Original Research Article

Entrepreneurial behaviour of dairy groups in Nyamira County, Kenya: A sustainable livelihood strategy for rural development

ABSTRACT

Aim: Farmers' groups were introduced in Kenya as cooperatives during the colonial period for the purpose of promoting commercial agricultural production by peasant farmers. However, there is still poor rural milk trade and supply. The informal sector is still the dominant force in milk trading. The study assessed the entrepreneurial behaviour of dairy groups under Smallholder Dairy Commercialization Program (SDCP) in Nyamira County, Kenya.

Study design: The study adopted field survey and focus group research designs.

Methodology: The sample size of 220 respondents was drawn from 40 dairy groups using multistage and systemic sampling techniques. Interview schedule and Focus Group Discussion (FGD) were the main data collection methods. Both descriptive and inferential statistics such as numerical counts, frequencies tables and coefficient of multiple determinant (R^2) were used for analysis.

Results: Regression model revealed a statistically significant contribution of the program to the entrepreneurial behavior of the dairy groups (0.0019; $p<0.05$, two-tailed). SDCP contributed 81.74% of the variation in the entrepreneurial behavior ($R^2 = 0.8174$). Majority of the respondents were in survival stage (60.91%) of entrepreneurial growth. In contrast, milk was mainly marketed by individuals and middle men (73.64%) in the informal markets. There were non-viable operational farms averaging 2.7 acres in the programme area.

Conclusion: These findings suggest that the produced milk was locally consumed thus leaving very little surplus for processing and formal marketing. This could be attributed to both the consumers' preference for the cheap unprocessed milk and inefficiencies in formal trading. The programme provided a platform by which constraints on livelihood strategies such as access to credit and investments in dairy farming (76.69%) could be prioritised for action to remove them and the links between them identified for sustainability. The study recommends development of holistic dairy policy that integrates both small and large dairy businesses. The Government, therefore, needs to up-scale the programme to other parts of the country especially those with higher poverty levels than the national average of 42 per cent. Crowd funding could also give a start-up capital for the smallholder dairy farmers.

Keywords: Entrepreneurial behaviour, dairy groups, livelihood strategy, rural development, Kenya.

1. INTRODUCTION

Entrepreneurship has been identified by several scholars (e.g. Coppock *et al*.; 2006; Kruno & Regan, 2008; Mbam & Nwibo, 2013; Fortunato, 2014) as a major driving force of a free market economy. The theories of entrepreneurships attempts to link entrepreneurship and profits. Indeed, it dates back centuries if one considers the work of Cantillon, the first academic to

explicitly attempt to define, and describe the role of, entrepreneurs (Christopher Brown & Mark Thornton, 2013). It was however not until the 1990s that the term-entrepreneurship became a buzzword both in the media and in political debate. Newspapers were full of success stories about self-made billionaires and politicians wanted to support and encourage their endeavours more widely (Ahmad and Hoffman, 2007). While in the eighteenth and nineteenth century the term was used to describe the process of bearing the risk to organise factors of production to deliver a product or service demanded by the market, modern approaches focus more on the concept of innovation and management.

Evidence is seen from the development of farm business enterprises to the opportunity created by globalization and technological changes in doing business. This would benefits approximately 150 million households engaged in milk production globally (FAO, 2014).The conventional wisdom for many years has been that rising output and incomes in agriculture itself are the catalyst for farm entrepreneurial activities in rural areas. However, in sub-Saharan Africa (SSA), this has rarely been the case, since most rural entrepreneurship is not just non-farm but non-rural in character. Nor does it work in Asia once the pace of technological change in agriculture slows and crop yields level off (Frank Ellis, 1999).

The Kenyan dairy industry, in economic terms is the single largest agricultural sub-sector, larger even than horticulture and tea; it contributes some 14% of agricultural GDP and 3.5% of total GDP. It supports the livelihood of at least 800,000 smallholder farmers. The enterprise generates jobs in wage labour and mobile milk trading for a further 365,000 people. These jobs benefit the poorest people in urban and rural areas (FAO, 2002; IFAD, 2014). However, despite the numerous dairy improvement in Kenya, there is still poor rural trade and lack of milk volume for market. The informal sector is still the dominant force in milk trading (Ministry of Agriculture, Livestock and Fisheries [MOALF], 2013; FAO, 2014). In view of this, we assessed entrepreneurial behavior of dairy groups under Smallholder Dairy Commercialization Programme in Nyamira County, Kenya.

2. METHODOLOGY

The research was conducted between May and July, 2015 in Nyamira South, Borabu and Nyamira North districts of Nyamira County, Kenya. The districts were purposively selected since the programme was being implemented there.

Multistage sampling was adopted as suggested by Kothari and Garg (2014; p.62). Stage one was saturated sampling of all the dairy groups under the program. Stage two was proportionate stratified sampling of 40 groups by district. Stage three was systemic selection of 220 respondents from the selected groups since sampling frame was available in the form of a list. There were 71 dairy groups and 2401 farmer under the programme in the County.

Interview schedule and focus group discussions (FGD) were the main instruments for data collection. According to Burdge (1987), FGDs allows a researcher to get deeper insight into the phenomenon under study. Both descriptive and inferential statistics such as numerical counts, frequencies tables and linear regression model was used for analysis (Kerlinger, 2014).

3. RESULTS AND DISCUSSION

3.1 Profile of the dairy groups

We considered gender distribution, market oriented dairy enterprise (MODE) process, group organization, economic activities, credit source, investment and milk marketed as they are associated with entrepreneurial activities (World Bank, 2001a; UNDP, 2011; Ministry of Livestock Development [MOLD], 2014). The results are presented in Table 1.

Table 1 Profile of the dairy groups

Description of the group	**Total**	
Gender distribution	**Number**	**Percent**
Male	1189	49.52
Female	1212	50.48
Total	**2401**	**100.00**
Land Size (Ha)		
Marginal (Up to 1.00)	78	35.45
Small (1.01 to 2.5)	56	25.45
Medium (2.51 to 5)	60	27.27
Large (Above 5)	26	11.82
Market Oriented Dairy Enterprise (MODE) process		
Mode I	0	0.00
Mode II	57	80.28
Mode III	14	19.72
Group organization		
Formal	199	90.45
Informal	21	9.55
Credit source		
Banks	104	47.27
SACCOS	66	30.00
MFI	46	20.91
Others	4	1.82
Economic activity		
Dairy farming	153	69.55
Crop farming	53	24.09
Non-farm business	11	5.00
Service	3	1.36
Investments		
Business	12	9.02
Farming	102	76.69
Real estate	5	3.76
Financial security	14	10.53
Milk production (000lit/day)	3.05	100.00
Milk marketed formally	0.80	26.37
Milk marketing		
Local (individuals and middle men)	162	73.63
Kenya Cooperative Creameries (KCC)	41	18.64
Brookside (Private exporter)	17	7.73
Total	**220**	**100.00**

Gender differentiation is associated with division of labour and socio-economic roles played in livelihood acquisition which is an integral part of entrepreneurial behavior (MOALF, 2013). In general, there were more females (50.48%) than males (49.52%). This could have been

attributed to level of gender empowerment in the study area. The results is in concurrence with World Bank (2001b) report that women plays a critical role in agricultural production such as post-harvest activities. It is also represents the national demography of female and male population of 22,224,534 and 22,129,157 representing 50.11% and 49.89% respectively of the total 44,353,691 (Kenya National Bureau of Statistics [KNBS], 2014). The Kenya constitution-2010 demands that no one gender shall occupy more than 33% of public appointment.

Economic perspectives have shown that farm or enterprise operational size is often an important consideration for purposes of business break-even and profit maximization analysis (Acharya & Agarwal, 2005; MOALF, 2013). Ackello-Ogutu, (2008) explained this by the concept of economies of scale such that as the size of operation increases so does the profit margin but up to a point beyond which diseconomies of scale set in. Majority had marginal land size of less than 1 Ha (35.45%). This could be interpreted to mean existence of non-viable operational farm sizes in most of the programme area. This calls for integrated innovative agricultural practices such as zero-grazing with high yielding animals and organic fodder production ("*Tumbukiza*") for profit maximization.

Movement of the group in the MODE process was determined by assessing how many groups had met the conditions for each MODE step. The study revealed that no group was in MODE I (group formation step). Majority (80.28%) were in MODE II (Identification of collective venture for the group) while only 19.72% had moved to MODE III (group organized as business entities). This implies that majority of these groups need to be supported so as to up-scale milk production, sales and distribution since these are the major challenges at this level as explained by Churchill and Lewis (1983); Naumes, *et al*., (2006) and MOALF (2013);

Groups are an integral part of modern organizations. They are present everywhere, from the shop floor to the highest levels of management (Sir John Kiln). The study revealed that between 87.69 per cent to 95, 00 per cent were formal while only 12.31per cent to 5.00 per cent were informal. These were consciously created group to serve organizational objective.
According to SDCP annual report 2014/15, the main economic activities were dairy farming (69.55%), crop farming (24.09%), business (5.00%) and service (1.36&). However, according to framers surveyed, the main occupation was crop farming (61%), livestock rearing 32%), business (4%) and service (3%). Farming was generally the main economic activity in the study area.

Source of credit is critical for entrepreneurial activities and sustainability of the groups. Main credit sources were commercial banks (47.27%), savings and credit cooperative societies (30.00%), micro-financial institutions (20.91%) and other sources such as members' contributions (1.82%) though insignificant. Total annual credit was KES. 10.19 million (USD 101,900).

Group investments were majorly farming (76.69%). Others financial security (10.53%), business (9.02%) and real estate (3.76%) though insignificant. This could explained by the fact the country is majorly agricultural.

Milk is mainly marketed locally (73.64%) through individuals and middle men outside the formal channels such as farmers' cooperative societies and processing sector both because consumers prefer unprocessed milk (they are cheap) and because of inefficiencies in formal trading. Kenya Cooperative Creameries (KCC) which is the main National milk marketing channel traded 18.64% while private processor (Brookside) traded 7.73%. This implies that milk consumption is largely local and there are shortages. New imperatives like bulking, use of high

yielding breeds and automation of the industry need to be emphasized for improved productivity and product safety. Only Borabu district marketed milk (72.50%) through formal channels.

3.2 Entrepreneurial behavior of the dairy groups

For this study, entrepreneurial behavior was measured as a composite function of attitude and innovativeness using geometric mean. Entrepreneurial behavior index (EBI) was computed to measure this as shown in the formula:-

$$EBI = (X_1 \times X_2 \times X_3)^{1/3}$$

Where;

X_1 = Attitude toward dairy entrepreneurship

X_2 = Attitude towards dairy farming and SDCP

X_3 = Innovativeness

Procedure followed by Naumes, et al., (2006) and Churchill and Lewis (1983) were used with modification to categorise the respondents into entrepreneurial growth stages based on total score, equal width interval and number of cutoff points.

While these authors put together five and six stages of business growth (start-up, survival, stabilization, growth orientation, take-off/rapid growth and resource maturity), the study chose three (Table 2). This was based on size and capacity of the dairy groups' entrepreneurial growth as observed in the field and data gathered. They did not meet the requirement for growth, take-off and resource maturity of business growth which represents stage 4, 5 and 6 respectively.

Table 2 Entrepreneurial growth of the dairy groups (N=220)

Sr. No	category	Score	Frequency	Per cent
1.	Startup	2.11 to 2.40	74	33.64
2.	Survival	2.41 to 2.70	134	60.91
3.	Stabilization	Above 2.70	12	5.45
	Total		**220**	**100.00**
	Range = 0.88	Maximum = 2.99	Minimum = 2.11	

The results described above suggested that majority of the respondents were in survival stage (60.91%). At this stage, the business has demonstrated that it is potentially viable and has established a market niche. Key issues in this stage revolve around the relationship between revenues and expenses. In the short run, the goal is to break even, with sufficient funds to maintain the capital assets. In the longer view, the group needs to generate enough cash to grow in order to earn an economic return on its assets and labor. The critical skills are similar to start up-owner's operating ability, access to financial resources, and ability to develop the processes and business relationships that will create the groups' competitive position in the market.

The government need to provide incentives such as tax holiday and affordable loans to such entrepreneurs since they usually do not make profits in the first three to five years as explained by Singh (2016). Only 5.45 per cent were in stabilization stage i.e. profitable business entity that could maintain cash flow levels adequate to service debt and to maintain a strong position in the market.

3.3 Contribution of Smallholder Dairy Commercialization Programme to the entrepreneurial behavior of dairy groups

Linear regression model was used to estimate the contribution of Smallholder Dairy Commercialization Programme (SDCP) to the entrepreneurial behavior of the dairy groups. The results in Table 3 revealed statistically significant contribution (0.0019; $p<0.05$, two-tailed). In fact, SDCP contributed 81.74% of the variation in the entrepreneurial behavior of the dairy groups (R^2 = 0.8174). So 18.26% of the variation in the entrepreneurial behavior of the dairy groups were explained by other factors. The constant, β_o = 2.092478 suggests there could be some entrepreneurial activity of 2.009 even without the programme. The slope (β_1 = 0.204693) suggested a unit increase in the programme, would result in an increase of 0.2046 in the entrepreneurial behavior of the group. However, there is need to improve organization and enterprise skills and development of the milk marketing chain of the groups as much milk is still being marketed locally as shown in Table 1.

Table 3 Regression model summary for SDCP contribution (N = 220)

Model	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2.092478	0.1200	17.425	0.000**	1.856	2.329
SDCP Contribution	0.204693	0.0649	3.1507	0.0019**	0.077	0.333

R^2 = 0.8174

3.4 Test for significance of SDCP contribution

Based on the statistical objective, this research hypotheses was tested using simple regression at α = 0.05.

H_o: *There is no supported evidence that smallholder dairy commercialization program contributes to the entrepreneurial behavior* (b=0).

H_a: *There is supported evidence that smallholder dairy commercialization program contributes to the entrepreneurial behavior* (b≠0).

The evidence against the null hypothesis is supported (0.0019 p-value < 0.05) as shown in Table 3. We therefore reject null hypothesis (Ho) and conclude that there is supported evidence that SDCP contributed to the entrepreneurial behavior of the dairy groups. We can actually see that 81.74% (R^2=0.8174) of the variation in the entrepreneurial behavior of the dairy groups were explained by SDCP.

This could be due to social capital - formal group organization (90.45%) and financial capital (savings, dairy farming etc.) promoted by SDCP. Livelihood strategies such as access to credit and investments in dairy farming (76.69%) could also have been a factor. The programme provided a platform by which constraints on livelihood success could be prioritised for action to remove them and the links between them identified for sustainability.

According Richards Branson (2016), “2015 was a fantastic year for start-ups. There were explosions in innovation and changes in attitude and access to help drive a boom in more

people setting up their own businesses". Crowd financing was the main source of funds for business.

4. CONCLUSION

We can conclusively say that Smallholder Dairy Commercialization Programme (SDCP) significantly contributed to the entrepreneurial behavior of the dairy groups (0.0019; $p<0.005$). In fact, 81.74% of the variation in the entrepreneurial behavior of the dairy groups were explained by SDCP (R^2=0.8174). The Government, therefore, needs to up-scale the programme to other parts of the country especially those with higher poverty levels (below $1.90 a day) than the national average of 42 per cent.

Livelihood strategies such as access to credit and investments in dairy farming along with social capital (group organization) and financial capital (savings, dairy farming etc.) should be encouraged. This way, constrain on livelihood success could be prioritised for action to remove them and the links between them identified for sustainability.

Although the study revealed the existence of non-viable operational farm sizes averaging 2.7 acres in most of the study area, holistic dairy policy that integrates both small and large dairy businesses needs to be developed. In particular, the policy should not only strengthen market integration, but also provide incentives such as tax holiday of three to five years for upcoming smallholder dairy entrepreneurs (start-ups) and affordable loans. Small businesses matter more on the ground of socio-political purposes rather than economic efficiency.

Crowd funding - "the practice of funding a project or venture by raising small amounts of money from a large number of people, typically via the Internet" – could also give start-up capital for the smallholder dairy farmers.

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