EVALUATION OF DISTRIBUTION CHANNELS FOR DAIRY FARMERS IN KIENI EAST AND WEST DISTRICTS, NYERI COUNTY, KENYA

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ABSTRACT

Dairy farming is a common income generating activity within Kieni east and west districts, Nyeri County. Majority of farmers alongside other farming activities have kept dairy cattle in this area. The milk produce gets to the market through various distribution channels. The study presents an evaluation of the various distribution channels available to the dairy farmers in Kieni east and west districts, Nyeri County. The objectives of the study were to assess how quantity of milk supplied, price of milk, access to credit facilities and collection procedures, influence the choice of distribution channels among dairy farmers within the County. The research design used was descriptive survey and focused on dairy farmers in Kieni east and west districts, Nyeri County. The data was collected using self-administered questionnaires. Various quantitative and inferential statistical analysis techniques were used to analysis the data obtained from the field. The results indicated that quantity of milk supplied by farmers and the prices of milk were the major determinants in the choice of distribution channel. Access to credit facilities had also an influence on the choice of milk distribution channel with majority of respondents indicating that credit facilities were inaccessible. Majority of respondents indicated that they use formal distribution channel to distribute their milk. Formal distribution channels were rated highly as influencing choice in distribution channel. The study concluded that absorption of the quantity of milk supplied and offered price of milk per kilogram strongly influence the choice of a distribution channel while access to credit facilities and collection procedures moderately influenced the choice of a distribution channel. The study recommends that all the stakeholders involved during the milk distribution process should play an active role to ensure that dairy farming turns out to be a profitable venture.
Key Words: Quantity supplied; Distribution channels; Dairy farmers; Strategies; Prices; Milk

1.0   INTRODUCTION

Kenya has one of the largest dairy industries in sub-Sahara Africa (Dairy Industry Report in Kenya, 2005). Dairy farming refers to rearing of dairy cattle in large and small scale for the purpose of production of milk for sale in the domestic market (Wawira, 2012). In Kenya development in the dairy industry spans over 90 years and it has undergone various evolutionary stages (Dairy Industry Report in Kenya, 2005). In the first 60 years it was dominated by the large scale farmers, while in the last 30 years small holder farmers have increasingly dominated the sector, contributing over 80% of the total milk production. In the year 1903 the government established department of veterinary services to provide research services particularly for the dairy cattle breeds being introduced from Europe and this opened up commercial farming to indigenous farmers in Kenya. In 1925, Kenya Cooperative Creameries (KCC) was established to process and market dairy products from the commercial farmers. In 1958 there was the enactment of Dairy Industry Act, Cap 336. Under the Act, Kenya dairy board was established in order to organize, regulate and develop efficient production, marketing, distribution and supply of dairy produce in Kenya. After independence in 1963, there were subsidies to European owned farms which introduced many small holder farmers into a highly subsidized dairy industry. In 1971 there was the abolition of the quota system, which ended the domination of KCC by the large scale producers followed by the revision of the Dairy Industry Act in 1984. The period between 1969 and 1992 large scale farmers dominated the market creating a monopolistic market situation. Finally in 1992 there was the liberalization of milk prices and marketing ending monopoly of KCC in urban areas, this lead to rapid multiplication of private sector dairying enterprises.

Dairy farming contributes greatly to the Kenyan economy and keeps improving the gross national product (Muriuki and Thorpe, 2001). FAO Report (2012), notes that dairy farming is the second largest contributor to GDP in the agricultural sector and it contributes greatly to the Kenyan economy and keeps improving the gross national product. There is a great demand for dairy products both nationally and internationally with almost every homestead consuming at least a litre daily (Dairy Industry Report in Kenya, 2005). To link up the dairy farmer and the consumer there needs to be appropriate milk distribution channels (Fubio, 2007). Distribution channels are one or more companies or individuals who participate in the flow of goods and services from the manufacturer to the final user or consumer (Omore A,Muriuki H,Kinyanjui M,Owango M and Staal S,1999). In relation to the study distribution channel therefore is a set of interdependent organizations that help make a product available for use or consumption by the consumer or business user. Farmers have various marketing options or channels at their disposal which include cooperatives, private dairies, vendors, hawkers, middlemen, neighbors, hotels and restaurants (Muriuki, 2003). Muriuki further asserts that distribution channels like cooperatives, private dairies, vendors, hawkers, middlemen, neighbors, hotels and restaurants have their merits and demerits and therefore farmers perceive these distribution channels differently. According to Poate (1993) farmers in Kenya seek to sell milk products at free markets rather than through conventional retail chains. Poete further notes that increasing numbers of small dairies are selling unpasteurized milk directly to the growing numbers of consumers who are willing to travel to farms to make purchases. In a study by Njaruai, (2010) informal milk outlets are known to absorb most of the milk from small holder farmers accounting to over 80% of the total milk sold. Brokers, hawkers, cooperatives and farmer groups are identified as the most important participants at the rural markets. We deduce from the above that the choice of distribution channel is determined by multifaceted factors. In regard to the study they are price, quantity supplied by farmers, collection procedures and access to credit.

There is no enough information to dairy farmers on the best milk distribution channel in Kieni sub counties of Nyeri County. In most cases farmers have opted to sell their milk to distribution channels that offer the highest price per litre of milk produced. But a distribution channel that offers the highest price is not necessarily the one that offers other economic benefits. This means there is need for dairy farmers to weigh individual economic benefits of a channel in order to strike a balance that will maximize their economic benefits. The purpose of the study was to evaluate the factors that influence the choice of distribution channels and strategies for dairy farmers in Kieni Sub Counties in Nyeri County. The study aimed at making the farmers informed about the best distribution channels and the economic benefits given by these channels. It is from this background that the study strived to establish the most profitable milk distribution channel and strategies that can be adopted by dairy farmers.

2.0   LITERATURE REVIEW

2.1   Dairy farming in Kenya

Kenya's dairy industry is regulated through the Dairy Industry Act, Chapter 336 of the Laws of Kenya, as enacted in 1958. Under the Act, the Kenya Dairy Board (KDB) was established in order to "organize, regulate, and develop efficient production, marketing, distribution and supply of dairy produce in Kenya". Hence the KDB has broad powers over the organization of the dairy marketing system in Kenya. In 1992 the dairy sector was liberalized limiting KDB's operations to processing and distribution of dairy products. As a result of market liberalization Kenya farmers are seeking to sell milk products at farmer's free market rather than through conventional retail chains. Poate   et al (1993) argues that increasing numbers of small dairies are selling unpasteurized milk directly to the growing numbers of consumers who are willing to travel to the farms to make purchases. Informal milk outlets are known to absorb most of the milk from smallholders farmers accounting for over 80% of the total milk sold. Brokers, traders/hawkers, transporters, co-operatives and farmer groups are identified as the most important participants at the rural markets (Njaruai, 2010).

From the consumers point of view, the shorter the marketing chain, the more likely is the retail price going to be lower and affordable (Ngigi , 2004). This explains why, following the liberalization of the dairy industry, direct sales of raw milk from producers to consumers or through hawkers has been on the increase despite the public health risks associated with the consumption of untreated milk and milk products. Milk producers may not necessarily benefit from a short marketing chain i.e. milk processors may be paying farmers the same price as hawkers. However, farmers sometimes prefer selling milk to hawkers because other factors such as prompt payments and inaccessibility to formal market outlets such as producer co-operatives or lack of nearby milk processing factory (Jaetzold et al 1983). The biggest disadvantage of direct milk sales to consumers by hawkers is the total lack of quality control and the frequent rate of adulteration of milk with dirty water, which is illegal. An efficient milk marketing chain is one which enables farmers to receive at least 50% of the retail price of milk. Kang'ethe (2000) argues that around a third of the total milk produced by the rural farmers 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 farmers. In urban areas, milk is accessible to common consumers in two ways: loose unprocessed milk and packed processed milk each with its own price.The unprocessed milk passes through the middle persons before it reaches the urban retailer. The price of milk increases at every stage of sale. The hawkers generally have undocumented contracts with farmers for regular milk supply. They pay farmers an average price of ksh. 20 per kg (Kang'ethe 2000). The urban retailers deliver milk door to door, by motorbike or sell it in a milk shop to consumers on the other hand farmers are inclined to sell milk for cash. These market forces operate in a totally unregulated environment where these agencies are exploiting poor farmers by offering low prices for their produce. There is also no restriction on the quantity of milk that a company can collect from an area.

2.2 Choice of Distribution Channel

Kotler, & Armstrong (2001), have defined a channel of distribution as the path or route along which goods move from producers or manufacturers to ultimate consumers or industrial users. In other words, it is a distribution network through which producer puts his products in the market and passes it to the actual users. This channel consists of producers, consumers or users and the various middlemen like wholesalers, selling agents and retailers (dealers) who intervene between the producers and consumers. Therefore, the channel serves to bridge the gap between the point of production and the point of consumption thereby creating time, place and possession utilities. He adds that a channel of distribution consists of downward flow of goods from producers to consumers' upward flow of cash payments for goods from consumers to producers and flow of marketing information in both downward and upward direction. An entrepreneur has a number of alternative channels available to him for distributing his products. These channels vary in the number and types of middlemen involved. Some channels are short and directly link producers with customers. Whereas other channels are long and indirectly link the two through one or more middlemen. These channels of distribution are broadly divided into four types

Producer-Customer: Fubio (2007), argues that the producer customer is the shortest channel in which no middlemen is involved and producers directly sell their products to the consumers. The authors assert that it fast and economical channel of distribution. Under it, the producer or entrepreneur performs all the marketing activities himself and has full control over distribution. A producer may sell directly to consumers through door-to-door salesmen, direct mail or through his own retail stores. Big firms adopt this channel to cut distribution costs and to sell industrial products of high value. Small producers and producers of perishable commodities also sell directly to local consumers.

Producer-Retailer-Customer: According to Fubio(2007), the producer retail channel of distribution involves only one middlemen called 'retailer'. Under it, the producer sells his product to big retailers (or retailers who buy goods in large quantities) who in turn sell to the ultimate consumers. This channel relieves the manufacturer from burden of selling the goods himself and at the same time gives him control over the process of distribution. This is often suited for distribution of consumer durables and products of high value.

Producer-Wholesaler-Retailer-Customer: This is the most common and traditional channel of distribution. Under it, two middlemen i.e. wholesalers and retailers are involved. Here, the producer sells his product to wholesalers, who in turn sell it to retailers. And retailers finally sell the product to the ultimate consumers. This channel is suitable for the producers having limited finance, narrow product line and who needed expert services and promotional support of wholesalers. This is mostly used for the products with widely scattered market.

Producer-Agent-Wholesaler-Retailer-Customer: This is the longest channel of distribution in which three middlemen are involved. This is used when the producer wants to be fully relieved of the problem of distribution and thus hands over his entire output to the selling agents. The agents distribute the product among a few wholesalers. Each wholesaler distributes the product among a number of retailers who finally sell it to the ultimate consumers. This channel is suitable for wider distribution of various industrial products.

2.3   Price and Channel of Distribution

According to Kotler (2001), price refers to a value that will purchase a definite quantity or other measure of a good or product. From the above definition price is determined by what a buyer is willing to pay and what a seller is willing to accept. In relation to choice of distribution channel, a farmer will choose a channel that offers the most profitable price. Kangethe et al. (2000), asserts that milk and milk products are distributed through selling directly to individuals, catering services and institutions such as schools and hospitals. The author asserts that in all these channels the sellers choose those channels that offer the most profitable price. In addition, price is normally high during the months January to early March which is usually dry season. In his study on challenges in processing and marketing of milk in semi and tropical Kenya, Kaguongo et al (1997), affirms that price of milk is highest and highly profitable during the dry season. This concurs with Ngigi M (2004), who asserts that irrespective of the channel of choice; most dairy farmers would prefer the channels that offer the most profitable price.

 Mburu et al. (2007), accords that pricing and payment of the various actors in the distribution channel are essential in determining the choice of distribution. In relation to the price, the underlying factor is the cost structure that is maintained in various distribution channels. The author argues that the distribution channel that offers the best value is likely to be chosen by dairy farmers. They assert that the distribution channel that offers more value to the dairy farmers becomes the preferred choice. The value chain is the profitable price that the efficiency of the distribution chain of choice offers. Furthermore, Njaruai, et al (2009), hold that the prices at the milk collection center are lower than at the informal market and also lower than the prices hawkers would pay farmers for their milk. The prices paid to the farmers differ substantially as per the distribution channel. The author further asserts that the relationship between price and choice of distribution channel is the quantity of milk sold by the farmer (for example price per liter the farmer receives for the milk). Therefore famers are more likely to choose a distribution that offers a financial incentive (premium price).

From the consumers point of view, the shorter the marketing chain, the more likely is the retail price going to be lower and affordable (Ngigi, 2004). This explains why, following the liberalization of the dairy industry, direct sales of raw milk from producers to consumers or through hawkers has been on the increase despite the public health risks associated with the consumption of untreated milk and milk products. Milk producers may not necessarily benefit from a short marketing chain i.e. milk processors may be paying farmers the same price as hawkers. However, farmers sometimes prefer selling milk to hawkers because other factors such as prompt payments and inaccessibility to formal market outlets such as producer co-operatives or lack of nearby milk processing factory (Jaetzold et al 1983). The biggest disadvantage of direct milk sales to consumers by hawkers is the total lack of quality control and the frequent rate of adulteration of milk with dirty water, which is illegal. An efficient milk marketing chain is one which enables farmers to receive at least 50% of the retail price of milk.

The average farm gate price of milk is ksh. 25 per litre and varies from ksh.20 to ksh.30 per litre. Variation of farm gate price is not linked to the quality of the milk. According to Ngigi (2004), it is rather determined by two factors. One is the financial arrangement between the buyer and the seller. The second factor is the geographical location. In areas where livestock rearing is difficult farmers get a better price for their milk. This is in line with the economic law of demand and supply (Ngigi 2004) .When the price of the fodder is taken into account, the net income of these farmers is not significantly higher than the income of farmers from other areas. Currently, there are no policies to regulate milk prices at the farm level. The middlemen,

contractors, local milk collection, transportation, processed unpacked milk, loose milk, and processed milk are the segments of the dairy value chain. The processed packed milk costs Ksh 35 per litre whereas the loose milk costs ksh. 24 per litre. The unprocessed milk passes through the middle persons before it reaches the urban retailer. The price of milk increases at every stage of sale. The hawkers generally have undocumented contracts with farmers for regular milk supply. They pay farmers an average price of ksh. 20 per kg (Kang'ethe 2000). The urban retailers deliver milk door to door, by motorbike or sell it in a milk shop to consumers on the other hand farmers are inclined to sell milk for cash. These market forces operate in a totally unregulated environment where these agencies are exploiting poor farmers by offering low prices for their produce. There is also no restriction on the quantity of milk that a company can collect from an area.

2.4   Quantity Supplied and Choice of Distribution Channel

Muriuki (2003), asserts that dairy farmers prefer those channels that take milk from farmers in large quantities. Muriuki, (ibid) acknowledges that dairy farmers opt for channels that absorb or take their produce (milk) in large quantities throughout the production season. Farmers also prefer those channels where the rejection rate of the commodity delivered by the farmer is very low if any. According to FAO a report (2005), dairy farmers both small scale and large scale choose distribution channels that collect milk in large quantities without pegging this on the price the milk is going to fetch. This phenomenon according to the report is common in areas where forage availability for dairy cows does not fluctuate, for example in Nyandarua, Kericho, and Kisii. This is because of farmers over production of milk and under consumption of the commodity, inaccessibility to the market during the rainy season due to poor infrastructure, inefficient transportation of raw milk and poor access to dairy markets. Weimer R (2012), found out that farmers do not actually evaluate the type of channel to use whether formal or informal markets. The author further asserts that farmers will go for those channels that absorb milk in large quantities for fear of losing the commodity due to its high perish ability levels and sensitivity in handling.

2.5   Access to Credit and Choice of Distribution Channel

Access to credit refers or encompasses loans and advances granted to borrowers to finance and service production activities related to milk production and distribution. Fubio (2007), asserts that majority of dairy farmers opt for distribution channels that provide avenues for credit facilities. Most dairy farmers prefer selling milk through cooperative societies as opposed to individuals, middlemen, and hawkers because cooperative societies offer credit facilities such as short term loans. Similarly Fubio (2007) acknowledges that market channels that provide avenues to credit facilities are becoming more and more preferred choice of distribution by small and large scale sellers. He argues that farmers in highly productive areas that have high milk production regions are likely to choose distribution networks that provide access to credit. Mburu M, and Gitu W, (2007), accords that the choice of milk distribution channel is heavily influenced by availability of credit. The authors argue that most dairy farmers prefer cooperative societies because they can access credit through them. Unlike banks that require security inform of title deeds of land, vehicle logo books as collateral, cooperatives use milk delivered as their security. Ideally, farmers prefer cooperative societies as they can access credit inform of farm inputs such as animal feeds and veterinary medicines.

2.6   Collection procedures and choice of distribution channels

According to Muriuki and Thorpe (2001), in Kenya milk is channeled through formal and informal marketing systems. The informal market involves direct delivery of milk by farmers to individual consumers in the immediate neighborhood and sales to itinerant traders or individuals to towns (Holloway, 2000). In informal market, milk may pass from producers to consumers directly or it may pass through two or more market agents. It is characterized by no licensing requirement to operate, low cost of operations, and high price for farmers since there no regulations for operation (Berhann , 2012). Berhann (2012) acknowledges that formal markets are more preferred than informal markets because they take marketable surplus that is the quantity of produce left out after meeting farmer's consumption, utilization for kind payments and other obligations. Berhann (2012), acknowledges that farmers are now opting for collection procedures whether formal or informal that adds value to the milk on delivery. This is because for the farmer value addition has a particular importance in that it offers a strategy for transforming unprofitable enterprise into a profitable one. The author further asserts that the farmer takes part in distribution, fetches a better price and again has advantage over competitors. So we infer from above that collection procedures that add value to the milk are the preferred choice of distribution channel.

2.7Milk marketing Legal and Regulatory Framework and Choice of Distribution Channel

Legal and regulatory framework refers to laws, regulations and policies that have been developed by state and local government in order to exert control over business practices (Wangechi Grace, 2009). According to Kotler (2001), the choice of distribution channel in the dairy industry is very much dependent on the operating environment. Operating environment comprises of policy, legal, and institutional framework within the marketing of milk (Njaruai, 2010). In a study by Ngigi (1995), he asserts that the government policy on liberalization of the sector in 1992 paved way for emergency of several informal milk distribution channels which comprises of hawkers, individuals and self help groups. The hawkers are traders who buy milk from farmers. According to Karanja (2003), brokers are appointed by transporters and other informal traders. They collect milk from farmers using bicycles and deliver to their principles, this mostly takes place in Nyandarua, Nakuru, and Kericho. We deduce from the above that legal and regulatory frameworks enacted by the government in 1992 paved way for more informal markets and this in turn opened the variety of choice of distribution channels for the dairy farmers. Indeed favorable operational environment spurs immergence of several milk distribution channels that dairy farmers can choose from. Conversely unfavorable environment can limit the farmers in choosing the channels since they have limited choices. For example during the pre-liberalization era the existing mode of distribution channel was through cooperatives which offered unprofitable prices. Regulatory environment is necessary for dairy farmers to have an environment that supports, is available, affordable and reliable (Njaruai 2010).

3.0   RESEARCH METHODOLOGY

3.1   Research design

This research employed a descriptive survey design. According to (Kothari, 2004), descriptive survey design is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way. The objective of descriptive research is to answer who, what, when, where, which, why and how of the subject under study.

3.2   Sampling procedure and Sample Size

Sampling is the process of obtaining information about the entire population by examining only part of it, (Kothari, 2004). He describes sampling as the procedure by which some elements of a given population are selected as representative of the entire population. The primary purpose of sampling is that by selecting some elements of a population the researcher can draw conclusions about the whole population. The significance of sampling comes from the fact that the precision of conducting the sampling procedures will determine the extent to which the research findings are general sable. The study utilized probability sampling in order to give all the individuals in the population equal chances of being selected. The research study employed proportionate stratified random sampling in the selection of the respondents because the population was not even in all the locations under study. The stratified sampling is used in order to obtain a representative sample. According to Kothari the target population is divided into sub populations that are individually more homogenous than the total population. They are called strata. In relation to this study, target population was categorized into ten sub- populations or strata referred to as observation areas. Yamane (1967) provides a formula to calculate sample sizes. A 90% confidence level since it is the most commonly used and precision level 10% are assumed.

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

Where n = the desired sample size

N = the population size. In this case 45,238

e = level of precision. In this case 0.1

$n = \frac{45238}{1 + 45238(0.1)^2} = 99.7 \approx 100$ respondents

The zone was spread across 10 locations among farms selected randomly.

 Samples were collected from the 10 locations giving a total of 100 respondents. This method and sample size has been used in various researches seeking to get farmers views on various marketing issues affecting their produce, (Musemwa 2007), researching on Analysis of cattle marketing channels used by small scale farmers in the Eastern Cape Province, South Africa.

3.3   Data Collection Method

A self-administered used as data collection instrument was used as data collection instrument both open ended and close ended questions were used. The use of questionnaires was to enable the respondents to remain anonymous and be honest in their responses (Kasomo 2007).The choice of the questionnaire was based on the fact that it is easy to analyze the collected data statistically

3.4   Data Analysis Procedure and Presentation

Data analysis consists of examining categorizing; tabulating or otherwise recombine the evidence to address the initial preposition of the study (Kasomo, 2007). The data collected was cleaned and coded. This was to enhance basic statistical analysis. The data analysis involved quantitative and qualitative methods (numerical and descriptive). Qualitative data was analyzed based on content analysis. Data was analyzed with the help of electronic spreadsheet SPSS program which has analysis tools. The collected data was presented using statistical techniques which included percentages and frequency distribution tables.

4.0   Empirical Results and Discussion

4.1   Response Rate

Questionnaires were distributed to the farmers with the help of two research assistants. The research targeted a population of 100 individuals. Out of the 100 farmers that were targeted in the study 93 completed and returned the questionnaires. Therefore the study achieved a high questionnaire return rate of 93%. According to Kasomo (2007),questionnaire rate of above 50% is considered good for a study .The authors further state that surveys that have high response rates provide a measure of assurance that the findings can be projected to a population from which the sample is drawn. The reason for this high response can be attributed to the fact that questionnaires were hand delivered to the respondents by the researcher and two research assistants.

4.2   Profile of the Respondents

The purpose of this study was to find the duration of time respondents (farmers) have been selling milk in agribusiness. As such the unit of analysis of this study was the farmers. The reason for the respondents to be profiled this way is because the more time one has been in the business the more experienced he has become. Table 4.1 illustrates the profile of respondents in the survey according to the duration of time they have been selling milk.

Table 1: Duration of Milk Sale in Agribusiness (n=93)

Duration	Frequency	Percentage
Less than 5 years	10	10.8
5 – 10 years	41	44.1
10 – 15 years	25	26.9
15 – 20 years	9	9.7
20 years and above	8	8.6
Total	93	100

Table 1 shows that 44.1% of the respondents had been selling milk for the past 5 to 10 years, 26.9% of the respondents for the past 10 to 15 years, 10.8 % of the respondents for less than 5 years, 9.7% of the respondents for 15 to 20 years and the rest for 20 years and above. It is evident that a majority of the farmers have been selling their milk for between 5 and 15 years indicating that they were vast with information concerning dairy farming and their responses could be heavily relied on.

4.3 Quantity of Milk Supplied and Choice of Distribution Channel
The study was to assess how the quantity of milk supplied by the farmers influences choice of distribution channel in Kieni districts, Nyeri county. Farmers produce different quantities of milk and the smaller the amount the more it is likely for the farmer to sell to hawkers. A farmer who produces huge quantities of milk is likely to sell to a formal channel of distribution because he is assured of continued absorption of all his milk produce. The study sought to establish quantity of milk produced by farmers. The findings are shown in the table below.

Table 2: Quantity of Milk Supplied and Choice of Distribution Channel

Category	Frequency	Percentage
Quantity of milk supplied		
0 – 9 Kgs	41	44.1
10 – 19 Kgs	25	26.9
20 – 29 Kgs	15	16.1
30 - 39 Kgs	8	8.6
40 Kgs and above	4	4.3
Choice of distribution Channels		
Formal distribution channel	78	84
Informal distribution channel	15	16

Table 2 shows that 44.1% of the respondents sold less than 9 kilograms of milk per day, 26.9% of the respondents sold 10 to 19 kilograms, 16.1% of the respondents sold between 20 to 29 kilograms, 8.6% of the respondents sold 30 to 39 kilograms and the rest sold above 40 kilograms. 84% of the respondents indicated that they preferred to sell their milk through formal distribution channels while as the rest of the respondents indicated they preferred informal distribution channels. From a pilot study carried out by the researcher on milk consumption it was found out that one household consumed 4 litres of milk per household. The excess milk was sold out. As farmers produce more milk than they can consume at home they look for a channel that can absorb the excess milk produced. The study findings agree with Muriuki (2003) who found out that dairy farmers opted for channels that absorb or take their produce (milk) in large quantities throughout the production season.

4.4 Price and Choice of Milk Distribution Channel

The farmers are usually attracted by a high price of milk per litre because it will determine the amount of anticipated profit. The study sought to seek information on whether price per litre of milk do influence the choice of a distribution channel. The responses are as shown in the Table 3

Table 3: Price and Choice of Milk Distribution Channel (n=93)

Category	Frequency	Percentage
If selling price influences the choice of milk distribution		
Yes	93	100
No	0	0
Selling price range		
5 – 14 Kshs per litre	10	10.8
15 – 24 Kshs per litre	25	26.9
25 – 34 Kshs per litre	41	44.1
35 – 44 Kshs per litre	10	10.8
45 and above Kshs per litre	7	7.5
Rating of price levels paid as mention above (Mean = 2.90, SD = 1.001)		
Very high	0	0
High	41	44.1
Average	30	32.3
Low	12	12.9
Very Low	10	10.8

Table 3 illustrates the response to the question that sought to determine if price was a determinant in the choice of distribution channel. All the respondents were in agreement that indeed the selling price had an influence on the choice of milk distribution that they choice. Majority of the respondents (44.1%) indicated that their selling price range that they had sold milk at any milking period was between 25 and 34 Kenya shillings. 26.9% of the respondents indicated their selling price to be between 15 and 24 Kenya shillings per litre, 10.8% of the respondents indicated their selling price to be between 35 and 44 Kenya shilling and 5 to 14 Kenya shillings per litre and the rest indicated their selling price was above 45 Kenya shillings per litre. Respondents were also asked to rate the price levels paid in a given selling time by buyers and the responses are shown in table 3. Majority of the respondents (44.1%) rated the price levels as high, 32.3% of the respondents rated the price levels as average, 12.9% of the respondents rated them as low while as the remaining rated the price levels as very low. With a mean score of 2.90 it is evident that that the respondents rated the price levels highly. The standard deviation of 1.001 is interpreted to mean a wide variation amongst the respondents. Farmers prefer to sell milk to that distribution channel that offers the highest price. This is in agreement with Mburu et al (2007) who assert that pricing and payment of the various actors in the distribution channel are essential in determining the choice of distribution. The author argues that the distribution channel that offers the best value is likely to be chosen by dairy farmers and it becomes the preferred choice.

4.5 Access to Credit Facilities and Choice of Distribution Channels

Most farmers would be attracted by a distribution channel that would extend to them credit facilities like soft loans, animal feeds and drugs. Therefore this study was done to find out from farmers if access to credit facilities influences choice of distribution channel, rating of access to credit as well as acceptance of credit through formal or informal distribution channels. This was analyzed using frequency rate as well as percentage rate. The study findings are as shown below.

Table 4: Access to Credit Facilities and Choice of Distribution Channels (n=93)

Category	Frequency	Percentage
If access to credit facilities influences the choice of milk distribution		
Yes	93	100
No	0	0
Rating of access to credit		
Extremely inaccessible	5	5.4
Inaccessible	41	44.1
Don't know	15	16.1
Accessible	25	26.9
Extremely accessible	7	7.5
Accept credit through formal or informal distribution channels		
Formal distribution channels	93	100
Informal distribution channels	0	0

Table 4 illustrates that all the respondents agreed that credit facilities influences the choice of a distribution channel. A majority of the respondents (44.1%) rated access to credit facilities as inaccessible, 26.9% of the

respondents rated it as accessible, 16.1% of the respondents said they did not know while ad the rest said it that credit facilities were extremely accessible. All the respondents indicated that they accepted credit facilities from the formal distribution channels. Majority of the respondents agreed that they would go for that channel that will offer them credit facilities. Wawira (2012) found out that close to 87% of milk vendors opted to choose distribution channels that offer credit facilities to them. Wawira's study acknowledges that farmers opt to choose distribution channels that have sound credit facilities or incentive policies in favour of dairy farmers, irrespective of production scale.

4.6: Types of Collection Centers and Choice of Milk Distribution Channel

Collection procedures are important in that they facilitate collection of milk from farmers. Farmers would prefer a channel of distribution that would collect all the milk, at their preferred time and place. This section shows findings to the questions that sought to get information on the type of collection centers and choice of milk distribution channel. Formal distribution channels are registered cooperative societies or companies while informal distribution channels are non conventional distribution collection avenues like middlemen, dairy centers, or milk sheds. Findings to each of them are discussed below;

Table 5: Types of Collection Centers and Choice of Milk Distribution Channel (n=93)

Category	Frequency	Percentage
Classification of distribution Channel used		
Formal	75	80.6
Informal	18	19.4
Rating the choice of formal Milk distribution channels (Mean = 2.15, SD = .607)		
Very high	5	5.4
High	25	80.6
Don't know	7	7.5
Low	6	6.5
Very low	0	0
Rating the choice of informal milk distribution channels (Mean = 3.92, SD = .368)		
Very high	0	0
High	0	0
Don't know	10	10.8
Low	80	86
Very low	3	3.2

Table 5 illustrates that 80.6% of the respondents preferred formal distribution channels while the rest used informal distribution channels. The respondents were also asked to rate the choice of formal milk distribution channels and 80.6% of the respondents rated it as high, 7.5% of the respondents did not know while the rest rated as being low. With a mean score of 2.15 it is evident that that the respondents rated the formal distribution channels highly. The standard deviation of 0.607 is interpreted to mean a small variation

amongst the respondents. The respondents were asked to rate the choice of informal milk distribution channels and 86.0% of the respondents rated it to be low, 10.8% of the respondents did not know while the rest rated it as very low. With a mean score of 3.92 it is evident that that the respondents rated the informal distribution channels low. The standard deviation of 0.368 is interpreted to mean a small variation amongst the respondents. Most farmers do not have coolers and milk is a perishable commodity that requires to be collected immediately for preservation. As a result farmers preferred that channel that would collect milk at their most convenient time and place. In this case those channels that have reliable transport and coolers are the formal channels of distribution. Therefore most farmers sell their milk through the formal distribution channels which are mainly cooperative societies. This study conquers with dairy industry in Kenya report (2005), which says that cooperatives remain the main channel for collecting milk destined to the formal market.

4.7   Factors Influencing Choice of Distribution Channel

This section shows findings to the questions that sought to determine factors influencing the choice of milk distribution by dairy farmers using a likert scale of 1 to 5. This section is subdivided into three parts: quantity of milk supplied, price of milk per kilogram, access to credit facilities and collection procedures. Findings to each of them are illustrated in table 6 and discussed next;

Table 6: Factors Influencing Choice of Distribution Channel

Factor	M.S	S.D	Interpretation
Quantity of milk supplied	1.51	0.829	highly Influencing
Prices of milk per kg	1.86	0.962	highly Influencing
Access to credit facilities	2.65	1.049	moderately influencing
Collection procedures	2.85	1.113	moderately influencing

This question sought to determine which factors did influence the choice of milk distribution by dairy farmers and to what magnitude. Quantity of milk supplied and price of milk per kilogram were noted to strongly influence the choice of distribution channel. This is because they have a mean score of less than 2 and the standard deviation of 0.829 and 0.962 respectively is interpreted to mean there is a small variation amongst the respondents. Access to credit facilities and collection procedures were noted to moderately influence the distribution channel. This is because they have a mean score of between 2 and 3 and the standard deviation of 1.049 and 1.113 respectively is interpreted to mean that there is a wide variation amongst the respondents.

4.8 Correlation Analysis

4.8.1 To access how Quality Of Milk Supplied by Farmers Influences Choice Of Distribution Channel

Using Pearson's correlation, the researcher sought to establish if there was a relationship between quantity of milk supplied and the influence on choice of distribution channel. The results are indicated in table 7.

Table 7: Correlation Analysis between Quantity of Milk Supplied and Choice of Distribution Channel

		Quantity of milk supplied	Rate choice of milk distribution channels
Quantity of milk supplied	Pearson Correlation	1	.181
	Sig. (2-tailed)		.083
	N	93	93
Rate choice of milk distribution channels	Pearson Correlation	.181	1
	Sig. (2-tailed)	.083	
	N	93	93

The results of this analysis indicated that there is a positive relationship between quantity of milk supplied and choice of distribution channel and this is because the P-value is positive (P-value = 0.181, Sig 0.083). This means that the independent variable in this case quantity of milk had a positive influence on the dependent variable that is choice of distribution channel.

4.8.2 To evaluate how Prices of Milk Influences Choice Of Distribution Channel

Using Pearson's correlation, the researcher sought to establish if there was a relationship between prices of milk and the influence on choice of distribution channel. The results are indicated in table 8.

Table 4.11: Correlation Analysis between Price of Milk Supplied and Choice of Distribution Channel

		Price of milk per kg	Rate choice of milk distribution channels
Price of milk per kg	Pearson Correlation	1	.414[**]
	Sig. (2-tailed)		.000
	N	93	93
Rate choice of milk distribution channels	Pearson Correlation	.414[**]	1
	Sig. (2-tailed)	.000	
	N	93	93

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

The results of this analysis indicated that there is a positive relationship between price of milk supplied and choice of distribution channel and this is because the P-value is positive (P-value = 0.414, Sig 0.000). This means that the independent variable in this case price of milk had a positive influence on the dependent variable that is choice of distribution channel.

4.8.3 To assess how access to Credit Facilities Influences the Choice of Distribution Channels

Using Pearson's correlation, the researcher sought to establish if there was a relationship between access to credit facilities and the influence on choice of distribution channel. The results are indicated in Table 9.

Table 9: Correlation Analysis between Access of Credit Facilities and Choice of Distribution Channel

		Access to credit facilities	Rate choice of milk distribution channels
Access to credit facilities	Pearson Correlation	1	.577[**]
	Sig. (2-tailed)		.000
	N	93	93
Rate choice of milk distribution channels	Pearson Correlation	.577[**]	1
	Sig. (2-tailed)	.000	
	N	93	93

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

The results of this analysis indicated that there is a positive relationship between access to credit facilities and choice of distribution channel and this is because the P-value is positive (P-value = 0.577, Sig 0.003). This means that the independent variable in this case access to credit facilities had a positive influence on the dependent variable that is choice of distribution channel.

4.8.4 To examine how Collection Procedures Influence Choice of Distribution Channels

Using Pearson's correlation, the researcher sought to establish if there was a relationship between collection procedure and the influence on choice of distribution channel. The results are indicated in Table 10.

Table 10: Correlation Analysis between Collection Procedures and Choice of Distribution Channel

		Collection procedures	Rate choice of milk distribution channels
Collection procedures	Pearson Correlation	1	.136
	Sig. (2-tailed)		.193
	N	93	93
Rate choice of milk distribution channels	Pearson Correlation	.136	1
	Sig. (2-tailed)	.193	
	N	93	93

The results of this analysis indicated that there is a positive relationship between collection procedures and choice of distribution channels and this is because the P-value is positive (P-value = 0.136, Sig 0.193). This means that the independent variable in this case the collection procedures had a positive influence on the dependent variable that is choice of distribution channels.

5.0   CONCLUSIONS AND RECOMMENDATIONS

5.1   Conclusion

The study established that the quantity of milk supplied is a crucial determinant when it comes to the choice of a milk distribution channel. During the analysis there was a positive relationship between quantity of milk supplied and the choice of a distribution channel. It was clear that a dairy farmer who produces over 10 litres of milk must have a channel of distribution that guaranteed absorption of that entire amount in both rainy and dry season. It is worth noting that quantity of milk produced is high during rainy season because of adequate pastures and vice versa. The study also concludes that price of milk was a crucial determinant in the choice of a distribution channel. This is because the results indicated a positive relationship amongst the two set of variables. Majority of farmers tend to go for those distribution channels that offer the highest price per litre of milk due to the anticipated profit in the dry season when milk is scarce but when rains come there is high milk production provoking the laws of demand and supply. This is supported by the respondents when they were asked if price was a determinant in the choice of a distribution channel and all of them were in agreement.

Credit facilities also do influence the choice of a distribution channel and was noted to have a positive relationship. The problem however was that credit facilities were inaccessible to most farmers depending on the type of a distribution channel that one used. The formal distribution channels ensured that their customers get credit facilities while this was not the case with informal distribution channels. The collection procedures also had an impact in the choice of a distribution channel with most farmers indicating that they preferred to sell to formal distribution channels as opposed to the informal channels. This was because most formal distribution channels were societies formed by the farmers and was therefore tailored to perform their duties according to how the farmers preferred.

The study concludes that quantity of milk supplied and price of milk per kilogram were noted to strongly influence the choice of distribution channel. Access to credit facilities and collection procedures were noted to moderately influence the choice of a distribution channel.The contribution of this study is that farmers should be well informed about the economic benefits offered by various distribution channels in order to make the best choice. Farmers should not pick a channel of distribution basing it on only one variable but a combination in order to break even economically thus making dairy farming a viable enterprise.

5.2   Recommendations

Based on the above observations the study recommends that since price is a key determinant in the choice of distribution channel, the government and other stakeholders should ensure there are price regulations are put in place since a farmer will choose a channel that offers the most profitable price. This will ensure that farmers have a stable and constant supply of their milk to the market. The markets should also be formalized so as to get rid of cartels that rip off farmers of their profits. The prices should be stabilized and harmonized in the market. Most farmers were noted to have limited access to credit facilities which encompasses loans and advances granted to borrowers to finance and service production activities related to milk production and distribution. The government should stream in money through cooperative societies and banks to ensure that money trickles down to the small farmers that are charged relatively low interest rates. This will encourage them to take up loans that will boast their business. The study finally recommends that milk vendors, creameries and other stakeholders should use channels whether formal or informal that adds value to the milk on delivery. This is because for the farmer value addition has a particular importance in that it offers a strategy for transforming unprofitable enterprise into a profitable one. They should establish a channel where the farmer takes part in distribution that fetches a better price and again has advantage over competitors.

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