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Full Length Research Paper

Value added milk products: Constraints to women in milk micro enterprises in Kenya

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As economic crisis deepens in Kenya, more and more women are joining the micro enterprise sector to earn a living. The dairy industry, in particular, provides opportunities for the Kenyan women to operate micro enterprises. However, these women face constraints in their efforts to sell high quality value added milk products. This paper is based on a study carried out in three districts in Kenya: Nakuru, Nairobi and Kiambu. The study used interviews and observations as data collection methods. The findings of the study indicated that women in milk micro enterprises used basic value addition technologies that were operated at low costs but which at the same time hindered their performance in the milk business. The major obstacle to acquiring appropriate technology for value addition was lack of finance. The women had problems accessing credit facilities due to high interest rates and lack of collateral. They also had problems accessing appropriate value addition information due to lack of knowledge on sources of information and lack of time to look for this information. Further, income realized from the sale of milk products was hampered by limited marketing skills among these entrepreneurs. If more income is to be generated from women owned micro enterprises to improve the lot of these women, it is imperative that the above issues are addressed. Value addition technologies targeting women should be relevant, accessible and affordable. Similarly, women entrepreneurs should be facilitated to acquire credit, appropriate training in value addition and marketing skills.

Key words: Women, micro enterprises, value addition, milk products, Kenya.

INTRODUCTION

Participation in micro enterprises has become an increasing career option for many women in Kenya. Economic recess and lack of employment seem to contribute to the rising number of women participating in this sector as a means of earning income for their families. Micro enterprises in this paper has been defined as those enterprises that employ less than 10 people and are run with very little capital investment and high level of manual labour (Oyelaran-Oyeyinka, 2000; Chuta and Liedholm, 1979). The organisational flexibility, low start up costs, basic technologies, low overheads, informal nature, reliance on family labour and proximity to home sites are characteristics of micro enterprises that make them flexible vehicles for facilitating the economic participation of women in Kenya (World Bank, 1991; Liedholm and Mead, 1992; Parker et al., 1995).

The dairy sector in Kenya provides many opportunities for women to operate micro enterprises. This is because milk is part of farm produce that generates cash on a regular basis and it is one of the foods consumed by almost all Kenyans of all ages in large quantities (Staal et al., 1998). However dairy micro enterprises owned by women mostly sell raw milk, which fetch low prices for the entrepreneurs.

One way women in milk micro enterprises can improve this situation involves value addition on raw milk. Value addition can be defined as a process of increasing economic value and economic appeal of a commodity. Value is added by changing a commodity's form, colour, taste and other such methods to increase the shelf life of perishables. Value of a product can also be added by capturing the market at the right time. This may include

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transporting the product to places where it can earn more income, or storing it and selling when there is high demand. Value addition minimizes wastage and improves quality of a commodity which realizes better prices (Kedere, 2006; Government of Kenya, 2004; Latham, 1997). Value addition on milk can therefore increase purchasing power of women entrepreneurs thus improving their standards of living.

Technology plays a central role in value addition process. However, most micro enterprises use low level technologies that hinder their products from competing effectively with large scale manufactures. Further, small scale processors find it difficult getting the right kind of equipment for their business. They often do not have access to information on types, capacities and prices of equipment (Thapa, 2000; Dugdill, 2000). This situation is worse for women-owned micro enterprises which are poorly equipped technologically compared with those run by men making similar products (Everts, 1998). Value addition through use of appropriate technology can, therefore, be seen as an opportunity to improve women's micro enterprises leading to improved quality of their products. Such improvements could lead to greater autonomy for women.

This paper presents data detailing challenges faced by women in their effort to enhance milk value in their micro enterprises. The paper is based on a study carried out in Nakuru, Nairobi and Kiambu districts of Kenya.

METHODOLOGY

Study area

Data used in this paper was collected from three districts in Kenya namely, Nakuru, Nairobi and Kiambu. According to the Kenya Dairy Board, the three districts have the highest concentration of licensed small-scale dairy processors in Kenya. Together they constitute approximately 90% of all licensed small-scale dairy processors in the country.

Nakuru District is located in the Rift Valley province of Kenya. The main activity in the district is farming on both small scale and large scale. The district has the highest number (45%) of the entire licensed dairy processing enterprises in Kenya. Nairobi is the largest city in Kenya and provides the largest market for milk and dairy products. It has 30% of licensed dairy processing enterprises in the country. Kiambu district is dominated by small holder mixed farms practicing livestock production combined with food and cash crop production. About 77% of the farmers in the district keep dairy cattle of which 40% depend on dairy production as the main source of income (Staal et al., 1998). The district has 15% of licensed dairy processing enterprises in the country. Most of the milk produced in the district is sold in Nairobi.

Research design

The study used cross sectional survey design because the purpose was to explore and describe the characteristics of the women owning micro enterprises, characteristics of the enterprises and the constraints these women face in their efforts to add value to milk products. Although this design is not as powerful as analytical models in understanding relationships, it is powerful in describing the real situation or status as it exists and therefore more likely to give accurate information (Ary et al., 1978; Kathuri and Pals, 1993).

Study target and sampling procedure

The study targeted women entrepreneurs engaged in milk micro enterprises in Nakuru, Nairobi and Kiambu districts. It was difficult to estimate the population of women owning milk micro enterprises in these districts as many did not register with the Kenya Dairy Board (a regulatory body dealing with milk enterprises) due to many and expensive legislative processes.

Nonetheless, a sampling frame was compiled using information obtained from Kenya Dairy Board, Nakuru and Nairobi stations (the Nairobi station serves Nairobi, Kiambu and the surrounding districts) and a sample size of 108 women was selected using stratified and simple random sampling, as well as purposive and snowball sampling methods. Purposive and snowball methods were used because several of the registered enterprises had closed down and others had been started, many of which had not registered with the Dairy Board.

The sample size of 108 was selected based on the recommendations of Kathuri and Pals (1993) and Borg and Gall (1989) that for a survey research there should be at least 100 participants in each major sub-group. The participants were drawn from various parts of the three districts in order to give a good representation of the dairy micro enterprises. According to Wakah (1999), every micro enterprise in a given area differs from others in many aspects including performance. Hence if more respondents from several areas within the districts are interviewed then more representative generalization can be drawn.

Data collection method

Data was gathered through interviews and observations. The interview schedule contained both open and close-ended questions. Observations were used to capture information such as the type and condition of value addition equipment used by women in milk micro enterprises, condition of business premise, interpersonal relations between entrepreneurs and customers among others.

RESULTS AND DISCUSSION

The aim of the study was to describe the characteristics of a sample of women in milk micro enterprises including constraints faced by these women with regard to value addition on milk products. Results have therefore mostly been presented in table format using percentages.

Characteristics of women owning milk micro enterprises

The profile of the women interviewed differed in a number of ways. 75% of these women had secondary school education and above, with 27.4% having post-secondary school education. Only 2.4% had no formal education at all. Generally the group of women in the present study seemed to have been better educated than those sampled in most studies involving women owning micro

Table 1. Factors motivating entrepreneurs to start dairy enterprises.

Motivating factors	Percentage (%)
Earn a living	62.3
Market availability	14.0
Create market for raw milk	13.2
Training in dairy	8.8
Business close to home	1.7

Table 2. Age of enterprises.

Age of enterprise	Percentage (%)
Less than one year	28.6
1 - 3 years	44.6
4 - 6 years	15.2
7 and above	11.6

enterprises (Naituli et al., 2006; Boserup, 1995; Gordon 1996a; Anderson, 1985). Lack of formal education has been identified as one of the factors that prevent women from taking advantage of technological progress in the food processing industry.

Birks and Sinclair (1989), however, disagree and argue that formal-based education and training is not usually what is needed to survive in the informal sector. Rather, it is the non-formal and the informal types of education and training that are important. Nonetheless the level of formal education affects entrepreneur's access to technical information and thus will affect the entrepreneur's ability to understand, respond to, use and control technologies. Furthermore, higher levels of education are associated with high computation and comprehension skills and greater verbal communication, all which are important in business decision-making and management (Barkham, 1990; Kinyanjui, 1993). Thus majority of women in this study, by virtue of their educational level, were better placed to take advantage of technological advancement and make decisions that would add value and improve the quality of their products.

Several factors motivated women to start dairy micro enterprises as shown in Table 1. Majority went into the business to earn a living as the only source of livelihood or to supplement the family's income. Others had training in the dairy field and therefore opted to start milk processing business to utilize their knowledge and skills, while others started the business because they realized an available market for dairy products. Still others started the enterprises to create a market for raw milk, either from their own farms or for other farmers. Only a few chose dairy businesses because they could operate close to home. This contrasts other findings that indicate that women tend to operate micro enterprises because

Table 3. Sources of raw milk used.

Source of milk	Percentage (%)
Individual farmer(s)	60.0
Own farm	20.9
Co-operative societies	18.3
Peddlers/traders	12.2
Larger dairies	7.8

access to credit; thus they tend to use personal savings or capital assistance from relatives as startup capital (Gordon 1996a; World Bank, 1991; Trenchard, 1987). The capital saved or received from friends and relatives, however, is often not enough to facilitate the growth of these enterprises; hence many remain at subsistence level.

Characteristics of milk micro enterprises

The 108 micro enterprises were both licensed and unlicensed. Although it is a requirement by the Kenyan law that any enterprise dealing with milk processing be registered with the Kenya Dairy Board for regulatory purposes, not all the enterprises in the study registered with the board. Legislative requirements often constitute a heavy financial burden to women in the informal sector. To operate a dairy enterprise, for example, one is required to register with the Kenya Dairy Board through payment of a fee. In addition, one is also expected to pay for an operating license from the local authority, renewable yearly. A public health certificate is also required for any person handling food products and this has financial implications as well. Further, any sign post advertising the enterprise must be authorized and paid for. The financial implications of these requirements make it difficult for women in micro enterprises to compete with milk peddlers, who do not pay any of these fees and with large-scale milk processors who benefit from economies of scale.

Many of the enterprises had been is existence for three years and less with only 26.8% being over 3 years as indicated in Table 2. This is in line with other findings that majority of micro enterprises close down within their first three years of existence (Kuriloff and Hemphill, 1988).

Concerning sources of raw milk, majority of the enterprises got milk from individual farmers. Other sources were co-operative societies, own farms, larger dairies and milk peddlers or traders. 17.4% of the enterprises got milk from more than one source. This is an indication that availability of raw milk was not a problem for these entrepreneurs. Table 3 presents the various sources of milk. Having many sources of suppliers at the same time, however, sometimes created problems for the women as the various sources did not have the same quality of milk.

Some suppliers adulterated their raw milk with water or unacceptable chemicals to increase volume and prolong milk life respectively. This affected the type of products produced by the entrepreneurs.

Technology used by women in milk micro enterprises

Technology as used in this paper is taken broadly to include both the equipment and the value addition methods used by women entrepreneurs. Although various types of milk value addition equipment were readily available in the market, the women had limited access to them. As a result, majority used very simple and basic value addition technologies. This was reflected in the type of value added milk products produced. Majority of the women processed fresh milk (99.1%) and fermented milk (88%), all of which do not require highly sophisticated processing equipment. Some 36.1% made yoghurt while only a few processed ice-cream (3.7%), ghee (0.9%) and butter, which require sophisticated processing equipment.

Examples of simple and basic equipment used by the women included kerosene cooking stoves, household aluminum cooking pans, plastic cups and containers, wooden cooking sticks and small kitchen sieves. Majority of the women (96%) processed fresh milk by direct heating, a practice that is not recommended because it interferes with the structure of milk protein. Those who processed fermented milk did not use the right method and equipment either. Most left the milk to ferment without using the recommended starter culture. This is dangerous to the health of consumers, as one is not aware of what type of bacteria has caused the milk to ferment. It is recommended that such milk should not be used for human consumption, although the women reported that customers preferred the product. Only 1.9% used high technology equipment such as pasteurisers, compressors and commercial butter churns.

Processing high quality milk products requires that raw milk should be of good quality. This requires strict testing procedures as well as preservation methods at the receiving end. A majority (62%) of the women used simple to medium technology methods to test for the quality of raw milk. Simple technology methods included the use of body senses such as smell, sight and taste (organoleptic) while medium technology methods included the use of lactometers and alcohol test. 28.7% of the women did not use any method to test the quality of raw milk but simply trusted that the supplied raw milk was good. Although milk is a highly perishable product, 28.8% of the women did not have any cooling or preservation equipment. This not only presented problems with the preservation of raw milk and finished products, but also limited the amount of raw milk and finished products purchased from suppliers and processed respectively.

Technology is a major enterprise asset that can be used in value addition leading to enhanced quality of product (Jain, 1985; Everts, 1998). While the basic value addition technologies used by these women may be operated at low costs and may be suitable for women who constitute majority of the poor, they may also be a hindrance to the growth of their enterprises. With the liberalization of the dairy industry, women entrepreneurs have to use appropriate technology if they are to compete effectively (Haan, 1994). The implication is that women owning milk micro enterprises have to upgrade their value addition technology if their enterprises are to make any meaningful contribution to the improvement of their livelihoods. This requires that they are exposed to existing technologies and are trained on their use.

Access to credit

A major factor that hindered women entrepreneurs in this study from upgrading milk value addition equipment was lack of finance. 92.9% reported that they could not acquire the desired value addition equipment because they were too expensive. Access to credit is essential if women entrepreneurs in milk industry are to expand and improve the productivity of their enterprises. As has been observed in other studies (Trenchard, 1987; Gordon, 1996a, Thomas-Slayter, 1991), the problems women in this study experienced with credit facilities included high interest rates (56.5%) and lack of collateral (34.9%). These obstacles barred women from acquiring credit.

Denying women access to credit due to the above factors undermines a country's economic efficiency because male biases in access to credit often results in poorer pay off both to lenders and societal development. Studies from Africa and other areas of the third world indicate that women are often better savers and more responsible borrowers than men (Gordon, 1996b). Guyer (1984), for example, states that African women work harder, are less inclined to spend money on ceremonial expenditures, and are inclined to save, invest and innovate when resources are available. When their income improves, they are also more likely to spend it on the family's food requirements, health and educational needs (Smith, 1995). Making credit accessible to women in milk micro enterprises will enable them to acquire appropriate value addition technology that is highly needed in their enterprises. Such credit facilities will further assist the women in establishing appropriate and sustainable enterprises that are likely to enhance income from their sales thus improving the livelihood of the entrepreneurs' families.

Access to appropriate training

Only 18.6% of the women had formal training in dairy processing before starting their enterprises. The rest (63.9%) learnt value addition skills from friends and

relatives or from previous employment (17.6%). Most of the learning was done through observations without theoretical background to explain concepts. This is likely to turn these enterprises into a risky business.

The ability to build upon and enhance competencies already acquired is critical for the growth of women's enterprises. Majority of the women made an effort to upgrade their value addition skills and knowledge, although 37.7% took no step at all to do so. Family and friends were the most common source of upgrading one's skills and knowledge (40%) while others used customers and competitors (8.3%). A few (9.4%) used more formal channels such as seminars and workshops to upgrade their knowledge and skills while a further 4.6% relied on reading materials and internet facilities. 91.3% of the women encountered problems in their effort to acquire and upgrade their knowledge and skills.

The most frequently cited problems were lack of knowledge on sources of information (50%), lack of time to look for this information (28.3%) and the high cost of acquiring this information (13.0%). Literature has consistently discussed the heavy domestic responsibilities of women entrepreneurs (Child, 1977; Baud et. al., 1993, and Parker et. al., 1995). These responsibilities restrict women's mobility as far as seeking for information is concerned thus reducing the productivity of their enterprises. It is therefore important that extension agents or training officers within the dairy sector put extra effort in reaching women owning milk micro enterprises with appropriate knowledge and skills necessary for successful management of their enterprises. It is also important that any training targeting these women should be brought closer to them, and such trainings need to take into consideration women's domestic responsibilities if women are to effectively participate in them.

Marketing of value added milk products

The income generated from value added milk products depends highly on the ability of women owning micro enterprises to market their products in the domestic market. Almost half (48.7%) of the women experienced problems in marketing their products. The main problem was inability to profitably price products, which was cited by 33.3%. Price is one of the main aspects of the 'marketing mix' and the price charged for a product ought to reflect the value of benefits a customer derives from purchasing that product (Dewhurst and Burns, 1993). Kuriloff and Hemphill (1988) suggest that a good pricing system should consider at least the cost of production, competitors' prices and customers' perception. In this study majority of the women relied only on cost of production as a basis of their pricing. Although this was necessitated largely by fluctuations in prices of raw milk, the products may not compete favourably in the market.

Another constraint to marketing was inability to estimate number of customers, which was cited by 31.1% of the women leading to product wastage. Other problems included getting products to customers (19.5%) and advertising (16.1%). Lack of knowledge and skills in marketing among women owning milk micro enterprises is more likely to limit the level of production, the number of consumers and geographical areas reached with the products, thus impacting negatively on income realized from the sales of their products.

Conclusion and Recommendations

Kenyan women are continuing to challenge the current economic status by creating strategic locations and spaces for themselves within the micro enterprise sector. Women's earnings from participation in this sector contribute increasingly larger share to their total household income and in many cases ensures family survival. If more income is to be generated from women owned micro enterprises in the dairy sector to improve the status of women and their families, it is imperative that government policies and programmes effectively address issues that affect women's participation in this sector.

This requires the inclusion of these women in the planning of development programmes at all levels, as this is the most appropriate way to ensure that women articulate their specific needs and challenges in attempts to enhance value of milk products. This will also facilitate the entry of women as active decision makers on issues that relate to value addition and income generation.

Research needs to focus more on value addition technologies that are relevant and appropriate for women's micro enterprises, with more consideration put not only on relevance but also on affordability and acessibility of such technologies. In addition, access to credit, appropriate training in value addition and marketing would help women sell high quality products that will not only fetch higher prices but will also be able to reach a wider market. Consequently, this would enhance women's income and improve their livelihoods and that of their families.

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