of the society. They used simple skills acquired either from their elders or doing job without experience.

Lack of public awareness about milk production and its dissemination was found in the study area. There were numerous reasons for not using modern technologies such as research, education and training, extension, policy and institutions. Among these, lack of public institutions which develop formal linkage for support and information exchange was of vital importance. The constraints indicated by respondents include lack of marketing, pack houses which are smaller in size, and, therefore, they were unable to explore new markets independently. The others constraints include limited and expansive availability of refrigerated transport facility, non-availability of good quality packing material, and shortage of other inputs needed in milk processing. The lack of credit facility was also observed as the significant problem in district Dadu and its surroundings.

5. Conclusions

The marketing system for milk was not identical; the marketing structure was found completely non-commercialized. Milk producers sold the milk to consumers directly as well as by means of intermediaries like milk trader, milk hawker and milk retailer etc. It was observed that particularly, the milk trader and milk hawker directly offer milk price to the milk producers. The milk traders were engaged in distinct types of operations; they purchased and processed milk and sold it to milk hawker, and also to the retailer. Similarly, milk hawker purchased milk from producers and also from milk trader, and sold to retailers and also to consumers. Finally, the retailers purchased milk from hawker and also from milk trader and sold it to consumers. The milk traders' net earning of milk was Rs. 2.55/liter, milk hawker Rs. 3.45/liter and net income of retailer was calculated as Rs. 1.75/liter. In this study area, it was found that, in general, the milk hawkers' net earning was higher than the other agents involved in the marketing of milk which include milk trader and milk retailer.

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