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Full Length Research Paper

Effects of policy change on the dairy production support services within the smallholder dairy farmers in Butere/Mumias and Kakamega districts of Western Kenya

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A survey was conducted in Butere/Mumias and Kakamega districts of Western Kenya in 2005 to evaluate the availability of dairy support services following liberalisation of agricultural sector by the Government. A total of 69 and 107 farmers were interviewed in Butere/Mumias and Kakamega districts, respectively. Liberalisation opened up market for raw milk in major urban centres that were previously supplied by processed milk from Kenya cooperative creameries (KCC). Attempts to expand dairy production to capture this market was constrained by a huge deficit of breeding stock with about 53.4% of farmers buying animals from neighbouring districts. Artificial insemination (AI) service was not available when required by 30% of farmers who resorted to use bulls that were within a distance of less than 2 km (71.4%). Farmers using AI moved between 0 and 5 km (38.1%). The private veterinary surgeon served 54% of the farmers and on average there were 2922 and 2087.1 dairy animals for every veterinary surgeons and AI service provider, respectively. The low demand for dairy support services was attributed to lack of high quality dairy animals and capital by the service providers to buy the required equipments and materials.

Key words: Smallholder, dairying, support services, liberalisation, Kenya.

INTRODUCTION

Dairy production in Western Kenya is predominantly at subsistence level despite good climate that favours the industry (Waithaka, et al., 2000). Slow growth of dairy industry has been attributed to a number of factors that range from poor nutrition, scarcity of good dairy breeds, none existence or poor disease control programs especially tick borne diseases, to low access to milk yield-enhancing inputs (Omore et al., 1999; Waithaka et al., 2000). Milk production improvement programmes in the area mainly exposed farmers to improved husbandry practices. The Government supported these programmes by offering highly subsidized input services, which included disease control programmes, artificial insemination services and a reliable market of milk offered by the Kenya cooperative creameries (KCC). Private sector to play a key role. As part of the Government's initiative to revitalize agriculture and make the sector the engine of growth, private sector participation in delivery of services is currently emphasized (Owango et al., 1998) with the Government only playing a regulatory role. To support this transition Kenya veterinary association privatisation scheme was established in 1995 to assist veterinary surgeons get loans to start up. This became

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Abbreviations: KCC, Kenya cooperative creameries; **AI,** artificial insemination; **NGOs,** non governmental organizations, **KES**, Kenya shillings.

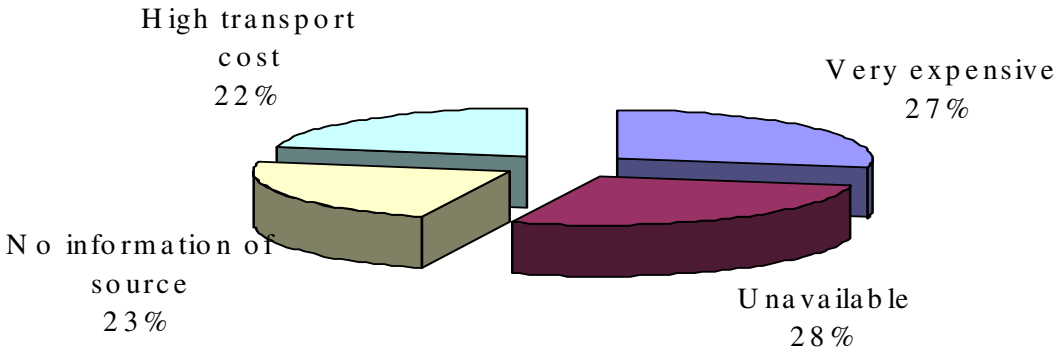

Figure 1. Problems encountered by farmers in acquiring dairy breeds in Butere/Mumias and Kakamega Districts of Western Kenya.

unsustainable in early 1980s and the Government changed its policy towards subsidies from mid 1980s by liberalizing the sector and leaving the Liberalization of services brought in the smallholder dairy industry various players who include civil society (non governmental organizations (NGOs), community based organizations, training institutions and schools), markets, support service providers (extension, AI, animal health, milk processors, dairy cattle breeders and livestock traders) and farmers (Smallholder dairy project, 2005). A good linkage between these players is important in establishing a vibrant dairy industry. It should be noted that a number of gaps were created during the transition. For example, the number of cows served by artificial insemination (AI) which was much higher when AI provision to farmers was subsidized nationally, has been declining since 1992 following privatisation of animal health and breeding services (Bebe et al., 2003). Thus sustainable development of dairy industry needs delivery of effective support services to improve on management practices. The main objective of this study was to evaluate the role played by various service providers in supporting development of dairy industry among smallholder dairy farmers in Butere/Mumias and Kakamega districts of Western Kenya.

MATERIALS AND METHOD

Study area

The study was carried out in Butere/Mumias and Kakamega districts in Western Kenya. The project area is densely populated with 432 and 508 persons per square kilometre in Kakamega and Butere-Mumias districts, respectively (Central Bureau of Statistics, Kenya, 2001). Farmers practice mixed livestock-crop farming and livestock is raised at subsistence level to provide milk for household use.

Data collection

Data was obtained from a study conducted in August 2005 using a questionnaire administered to 176 smallholder farmers in Butere/Mumias (69) and Kakamega (107) districts in Western Kenya. The questionnaire sought information on trainings, access to extension and veterinary services, modes of acquisition of dairy animals, breeding programmes and marketing of milk. Additional data was collected through visits and informal interviews with other dairy industry stakeholders who were identified by the personnel of Ministry of livestock and fisheries development. Informal interviews were conducted to establish type of services offered, area covered and any problems encountered in providing these services.

Data analysis

Means, frequency counts, percentages and range were calculated for different strata in terms of service provision or availability using GLM SSP statistical package. Means for some attributes were compared by t-test. Data for some attributes was entered into the Microsoft Excel worksheets to produce column and pie charts.

RESULTS

Sources of dairy animals

Dairy cattle breeds kept by farmers included Holstein - Friesians, Aryshire, Jersey, Guernsey and their crosses with local zebu. These dairy animals were purchased either locally or from other districts. The problems encountered in acquiring breeding stock are summarized in Figure 1. Dairy breeding stocks were not easily available and the few that were on sale were very expensive while some farmers did not know where to buy such animals. In the breeding of animals more farmers preferred using the bull to AI (72.7% vs. 50%). A similar trend was apparent in Kakamega district where only 37.4 used AI service (Table 1). The charges for using a bull in Kakamega district compared to Butere/Mumias district. The problems associated with using AI services were identified and the percentages are summarized in Figure 2. agreed that A.I service was not easily available and about 18% of cases highlighted high charges for the service as a problem. Six percent of these problems were attributed to unawareness of existence of the service in the local area.

Table 1. Frequencies and charges for methods of breeding dairy animals in Butere/Mumias and Kakamega districts.

Parameter	Type of service	Butere/Mumias	Kakamega
Frequency of methods of breeding	AI	48	40
	Bull	39	89
Charges for service (KES)	AI	739.8	941.1
	Bull	345.9[a]	284.7[b]

[a, b] Means in the same row with the different superscript letters are significantly different at $P < 0.05$.

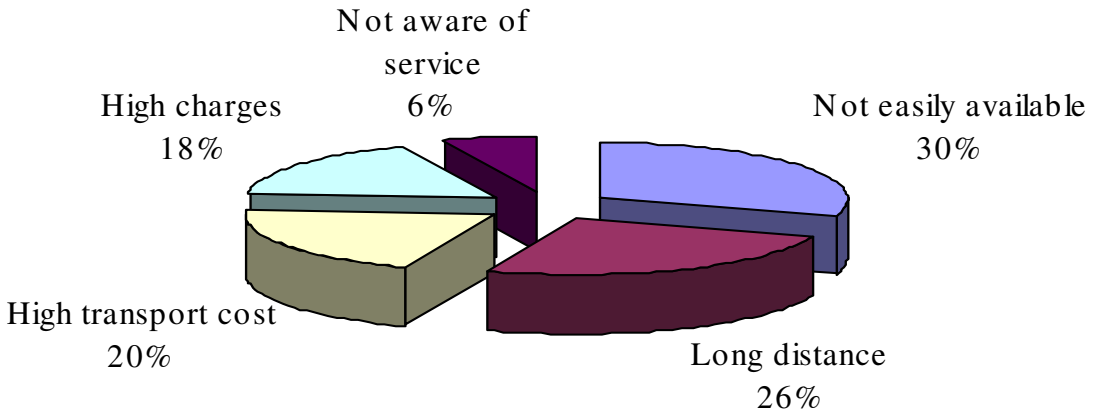

Figure 2. Percentage of problems encountered by farmers using arttificial insemination in Butere/Mumias and Kakamega Districts.

Table 2. Numbers of veterinary and artificial insemination (AI) service providers in Butere/Mumias and Kakamega districts.

Parameter	Butere/Mumias	Kakamega	Overall
Veterinary surgeons	6	9	15
Livestock officers / animal health assistants[1]	18	19	37
AI service providers	7	14	21
Dairy animals per veterinary surgeon	1157.7	4098.2	2922
Dairy animals per AI provider	992.3	2634.6	2087.1

[1]Diploma or certificate holders in animal health management.

Veterinary services

The numbers and distribution of veterinary and AI service providers in the 2 districts are given in Table 2. There were more animal health assistants compared to veterinary surgeons. There were 4 and 3 private veterinary surgeons in Butere/Mumias and Kakamega districts, respectively. All farmers treated animals whenever they fell sick with 54% referring their cases to private veterinary surgeons (Figure 3) while animal health assistants attended to cases by 29% farmers. Use of traditional medicine was only reported in Kakamega district. Problems identified by farmers in treating animals are presented in Figure 4. Most farmers could not afford the veterinary services offered and they also moved long distances to access the services.

Distance to dairy support services

Farmers in Kakamega traveled 10.9 km to veterinary services as compared to 7.6 km for those in Butere/ Mumias ($P > 0.05$). However many farmers (43.6%) were within a distance of less than 5 km to the veterinary service providers (Table 3) and the high number of farmers (38.1%) using AI, especially in Kakamega, were within a distance of 5 km from the source. In Butere /Mumias most farmers using AI (44.7%) moved between 5 to 15 km to reach the service providers (Table 3). Farmers using bulls (71.4%) for breeding in both districts

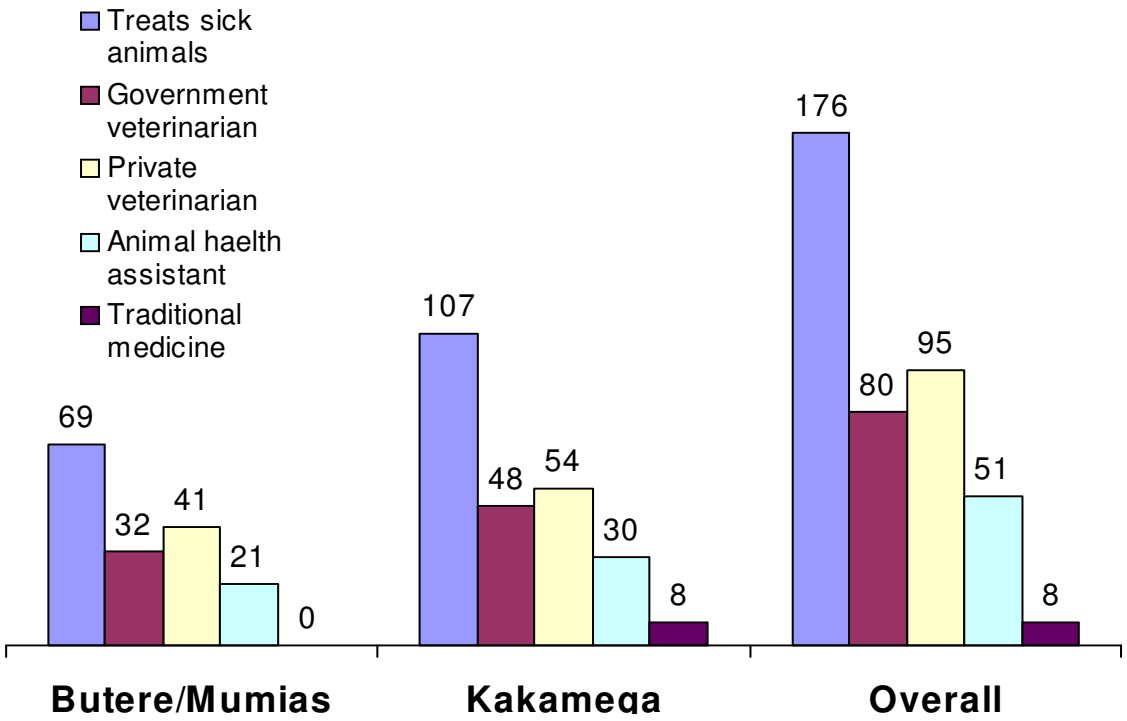

Figure 3. Frequencies of treatment of sick animals by different veterinary service providers in Butere/Mumias and Kakamega Districts.

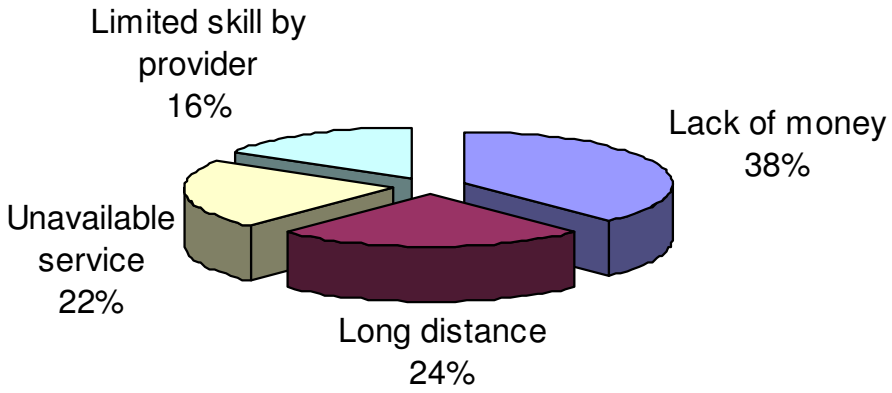

Figure 4. Percentages of problems encountered by farmers in accessing to veterinary services in Butere/Mumias and Kakamega Districts.

were within a radius of 2 km from the bull (Table 3).

Marketing of milk

Farmers identified and stated some problems faced in selling milk which are presented in Figure 5. A number of agencies were involved in marketing milk. These included 2 dairy cooperatives, milk bars, milk vendors and small-scale milk processors. The later produced yoghurt, fermented milk and preserved fresh whole milk for sale. The cooperatives, milk bars and vendors handled fresh milk. The amount of milk handled in milk bars ranged from 5 to 500 L a day. Some milk vendors sold up to 150 L of milk in the evening in the open market when workers were returning home from work. Most milk sold by milk-vendors and in milk shops and dairies in larger towns (Kakamega, Mumias and Butere) came from neighboring Nandi, Bungoma, Trans Nzoia and Uasin Gishu districts. Availability of milk on the market was low from august all the way to April followed by a peak season between April to July.

Table 3. Frequency of distance traveled by farmers to the nearest dairy support services in Butere/Mumias and Kakamega districts.

Support service	Distance range (km)	Butere / Mumias	Kakamega	Overall
Veterinary services	Mean	7.6	10.9	9.7
	< 5	26	42	68
	5 to 10	22	16	38
	>10 to 20	9	24	33
	> 20	3	14	17
AI service	Mean	1.9[a]	7.3[b]	4.4
	0 to 5	17	15	32
	>5 to 15	21	9	30
	>15 to 30	6	7	13
	>30 to 50	3	5	8
	> 50	0	1	1
Bull	Mean	1.39	1.42	1.41
	<2	25	60	85
	2 to 5	10	18	28
	>5	2	4	6

[a, b] Means in the same row with the different superscript letters are significantly different at $P < 0.05$

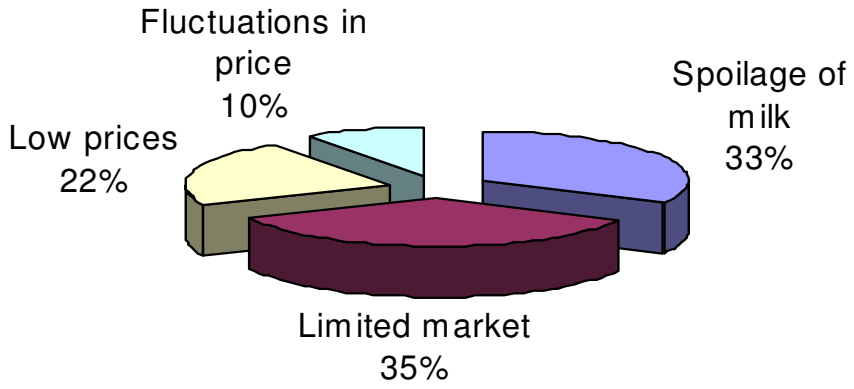

Figure 5. Percentage of problems encountered marketing milk in Butere/Mumias and kakamega Districts.

DISCUSSION

Availability of dairy animals

Farmers raised concern about the problems they encountered as they acquired dairy cattle breeds for rearing. Although unavailability of dairy breeds was the major problem, it could be concluded that the four mentioned areas of concern, with frequencies ranging between 22 and 28%, are also major problems facing these farmers. Unavailability of animals may have contributed to high prices of the few that could be got. Farmers also incurred high transport costs by moving long distances looking for breeding stock. Lack of suitable cattle breeds mean that farmers ended up buying any animal available irrespective of their quality. This was expected to have a negative effect on development of the dairy industry in the area. Some farmers did not have information on where to get good quality cattle breeds and there is need to link these farmers to such sources or support them to establish breeding sites within the area. Mukumu Guernsey farm was the only breeding farm in the study area. In addition to this farm most dairy animals originated from neighbouring districts of Nandi, Uasin Gishu and Trans Nzoia.

Most farmers and other stakeholders like the veterinary staff indicated that animals in the area were of low genetic potential and the few good breeds that were

available were very expensive. They also pointed out that the low milk produced by these breeds could not pay for inputs and veterinary services offered, which discouraged farmers from venturing in this business. This may have been the reason why farmers did not invest in using high inputs to improve productivity. Thus unavailability of good breeds should be addressed to create demand for services in an attempt to improve dairy industry in the area.

Whereas animals could be improved through artificial insemination, farmers were not well served or did not have access to this service. Bebe et al. (2003) also reported a declining number of cows served by artificial insemination (AI) since 1992 following privatisation of animal health and breeding services. Farmers in Butere/ Mumias and Kakamega districts moved long distances in search of AI, which made it to be very expensive due to poor road network. The service was also not available when required and farmers resorted to using low quality bulls, which was a big risk as far as the spread of venereal diseases was concerned. Veterinary surgeons practicing in the area used bicycles (boda bodas), which could not enable them cover many cases. Consequently they could handle on average 60 cases within a month. The cost of AI service was not the major problem deterring farmers from using this service (Figure 2). Although distance from AI providers was indicated as the second problem in accessing to AI services, in Kakamega district most farmers using AI (38. 5%) were within a distance of 5 km from the source and in contrast the larger number of farmers (44.7%) using AI in Butere/Mumias moved distances of between 5 and 15 km (Table 3.). These results indicate that unavailability of the service when required was the major limitation of its use. Bulls were within a distance of 2 km to many users which can be attributed to the inconveniences involved in moving cows to the bull for long distances. This imply that farmers who are far away from superior bulls ended up using poor quality bulls that were found within reach. It is also interesting to learn that 6% of the farmers were not aware of the existence of the service in the area. Nevertheless the problems mentioned face farmers in the survey area and there was need to address them to improve the use of AI. It is clear that liberalization of this service was taken over by poorly equipped veterinary surgeons that cannot satisfy the demand in the local area.

Veterinary services

There were few qualified veterinary surgeons compared to the number of dairy cows in the area. The same veterinarians were also expected to treat zebu animals and other species of animals. The situation is even made worse since government veterinary surgeons only play a regulatory role in provision of the service. Consequently the main veterinary providers were private veterinary surgeons who offered services to 54% of farmers. Although this is in agreement with the new government policy of encouraging private sector to be the main service provider, services were not readily available to 22% of farmers and 24% moved long distances to treat sick animals. A low extension staff to farmer ratio of 1:1,230 in Western Kenya was also recorded by Omore (1999) who predicted a continued decline in the ratio following privatization of the services.

The major complain on accessing a veterinary service was the inability to pay for the service, which could be attributed to either high charges or expensive drugs. Private veterinary surgeons in the area handled few cases ranging from 3 to 5 a day, which they attributed to the large number of indigenous animals. It is therefore important to create demand for veterinary services by introducing improved dairy cattle breeds. The service was generally of low quality since farmers preferred the less experienced livestock production officers and animal health assistants because they charge less. There was need to train farmers on importance of running dairy as a business so that they can go for quality services, which pays in the long run. In some cases veterinary surgeons offered services on credit especially for their contact farmers but they did not have enough funds to extend this especially for diseases like East Coast fever that require over KES 5,000 (1US $ = 78 KES) to treat one animal. They were also reluctant to extend the credit facility because occasionally some farmers did not pay. Most farmers (43.6%) were within reach (a distance of less than 5 km) to the veterinary service providers.

Marketing of milk

About 35% of farmers had problems in selling milk, which was accompanied by high spoilage rate among 33% of farmers (Figure 5). On the contrary, the bulk of milk sold in major towns by milk vendors came from neighbouring districts, which were previously under the monopoly of KCC. Following liberalization of milk market there was an influx of raw milk because of a good and steady average price of KES 28.7 /kg (Musalia et al., 2007). However, limited market leading to milk spoilage among some local farmers, which seemed to be significant, was a major concern. This may be attributed to incompetence of farmers to market milk. This study also revealed that very little milk was marketed through cooperatives and in fact only 2 cooperatives were identified in the region that is Marenyo cooperative and Kakamega dairy cooperative society in Butere/Mumias and Kakamega districts, respectively. There is need to organize marketing of milk from remote areas to reach urban areas where its demand is high.

Milk prices were almost constant throughout the year hence price fluctuations did not pose a big problem to

farmers (Musalia et al., 2007). The peak season for milk market for farmers corresponded with low rainfall when production was low while the low season coincided with long rains when there was an adequate supply of feeds to animals. Low market for milk was experienced during the rainy season, because of the low producer price due to demand and supply forces in the market.

Conclusion

There is a huge deficit of breeding stock which remains an area of big concern in the development of the dairy industry in the area. Farmers need a good programme for breeding quality dairy animals which should be supported by a reliable AI service. The resultant lack of high quality animals in the area has indirectly contributed to the low demand of support services. Farmers should be supported to establish marketing networks to capture the huge milk demand in urban areas by forming cooperatives. They should also be trained to take dairy production as a business with emphasis on the use of good support services.

ACKNOWLEDGEMENTS

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