THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Dairy Agribusiness Strategies and Performance of Farmers in Selected Counties in Central Kenya

Christopher Kahuthu Koori
Post-Graduate Student (MBA), Kenya Methodist University, School of Business and Economics,
Department of Business Administration, Nairobi, Kenya
Dr. Peter M. Kihara
Senior Lecturer/ Academic Registrar, Kenya Methodist University,
School of Business and Economics, Department of Business Administration, Nairobi, Kenya
Dorothy Kirimi
Lecturer/Chairlady, Department School of Business and Economics,
Kenya Methodist University, Department of Business Administration, Nairobi, Kenya

Abstract:
Despite intensive knowledge and skill presumably passed on to the dairy farmers, there is a huge outcry from these farm entrepreneurs of high cost of dairy production and low returns on their dairy farming investment. Nevertheless, a small portion of the farmers have gone ahead to venture into dairy farming as business. This study sought to establish the dairy different investment strategies or combination of investment strategies and their resulting performance in the agribusiness farms. The study focused on the dairy agribusiness strategies of dairy farms in Nyeri, Kirinyanga, Murangá and Kiambu counties of Kenya. The study covered four objectives independent valuables and one dependent valuable. The independent valuables include innovative activities strategies; Operations activities strategies; Training of dairy farmers and value addition strategies. The four independent variables are checking against the farm performance as the dependent variable. Sample size was 384 dairy agribusiness farms. The sample size was derived using Mugenda &Mugenda sampling formulae applied on the total number of active dairy farmers who delivered milk to Milk Associations (processor, Union, Federation, Cooperative (D.F.C.S.) self-help (S.H.G.), Investment Company) data sourced from Kenya Dairy Board 2015. For data collection questionnaires was the major instrument. Where approvals were given photographs were taken. Data was analyzed using the SPSS computer software, where both descriptive and inferential statistics were derived. Regression analysis was used in estimating the relationships among variables. The study found that innovative activities strategies in dairy agribusiness, dairy agribusiness farming operations activities, training to dairy agribusiness farmers and end product value addition influence the performance in dairy farming in central Kenya. The study recommends area for further studies to consider other County Governments in Kenya for purpose of making a comparison of the findings with those of the current study.

Keywords: Agribusiness investment, performance, innovative, operation, training, value addition

1. Introduction

Under World Bank Development report 2008 titled Agriculture for development, they stated that Agricultural is one of the most important and effective strategies for economic growth and poverty reduction in rural areas where the majority of the world's poor live. Gross domestic product (GDP) growth in agriculture has been shown to be at least twice as effective in reducing poverty as growth originating in other sectors.

It is important to consider inclusive business strategies that will create value for the rural and urban poor, or innovative models that will help build bridges between businesses and the poor. Past agricultural policies and programs have focused mainly on improving production (World Bank, 2013). Hence, the failure of agriculture to function as an engine of growth stems not only from 'production' considerations but from the organization and performance of the value chain as a system. For instance, coordination with urban markets, relations between farmers, processors and traders, transportation, finance, diffusion of knowledge, infrastructure, are all part of the bigger picture. Issues, such as who benefits from the agribusiness value chains, value chain dynamics and upgrading, sector linkages, governance and coordination mechanisms, and social diversity (age, gender), are all important lines of inquiry that have only been fragmentally understood and partially explored in the Kenyan context. Broadly, these aspects are all encompassing to include interaction of factors facilitating upgrading and inclusion or exclusion of actors in the value chain. Inter alia, institutional settings, the governance structure, and standards influence linkages and participation of actors and their role and position in the local and global agricultural value chains (Rutashobya, 2013).

Under the Vision 2030 Economic Pillar (other Pillars includes Social and Political), Agriculture is among the sectors in target to realizing the set objective (moving the economy up the value chain). The sector has for many years formed the backbone of Kenya's economy, contributing about 24 per cent of the Gross Domestic Product (GDP) and accounts for 80 per cent of national employment, mainly in rural areas. Agriculture also contributes more than 60 per cent of the total export earnings and about 45 per cent of government revenue, while providing for most of the country's food requirements. The sector is estimated to have a further indirect contribution of nearly 25 per cent of GDP through linkages with manufacturing, distribution, and other service related sectors.

The promulgation of Kenya's Constitution in 2010 enunciated a plethora of reforms key amongst them being; devolution of various sectors including agriculture. Devolved framework for agriculture is anchored in Part 2 of the Fourth Schedule, providing that the national government shall have exclusive responsibility of agricultural policy formulation whilst the county government shall facilitate, implement and oversee all other agricultural related matters including the implementation of national policies on agriculture. The new constitution has the national ministry making policy, but crop and animal husbandry, fisheries, disease control and other services being undertaken at the county level (Simiyu, 2012)

In Kenya, we have a State Department of Agriculture that has the mandate "to promote and facilitate production of food and agricultural raw materials for food security and incomes; advance agro based industries and agricultural exports; and enhance sustainable use of land resources as a basis for agricultural enterprises." These government objectives show the renewed focus on the agriculture management. Among the areas being addressed include; Crop Resources, Agribusiness & Marketing; Policy, Crop Research & Regulations; Infrastructure & Mechanization; Licensing, (Simiyu, 2012).

2. Statement of the Problem

Despite intensive knowledge and skill presumably passed on to the dairy farmers, there is a huge outcry from these farm entrepreneurs of high cost of dairy production and low returns on their dairy farming. Nevertheless, a small portion of the farmers have gone ahead to venture into dairy farming as business. The study seeks to establish the different strategies or combination of strategies and their resulting performance in these agribusiness farms. This help answer the question: "are the small dairy farmers not using the right strategies in their milk production"

Question is. What are the strategies the agribusiness dairy farmers have used that make them have a competitive advantage in the dairy venture? Can we take these strategies across the board to make the dairy farming venture into the profitable margins hence help the dairy farmers? This study has addressed itself on dairy agribusiness strategies farmers have used and how they affect performance.

3. Literature Review

3.1. Diffusion of Innovation Theory

Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in 1962. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behaviour, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behaviour, etc.). The key to adoption is that the person must perceive the idea, behaviour, or product as new or innovative. It is through this that diffusion is possible.

In the context of this study two variables will be covered by this theory; the innovation activities and the training of farmers. The process of new innovations being communicated through the various channels (trainings which can be theory or practical application in the farm) is what is being referred as diffusion. The diffusion process includes the classic process of "technology transfer" and the process of "adoption of technology" (Black, 2000: Warner, 1974).

3.2. Theory of Reasoned Action

Martin Fishbein and IcekAjzen (1967) came up with a theory of reasoned action. The theory states "An individual's decision to engage in a particular behaviour is based on the outcomes the individual expects will come as a result of performing the behaviour". The theory of reasoned action suggests that stronger intentions lead to increased effort to perform the behaviour, which also increases the likelihood for the behaviour to be performed. In the context of an agribusiness dairy farmer the conceptualized deliberate actions to take departure from the normal dairy farming practices is a reasoned action. Agribusiness dairy farmers have changed their attitudes in adoption of new ideals for commercial benefits particularly technology. The dairy agribusiness farmer decision to for example involve specialist and consultants in designing the cow barn structure, feeds planning plus many others. A reasoned action in dairy farming would mean were established planned structured system that ensures efficient flow of activities involved in the entrepreneurship exercise. In the covered objectives on the study, each of them will help demonstrate how deliberate planned action help improve performance.

Modern dairy feeding practices reasoned action would entail; securing feed and water supplies from sustainable sources, ensuring dairy feed and water are of suitable quantity and quality, control storage conditions of feed.

3.3. Classical Conditioning Theory

Classical conditioning (Theory by Ivan Pavlov, 1849-1936) is a form of learning whereby a conditioned stimulus (CS) becomes associated with an unrelated unconditioned stimulus (US) in order to produce a behavioral response known as a conditioned response (CR). The conditioned response is the learned response to the previously neutral stimulus. The conditioned stimulus is usually neutral

and produces no particular response at first, but after conditioning it elicits the conditioned response. In this study context, this theory will apply on the training and operation objectives bring about a desired conditioned performance.

When a farmer acquires skills and knowledge (conditioned stimulus) on how the dairy cow converts feds into milk within it body, the farmer results into enhancing the nutritional balanced aspects (unconditioned stimulus) of what help the cow generate more milk (conditioned response). When a farmer also engages in research on best breeding dairy cow and apply the knowledge to enhance and upgrade the dairy farming (conditioned stimulus) by propagating the best genetic makeup (unconditioned stimulus) of dairy cow's high milk productivity performance (conditioned response). Research on dairy farming involves experiments and demonstrations on nutrition and management. Experiments conducted on the dairy farming are investigating: feeds and feeding activities; improving health of dairy cows through management and feeding programs. Skilled and well-trained farm workers are essential. Intimate knowledge of dairy cattle and their management is necessary in providing the milking cow with the kind of nutrition that will allow dairy cow to produce the optimum amount of quality milk. By having skilled and trained workers a dairy farmer not only increase milk production but may as well minimize other cost related to wastage (of resources), diseases and pest control. This eventually enhances performance.

3.4. The Value Chain Approach

The term 'Value Chain' was used by Michael Porter in his book "Competitive Advantage: Creating and Sustaining Superior Performance" Porter, (2013). Every farm is a collection of activities that are performed to design, produce, and market, deliver and support its products. All these activities can be represented using a value chain model. Competitive advantage is created and sustained when a farm performs the most critical functions either more cheaply or better than its competitor(s). Value chain can be used to examine the various activities of a farm and how they interact in order to provide a source of competitive advantage by, performing these activities better or at a lower cost than the competitors (Sivapalan&Rajendran, 2012). The value chain analysis describes the activities the organization performs and links them to the organizations competitive position.

Agriculture due diligence focuses heavily on value-chain analysis that assesses the structure, conduct and performance of each segment of the value chain: agricultural production process/activities, the value-added processes and the market. A value chain analysis will include a focus on actors (who handle the process as it moves through the value chain), supporters (who provide essential services) and regulators (who create the enabling environment). According to Porter (2013), a firm must decide whether to attempt to gain competitive advantage by producing at a lower cost than its rivals or differentiate its products and services and sell them at a premium price. Then, the firm must decide whether to target the whole market (broad) with its chosen strategy or to target a niche (narrow) market. If a firm wishes to pursue the strategy of cost leadership, it has to be the low-cost producer (Porter, 2013). A firm may gain cost advantage through economies of scale, appropriate technology, cheap raw material, etc. Organizations that achieve cost leadership can benefit either by gaining market share through lowering prices (whilst maintaining profitability,) or by maintaining average prices and therefore increasing profits (Porter, 2013). All of this is achieved by reducing costs to a level below those of the organization's competitors.

In this study though the value chain approach under Porters theory address itself to the whole firm systems, the study will focus much on the objectives farming activities and look at them deep analyzing them to bring out the exact activities that derive the competitiveness by reducing cost or enhancing productivity. Feeding activities to ordinary farmers would entail providing pastures/fodder to the dairy cow to satisfy the hunger with expectation of milk. In dairy agribusiness, a dairy farmer will plan to give the dairy cow pasture/fodder that is balanced in both quality and quantity, at the right time for the right stage of the dairy cow, in the right manner, using right feeding trough etc. In doing all these farmer targets to get the best out of each activity he does in the feeding. Milk value addition; Small scale dairy farmers often deliver their milk to the milk processors who buy milk direct from farmer or indirect from the collectors then process, package and transfer raw milk into final product. This act as the centre of the value chain and also the ruler in the game with dairy farmer. The processors set the quality control to the milk assessment. And base on the quality of the milk, they would set the price. The dairy farmer become the one who suffer a lot in this trade due to the fact that the processor normally uses the approach of "buy low sell high". In the light of this agribusiness dairy farmers have seen the challenge of having to "sell low" their produce hence is further investing to ensure they do more value addition to their milk produced and thus fetch better prices for their milk from consumers.

4. Empirical Literature Review

Dennis, (2010) in the study aimed at determining herd management and institutional arrangements both at the farm and market level that influence the profitability of the dairy farmers. To determine factors constraining profitability the Data Envelopment Analysis model was used to give profit efficiency levels of the dairy farmers. The Stochastic frontier second stage was used to determine the factors that affect profit efficiency and their extent.

A study by Nyariki, (2009), on impacts of policy reforms on the livestock industry in Kenya noted the increased competition which is adversely affecting performance. The study did not proceed to outline how various strategies influence performance. This study will focus on the dairy farm agribusiness strategies at the farm level and this affect performance.

Under the journal by International Journal of innovative research and Development Vol 3, 2014, a study titled Evaluation of Technical Efficiency of Dairy Farms in Eastern Central Highlands, Kenya. This study evaluated the technical efficiency of dairy cow farms in Embu and Meru counties of Kenya, using the stochastic frontier approach. The farms were characterized and technical efficiency estimated. Results revealed that the number of lactating cows and the amounts of roughages, concentrates, and mineral supplements were the major factors influencing milk output.

Under the Journal of Economics and Sustainable Development Vol.6, No.2, 2015 study titled Assessing the Economic Efficiency of Dairy Production Systems in Uasin Gishu County, Kenya. The objective of the paper was to estimate economic efficiency in the dairy production sector in Uasin Gishu County of Kenya. Zero grazing, semi-zero grazing and open grazing production systems were analyzed separately using the Cobb-Douglas stochastic frontier cost function. In a second stage, it examined the degree to which the calculated efficiency correlates with a set of explanatory variables using a censored regression model. The results indicate that each of the three milk production systems was relatively inefficient, with potential in all cases for reducing input costs or increasing output.

Nakanwagi and Hyuha, (2015) in their case study titled, Technical Efficiency of Milk Producers in Cattle Corridor of Uganda: Kiboga District. The overall objective of the study was to analyze technical efficiency and its determinants among milk producers in cattle corridor parts of Kiboga district. Stochastic frontier approach was employed to analyze technical efficiency and to bit model regression to establish determinants of technical efficiency. The study used cross sectional edited data of 190 randomly sampled respondents from the three sub counties. Average technical efficiency indicated that milk producers were operating below the production frontier and were not technically efficient but had potential to improve. Determinants of technical efficiency were herd size, improved cows, hired labor, land ownership, water source and extension services.

According to Tegemeo Institute in Policy Brief Document Titled Productivity Trends and Performance of Dairy Farming in Kenya No. 4/2011), they studied trends in milk productivity and performance of the Kenyan smallholders' dairy sector nationwide between years 2000-2010.

The objective of their study was to examine milk productivity trends, assess variable costs of production and gross margin at the farm levels for different grazing systems, and highlight the constraints in the dairy industry.

Some of findings included; households keeping improved animals increased over the years 2000-2010, there was positive trend in milk production between 2000-2007 declines in 2010 due to prolonged drought, milk production was higher in higher potential areas, production in any year was associated with seasonal variation, there were relatively low proportions of milk sold indicating that while dairy production was practiced by many households, most of the produced milk is mainly for home consumption, purchase of concentrates formed the largest cost component in both non-zero grazing and zero grazing system. Cost of maintenance and repairs was second for zero grazing system, cost of labor is second in non-zero grazing system. Dairying is an economically viable enterprise in the short run. Both total value of milk produced by each lactating cow per month and the monthly variable cost per lactating cow were higher in zero grazing enterprises. Overall the ratio of gross margin to variable expenses was low for all households regardless of the grazing system, with every shilling invested in total variable costs returning just a few cents. The gross margin rate was low on average.

Though Tegemeo Institute in Policy Brief Document titled (Productivity Trends and Performance of Dairy Farming in Kenya No. 4/2011) did a great work identifying the cost areas in dairy farming that carry the heavy cost in the small-scale dairy venture, this study will look at the agribusiness s strategies and find the relation between the cost involved and its effects on the performance. The study will also look at the finding that "dairying is an economically viable enterprise in the short run" and see how true this statement is.

Ter-Hemen, Amah Tony, 2015 (The challenges affecting dairy farmers in Kenya: a case study of dairy farmer groups in Njabini, Nyandarua County). In this study, the conclusion was that dairy farmers are faced with challenges such as limited access to financial services, lack of working capital, low liquidity, low spending on agriculture by most African governments, high costs of production due to insufficient access to market information, unavailability of agricultural based financing and agricultural grants. The findings also conclude that road networks and key Infrastructural facilities are either lacking, in poor condition or nonexistent as in the case of feeder roads and road networks. Inadequate dairy production information necessary for the optimal quality of dairy products and the required milk marketing activities for milk markets integration. Further to what the study under Ter-Hemen did this study will be looking at the challenges findings mentioned above and see how the agribusiness dairy farmers are addressing and convert them from challenges to opportunities creating a competitive advantage by looking at the strategies to counter challenges and the results of the some in returns.

The work of LeoneIga, Mutuku, Isabelle and Jane (2014) is closely related to what this study is all about but with the departure in that this study will be looking at the Agribusiness dairy farming and focus on the strategies they have undertaken to mitigate against the low efficiency in milk returns.

It is important to note that most of the literature done on the dairy farming is mainly focusing on small scale farmers and addressing itself to highlighting the challenges the farmers are facing. For a departure, this study will look at the farmers doing dairy farming as a business and objectively look at the returns effects after strategically addressing the obvious common challenges the small-scale farmers have been facing.
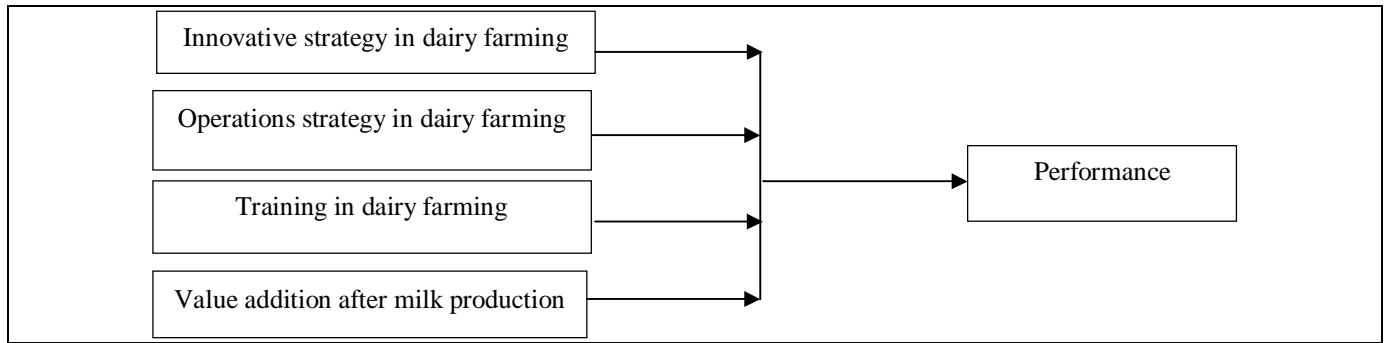
5. Conceptual Framework

Figure 1: Conceptual Framework

6. Research Methodology

The study concentrated in Central Kenya which is mostly an agricultural area with farmers practicing mixed farming. Much of Kenya's dairy industry is also based in this province. Under the new constitution Central Kenya has five counties which include Nyandarua, Nyeri, Kirinyaga, Murangá and Kiambu, (G.O.K, 2010). The research study utilized a descriptive, qualitative and quantitative research design to analyze the performance of dairy agribusiness farming in central Kenya region. Descriptive research design utilizes both elements of quantitative and qualitative research methodologies to offer description of the current environment. Qualitative design created understanding from data as the analysis proceeds. Quantitative methods involved objective data analysis collected through questionnaires and surveys. This helped to determine the relationship between the independent variables (objectives) and the dependent variable (performance).

Data under Kenya Dairy Board (KDB) -2015 showed that 34 counties had active dairy farms which delivered milk to Milk Associations (processor, Union, Federation, Cooperative (D.F.C.S.) self-help (S.H.G.), Investment Company). The total number of these Milk Association were 411 with a total of 180,132 active farmers. The areas covered by this study included Nyeri, Kirinyaga, Muranga and Kiambu. The active farms as per KDB 2015 are as per the table below.

6.1. Target Population Table

Location	Active Dairy Farmers
Nyeri	23,508
Kirinyaga	4,550
Muranga	3,400
Kiambu	38,023
Total	**69,481**

Table 1
Source: Data under Kenya Dairy Board (KDB) -2015

6.2. Sampling Procedure

The global formula for sample size was determined by Cochran's formula as quoted in Mugenda and Mugenda (2003):

$n = pqz2/e2$

Where:

n   is the minimum sample
z   is the standard normal deviation at required confidence level
p   is the population proportion in the target population estimated to have the characteristics being measured
q   is 1-p
e   is the marginal error

Mugenda & Mugenda (2003) recommend that since p and q are unknown, both are set at 50% at a confidence level of 95% that will be used for this study. Z= 1.96 and the sampling error, e = +5% thus sample size becomes:

$N=50*50*(1.96)2/5=384$

LOCATION	Target Number	Proportion %	Sample size
Nyeri	23,508	34%	130
Kirinyaga	4,550	7%	25
Muranga	3,400	5%	19
Kiambu	38,023	55%	210
Total	**69,481**	**100%**	**384**

Table 2: Sample Size Table

Table 2 showing the sample sizes as per county.

The area of study and location sample was represented in Appendix 2.

6.3. Instrumentation, Data Collection and Analysis

During the data collection questionnaires were the major instrument. Questionnaires were easy to administer and remove the biasness since the person completing it was guided by what he knew. Where necessary and approvals were given, photographs were used. Five pilot questionnaires were dispatched in the field to test how applicable they were in the field and determine how possible the data required was available in the field.

Data collection predominantly involved primary data from the agribusiness farms. Since the farmers practiced pure dairy agribusinesses are not many, sample focus was on very specific target farmers. Questionnaires method of data collection was used where specific questions were asked and where applicable the interviewer noted down the response or the interviewee filled the questionnaire themselves.

Data was processed by use of SPSS software. Regression analysis was used in estimating the relationships among variables.

7. Research Findings and Discussions

7.1. Response Rate

A total of 384respondents were issued with the questionnaires which imply that the entire sample population was used for the study. Out of these, 346 questionnaires were properly filled and returned. This represented an overall successful response rate of 90.10%.

7.2. Demographic Characteristics

7.2.1. Type of the Farm

Respondents were asked to indicate the type of the farm they had. Majority of the respondents who represented 52% were sole proprietors, 33% were in partnership while 15% operated as a company. The sole proprietorship also coincides with the way the farm is being managed. A significant number of farms also fall under partnership. This observation was peculiar in that the partnership is between the farmers and the commercial entities that want to market their products like animal feeds and drugs.

7.2.2. Farm Manager

Respondents were asked to indicate one who managed the farm daily activities. 55% of the farms daily activities are managed by their owners, 45% indicated that the farms were managed by employed managers. In farms where managers are employees, they had formal education on farming.

7.2.3. Education Level

Respondents were asked to indicate their highest level of education. 49% who were the majority had their highest level of education at tertiary level. 33% of the respondents had secondary level of education, 15% had their highest level of education being upper primary level of education while only 3% had their level of education being lower primary level of education.

7.2.4. Farm Period (years/months) of Existence

Respondents were asked to state the number of years and months the farm has been operational. A significant number of farms are between 2 years and 5 years i.e. farms below 1 year were 5%, 2 years 12%, 3 years 15%, 4 years 28%, 5 years 18%, 6 years 6% 7 years 7% 8 years 4%, 9 years 4% and 10 and above years 1%. It then proper to assume that dairy agribusiness is now being embraced and in years to come a more farmers will take it as serious business.

7.2.5. Source Power

Respondents were asked to indicate the main power source for the farm. 55% of the respondents' main source of power was electricity, 17% indicated that their main source of power was motor vehicle/cycle, 16% have human capital as their main source of power while 12% use generators as their main source of power.

7.2.6. History Records Tracking

The respondents were requested to indicate whether they were tracking their breeding records. Majority of the respondents keeps history records as show by 77% indication, 23% who were the minority do not keep records.

7.2.7. Herd Details

The respondents were told to state the stage at which the livestock are at the time of study. 50% of the dairy cows were under the production stage. 7% were in the dry spell. 19% were heifers reared for the future of the farm production. 21% were calves and 3% were mature bulls for reproductions. The conclusion is that dairy farmers concentrate so much of the animals that have greater returns or are about to start the production.

7.2.8. How Many Mature Breed of Dairy Animals is in the Farm?
The respondents were told to give breed type of dairy cows which are mature and are currently being milked or are in the dry spell. 63% of the respondents had Friesian cow, Jersey were 14%, Guernsey 13%, crossbreeds and Ayshire were at 4% and 6% respectively. Almost no indigenous cows were found.

8. Descriptive Statistics
Descriptive statistics were obtained through running the statements of each objective using descriptive custom Table and presenting in percentages. The mean and the standard deviations were obtained through running the descriptive statistics. The highest of the mean was 5 while the lowest was 1. Therefore, a mean of 1= Strongly Disagree 2=Disagree, 3=Not Sure, 4=Agree 5= Strongly Agree.

8.1. Innovative Strategy Activities
In this study, innovativeness was measured by eleven questions. On a five-point scale, the average mean of the responses was 3.93 which mean that majority of the respondents agreed with most of the statements on farm innovativeness. The answers, however, were varied by a standard deviation of 1.12.

8.2. Farming Operations Activities
In this study, operation activities were measured by nine questions. On a five-point scale, the average mean of the responses was 3.89 which mean that majority of the respondents agreed with most of the statements on operation activities. The answers, however, were varied a standard deviation of 1.15.

8.3. Dairy Agribusiness Training
Training on dairy agribusiness was measured by seven questions. On a five-point scale, the average mean of the responses was 3.88 which mean that majority of the respondents agreed with most of the statements on training. The answers, however, were varied as shown by a standard deviation of 1.15. The highest of the mean was 5 while the lowest was 1.

8.4. Products Value Addition
Products value addition was measured by seven questions. On a five-point scale, the average mean of the responses was 3.83 which mean that majority of the respondents agreed with most of the statements on value addition on products. The answers, however, were varied as shown by a standard deviation of 1.15. The highest of the mean was 5 while the lowest was 1.

8.5. Performance of Dairy Farms
On the dependent variable was measured using eight questions. On a five-point scale, the average mean of the responses was 3.95 which mean that majority of the respondents agreed to most of statement items. The answers, however, were varied as shown by a standard deviation of 1.15. The highest of the mean was 5 while the lowest was 1.

9. Correlation Analysis

		Performance	Innovation	Operations	Training	Value Addition
Performance	Pearson Correlation	1.000				
	Sig. (2-tailed)					
Innovation	Pearson Correlation	0.075	1.000			
	Sig. (2-tailed)	0.006				
Operations	Pearson Correlation	.397**	.165**	1.000		
	Sig. (2-tailed)	0.000	0.002			
Training	Pearson Correlation	.679**	0.059	.204**	1.000	
	Sig. (2-tailed)	0.000	0.278	0.000		
Value Addition	Pearson Correlation	.190**	.175**	.219**	.396**	1.000
	Sig. (2-tailed)	0.000	0.001	0.000	0.000	
** Correlation is significant at the 0.01 level (2-tailed).						

Table 3

Results in Table 7 below presents the results of the correlation analysis. The results revealed that innovative activities strategies in dairy agribusiness farming and performance of dairy farms are positively and significant related (r=0.075, p=0.006). The results further indicate that dairy agribusiness farming operations activities and the performance of dairy farms are positively and significantly related (r=0.397, p=0.000). It was further established that training on dairy agribusiness farmers and the performance of dairy farms were positively and significantly related (r=0.679, p=0.000). Similarly, results showed that end product value addition and performance in dairy farming were positively and significantly related (r=0.190, p=0.000).

10. Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.25	4	13.062	102.951	0.000
Residual	43.266	341	0.127		
Total	95.516	345			

Table 4

Table 9 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of performance of dairy farms. This was supported by an F statistic of 102.951 and the reported $p<0.05$ which was less than the conventional probability of 0.05significance level.

11. Regression of Coefficients

	B	Std. Error	Beta	t	Sig.
(Constant)	0.065	0.262		0.246	0.806
Innovation strategies	0.014	0.044	0.012	0.328	0.003
Operational activities	0.403	0.053	0.289	7.604	0.007
Training	0.710	0.042	0.675	16.867	0.000
Value addition	0.126	0.036	0.143	3.514	0.001

Table 5

The table shows that innovation strategies had a positive and significant effect on performance of dairy farms (r=0.014, p<0.044). The Table further indicated that operational activities had a positive and significant effect on performance of dairy farms (r=0.403, p<0.05). It was further established that dairy farm training had a positive and significant effect on performance of dairy farms (r=0.710, p<0.005). Similarly, results showed that dairy product value addition had a positive and significant effect on performance of dairy farms (r=0.126, p<0.05).

12. Summary of Findings Conclusion and Recommendations

12.1. Innovative Activities Strategies and Performance of Dairy Farms
The first objective of the study was to establish how innovative activities strategies in dairy agribusiness farming affect the performance of dairy farms in Central Kenya region. Results showed that innovation strategies had a positive and significant effect on performance of dairy farms (ß=0.14, p=0.003). The finding implies that well planned innovative activities will lead to increase in performance of dairy farms.The innovative activities included dairy feeds production, feeds processing, storage and preservation. The other activity that supported the innovative strategy was the choice of cow breed. Farmers should invest in rearing high-quality breeds and endeavor to keep improving them to the levels of pedigree. Recycling and reuse of farm byproduct like example biogas production and manure for fodder production.The study concludes that innovative activities strategies in dairy agribusiness are an essential foundation for dairy farming. Being everything that supports the flow and processing of farm performance, innovative activities strategies in dairy agribusiness constitutes a significant enhancer to current and future performance in dairy farming.

12.2. Farming Operations Activities and Performance of Dairy Farms
The second objective of the study was to establish how dairy agribusiness farming operations activities, affect the performance of dairy farms in Central Kenya region. Results revealed that operational activities had a positive and significant effect on performance of dairy farms (ß =0.403, p=0.007). The finding implies that improvement in farming operation activities will lead to improvement in performance of dairy farms.Operating activities that enhanced performance as per the study includes well planned feeds and feeding schedule, planned schedules for milking, feeding and resting time, well planned cow barns including feeding troughs/resting space/exercise, investment in machineries like choppers/chaff cutter/hoppers/milking machines. In addition, the study concluded that improving dairy agribusiness farming operations activities has become a core determiner of the successful production of dairy and dairy products in dairy farming. An improvement in dairy agribusiness farming operations activities will results in improvement of farm performance. The operations activities as addressed in the study included feeding schedules, cow barn structure design, milking schedules, investment in machineries and equipments.

12.3. Training to Dairy Agribusiness Farmers and Performance
The third objective of the study was to establish whether training to dairy agribusiness farmers affect the performance of dairy farms in central Kenya region. Results revealed that dairy farm training had a positive and significant effect on performance of dairy farms (ß=0.710, p=0.000). The finding implies that an increase in training to agribusiness farmers will lead to increase in performance of dairy farms.The study concluded that training to dairy agribusiness farmers play a crucial role in any initiation and adoption farm production activities. It has great power to influence farm performance within the county. Through long term strategic vision, training

to dairy agribusiness farmers can encourage the entire county to learn and participate in dairy farming. This study training picked on farm staff getting occasional farming refresher updates through attending farm seminars/trade fares/other farm visits, farms hiring trained dairy farming professionals, chain of command in the farm, in house dairy farming knowledge sharing.

12.4. Product Value Addition and Performance
Product value addition on performance in dairy farming in central Kenya. Results showed that dairy product value addition had a positive and significant effect on performance of dairy farms (ß=0.126, p=0.001). The finding implies that an improvement in product value addition will lead to increase in performance of dairy farms.The study concludes that end product value addition has a positive and significant effect on dairy farming performance. Value addition in dairy farming needs little innovative ways whose product sales will result in the farm increased performance.

12.5. Policy Recommendations and Suggestions for Further Study

12.5.1. Innovative Activities Strategies in Dairy Agribusiness
The study recommends for investment innovative activities strategies in dairy agribusiness in the county to be natured. The innovative activities should include dairy feeds production, feeds processing, storage and preservation. Feeds and feeding forms a paramount activity in dairy farming as observed form the study and thus an investment towards promotion of these activities will have positive benefit. The other activity that supported the innovative strategy was the choice of cow breed. Farmers should invest in rearing high-quality breeds and endeavor to keep improving them to the levels of pedigree. Recycling and reuse of farm byproduct like example biogas production and manure for fodder production. The farmers can also harvest rain water and use it for animals and fodder growth. In the light of the study the county government should endeavor to come up with programmers that are field based and not paper based. The innovative activities should be spread to other farmers through practical demonstrations. Farmers who have innovative ideas should be supported both financially and emotionally to encourage realization of the innovation.

12.5.2. Dairy Agribusiness Farming Operations Activities
The study also recommends that farmers should be made aware of productive dairy agribusiness farming operations activities. Operating activities that enhanced performance as per the study includes well planned feeds and feeding schedule, planned schedules for milking, feeding and resting time, well planned cow barns including feeding troughs/resting space/exercise, investment in machineries like choppers/chaff cutter/hoppers/milking machines. The operations activities should be guided by the knowledge behind each activity. Farmers should be guided through training why each activity has to be done in the way it is stipulated. The notion that dairy farming is a matter of having a cow and feeds is a misconception that has always made the dairy farmers lags behind in terms of realizing a benefit in the dairy venture. From this study, it is important that the counties have a comprehensive policy program that will help farmers understand how and why they do what they do. This will help increase efficiency in the dairy farming venture hence better profitability. They should be guided to ensure that they stick to these ways to realize profitability in their dairy ventures.

12.5.3. Training to Dairy Agribusiness Farmers
Training and continuous training is highly recommended to dairy farmers. The presumption that dairy farming knowledge has been passed on to the farmers is still high. In the sampled farms training and practical application of dairy farming was paramount to the success of the farm. Most farms had trained staff especially the decision makers. Good to note that all the sampled farms had more than often sent its staff to farming fair shows or visit to other dairy farms. Having made these observations its goes that training strategy has contributed a great deal in the positive performance of those doing dairy agribusiness. It is good to note that dairy farming is a science not art, for optimal commercial benefit to be realized the farmers have to learn and practice the knowledge on the farm. As stated in the statement of the problem, the presumed knowledge and skills that has passed to the dairy farmer is more of a narrative to majority of the dairy farmers than a reality. The few who have been able to translate the skills and knowledge could be the in the category of the sampled farmers. The counties should come up with plans on how the knowledge and skills to farmers should be actualized in the farms and not retained in the brains. This would help the dairy farmers improve their production in a more efficient and more economical way. The idea of agricultural extension officers was hatched to handle this matter but the reality on the ground has not reflected any much benefit. Training (both theory and practical) will ensure that they learn the innovative ways, new operational activities and ways on farm management hence leading to improved farm performance.

12.5.4. End Product Value Addition
Lastly, the study recommends for the development of end product value addition. Traditionally after milking cows most of the farmers subdivide the produce for domestic use and the rest is taken to the dairy collection centers. One of the significant observations from majority of the sampled farms was an attempt to break this tradition by doing some value addition to the milk before giving it to consumers. Among the activities done as milk value addition included pasteurizing, cooling, yoghurt making, cheese, milk skimming, ice creams making and milk product spackaging. A major challenge in this area was choice for right machineries and tools plus the human skills to handle the food processing activities. It's important to note that of the sampled farms none had a major challenge in marketing their products. Reasons for this were that they have a significant reliable production that satisfies their clients/consumers who included supermarkets, hotels, Milk ATMs and institutions. The County Government should make sure that farm products are added value before they are sold outside the county. As part of bigger plans to ensuring regional/counties economic development dairy

agribusiness should be one of the targeted sectors to spar growth in these counties. Each county should therefore enhance their policy on dairy farming and invest more in the areas that would encourage further processing of raw milk to creating more value to the farmers. The policy should include offering equipments and machineries that help in milk value addition and also packaging. End product value increases farm revenue and hence profitability

12.6. Recommendation for Areas for Further Study
The study sought to assess agribusiness strategies and performance on dairy agribusiness farmers in central Kenya region only, thus area for further studies could consider other county Governments for purpose of making a comparison of the findings with those of the current study. The study also has concentrated on only four objectives namely innovative, operational, training and milk value addition against performance, it is prudent to have further studies done in the same counties and focus on other strategies like marketing, financing, institutions and so on. These would help find out how they measure against performance thus help the county governments to draft policy drawn on research touching each region rather than a generalized policy.

13. References
i. Anderson, D.P., and D. Hanselka. (2009). "Adding value to agricultural products." Texas AgriLife Extension Service Publication No. E-573.
ii. Barkema, A., and M. Drabenstott. (2012). The Many Paths of Vertical Coordination: Structural Impacts for the Food System. Agribusiness11:483–492.
iii. Bakewell R. (2012). Animal Husbandry: Role of Animal Husbandry in Human Welfare Management. Journal Article
iv. Black, C., Akintoye, A. & Fitzgerald, E. (2000). An analysis of success factors and benefits of partnering in construction. International of Project Management, **18**(6), 423-434.
v. Dennis K.,(2010).Evaluation of the constraints to profitable smallholder dairy: A case of Nakuru County, Kenya
vi. Dooley, F. J. and J. R. Fulton. (1999). The State of Agribusiness Teaching, Research, and Extension at the Turn of the Millennium. American Journal of Agricultural Economics 81(5):1042-1049.
vii. Faostat, (2006). Dairy production and products. http://faostat.fao.org
viii. Gert-Jan M., AndreB., David C., (2005). Greenhouse gas abatement strategies for animal husbandry. Agriculture, Ecosystems and Environment 112 (2006) 163–170
ix. IFAD,(2006). Small holder Dairy Commercialization Program Report, IFAD and G.O.K report.
x. Ivan P., 1849-1936. Classical conditioning Theory.
xi. Karanja M., Andrew. (2003). The dairy industry in Kenya: The post-liberalization agenda, Paper presented at a dairy industry stakeholders workshop held in Nairobi, Kenya (27th August 2003).
xii. LeoneIga, Mutuku, Isabelle and Jane. (2014).Journal on Development and Agricultural, Titled Profit efficiency of dairy farmers in Kenya.
xiii. Fishbein, M. (1967). Theory of reasoned action: Some applications and implications. In H. Howe & M. Page (Eds.), Nebraska Symposium on Motivation, 1979 65–116. Lincoln: University of Nebraska Press
xiv. Methu. J. N., Owen, E., Abate, A., Mwangi, D. M. and Tanner, J. C. (1996). Smallholder Dairying in the Central Kenya Highlands: Practices in the Utilization of Maize Stover as a Feed Resource. Proceedings of the 5th KARI Scientific Conference: 243 - 251.
xv. Nakanwagi, T.T. and Hyuha, T.S. (2015).Technical Efficiency of Milk Producers in Cattle Corridor of Uganda: Kiboga District Case. Modern Economy,6,846-856. http://dx.doi.org/10.4236/me.2015.67079
xvi. NdambiO.A, T. Hemme and U Latacz-Lohmann, (2007). Dairying in Africa. IFCN Dairy Research Center at the Department of Agricultural Economics, University of Kiel, Schauenburger Strasse 116, 24118 Kiel, Germany, Department of Agricultural Economics, University of Kiel, Germany
xvii. Ngigi M. (2004). Building On Successes in African Agriculture Smallholder Dairy in Kenya, Focus 12, Brief 6, of 10 April 2004, Copyright © 2004 International Food Policy Research Institute.
xviii. Norman, D. & Obwona, M. 2001, Status of Agricultural Economics in Selected Countries in Eastern and Southern Africa, IFPRI, Washington, DC.
xix. Nyariki D.M. (2009) Impacts of Policy Reforms on the Livestock Industry in Kenya: The Case of the Dairy Sector, Livestock Research for Rural Development, 21 (10) 2009
xx. Omore, A., McDermott, J. J. and Gitau, G. K. 1996. Factors Influencing Production on Smallholder Dairy Farms in Central Kenya. Proceedings of the 5th KARI Scientific Conference: 370 – 380.
xxi. Porter, Michael E. (1985). Competitive Advantage: Chapter two, 36. Creating and sustaining superior Performance
xxii. Rogers, Everett M. (1962). Diffusion of innovations (1st ed.). New York: Free Press of Glencoe. OCLC 254636.
xxiii. Rutashobya K. &Bangens L. (2013) The Search for Poverty Reduction and Sustainability in Agribusiness in Tanzania: Will Value Chain Approaches provide the Insight? In Sigue, S (ed) "African Business and Sustainable Development: Challenges in the Era of Globalization" Edmonton, International Academy of African Business and Development (IAABD)
xxiv. Smallholder Dairy Project (SDP) (2005). The uncertainty of cattle numbers in Kenya. SDP Policy Brief No. 10. Smallholder dairy (R&D) Project. www.Smallholderdairy.org retrieved April 2013.
xxv. Staal, S. J. and Omore, A. (1997). Use of farmer recall versus direct measurement in gathering lactation data: Lessons from Kenyan smallholder dairy systems. Food, Land and Livelihood. Setting Research Agendas for Animal Science, 184 – 185.

xxvi.   Sivapalan Achchuthan, Rajendran Kajananthan. (2012). Vol 12, No 21. A Study on Value Chain Analysis in Dairy Sector Kilinochchi District, Srilanka

xxvii.   TechnoServe (2008). The dairy value chain in Kenya. Project report for the East Africa Dairy Development Program.

xxviii. TegemeoInstitute. (2011). Policy Brief Document, Productivity Trends and Performance of Dairy Farming in Kenya No. 4/2011

xxix.   Ter-Hemen, Amah T. (2015). The challenges affecting dairy farmers in Kenya: a case study of dairy farmer groups in Njabini, Nyandarua County. (United States International University - Africa, 2015)

xxx.   Thorpe, W.; Muriuki, H.G.; Omore, A.; Owango, M.O.; Staal, S. 2000. Development of smallholder dairying in Eastern Africa with particular reference to Kenya.

xxxi.   Thomas H. Herdt. (2014). Animal Science, Food Science, Veterinary Medicine. Michigan State University.

xxxii.   WambuguS, Kirimi L and Opiyo J. (2011). Policy Brief Productivity Trends and Performance of Dairy Farming in Kenya. Tegemeo Institute

xxxiii. Warner, K.E. (1974). The need for some innovative concepts of innovation: An examination of research on diffusion of innovations. Policy science, 5:433-451.

xxxiv.   World Bank. (2008). World Development Report 2008: Agriculture for Development. Washington, DC. © World Bank. https://openknowledge.worldbank.org /handle/10986-5990. License: CC BY 3.0 IGO.

xxxv.   Waema. (2013). A study on the effects of competitive strategies on performance of dairy firms in Kenya.

xxxvi.   Zepeda L. (2001). Agricultural, Production Capacity and Productivity. FAO Economic and Social Development.148.