

# Influence of Product Diversification Strategy on Performance of Dairy Firms: A Survey in Trans Nzoia County

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**Abstract:** The main objective of this research work was to determine how access to inputs influences performance of dairy enterprises in Trans Nzoia County. Descriptive research study design was employed based on a target population of approximately 696 milk bars/milk traders in Trans-Nzoia County. Cluster and simple random sampling was used to select a sample size of 245 dairy enterprises from the 5 sub counties in Trans-Nzoia County. Semi-structured questionnaires were employed to collect data and t-test, Pearson correlation as well as multiple regression analysis used to analyze the data. The F-test was employed to test the hypotheses of the study. The findings of the study show a significant positive linear correlation between access to inputs and dairy enterprise performance. Recommendation is made to the dairy industry players and the government take a more proactive approach especially in training the SSMVs on value addition of milk into higher value added dairy products. The study proposes that other counties known to be large producers of milk should be investigated in order to have a holistic picture of the entire country as well as a study done on total product diversification strategy by the milk bars with regard to performance.

**Keywords:** Dairy enterprises, influence, Inputs, performance.

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## 1. INTRODUCTION

The livestock sector has various sub sectors of which the Kenya dairy farming is one. It is an important source of health and wealth generation as well as employment provision for this country's population. Commercial dairy farming started in Kenya in early 1900's and grew rapidly in the early years with both large and small scale farmers getting into commercial dairying. Dairy production in Kenya is predominantly smallholding. Market oriented dairy farming in Kenya, based on exotic cattle, dates back to the early 20<sup>th</sup> century when European settlers introduced dairy cattle breeds and other exotic forms of agriculture from their native countries. Improved dairy cattle production by indigenous Kenyans was not until after the Swynnerton Plan of 1954, which allowed them to engage in commercial agriculture (Connelly, 2008). By 1963, when Kenya attained independence, the dairy herd had increased to about 400,000 exotic cattle largely in the hands of the settlers. The government strategy of a combination of direct intervention and statutory control of production activities and markets greatly benefited the smallholder dairy production and marketing, through subsidies on production inputs and market guarantees. While the strategy was justifiable, it was clearly not sustainable as was evident during the economic crisis of the late 1970s and early 1980s, which coincided with global changes regarding the extent of government control of and intervention in the production and marketing process (McDougall & Round, 1984). Several factors, which include the presence of significant dairy cattle populations, the importance of milk in the diets of most Kenyan communities, a suitable climate for dairy cattle and a conducive policy and institutional environment, have been contributing factors to the success of dairy production by smallholders in Kenya (Connelly 1989; Thorne et al 2000). The success is also attributable to the fact that milk sales provides a continuous stream of cash throughout the year for households growing

cash crops whose income is realized only once or twice a year. As at present Kenya produces an estimated 3.12 billion litres of milk per annum of which 2.2 billion litres is marketed. The dairy industry contributes 3.1 percent of Kenya's Gross Domestic Product. The industry supports over 1 million small holder dairy households and has generated 365,000 waged jobs and over 500,000 in support services. Diversification has become an important aspect of business strategy with reasons for this increased focus being, increased profitability, reduction in risk, increasing competition, higher growth and more efficient resource allocation (McDougall & Round, 1984). In terms of poverty reduction, product diversification is appealing with most high-value food commodities generating quick returns, hence offering smallholders a perfect opportunity to increase their incomes (Birth al, Joshi, Roy & Thorat, 2007; Singh, 2011). Product diversification involves the addition of new products to existing products either being manufactured or being marketed. Organizations follow various strategies within their environs until it reaches its maturity. Shifts in buyer preferences, diminishing demand of the product, increase in substitute products, increase in innovation and alternative technologies, and limited opportunities are some of the signs for a firm to look into alternative growth strategies. To continue growing the firm might try to expand internationally into less mature markets or diversify into different industries (Mishra et al, 2007). Different firms use product diversification strategies to expand firms' operations by adding markets, products, services or stages of production to the existing business. The purpose of product diversification is to allow the company to enter lines of business that are different from current operations. Companies diversify either by acquiring already existing business or expanding their own businesses into new markets and new areas of production.

#### ***Statement of the Problem:***

According to a report by Bolo *et al.*, (2011), the Ministry of livestock and fisheries reported that dairy farmers lose about 95 million litres of milk annually due to waste and spoilage in farms and along the market chain. Specifically, Bolo *et al.*, (2011) reported that farmers are faced with lack of market access for their excess milk. Because fresh milk is highly perishable, milk losses in the informal sector are high due to lack of milk collection and gluts during the rainy season (Ayako & Ngunjiri, 2011; Wambugu *et al.*, 2011). Karanja (2003) reported that milk production in Kenya is higher than the reported official statistics and that this could explain the observation shared by many in the dairy industry that the country is increasingly being faced by glut situations. While adding value to farm and livestock products before they reach the local and international market is one of the key aims of Vision 2030, value addition in the dairy value chain is still a challenge (ROK, 2007). The dairy sector faces inadequate exploitation of value addition which robs the country of the opportunity to increase the shelf life of products (ROK, 2008). A report by Techno Serve (2008), indicated that in the informal market, only 16 per cent of the milk goes through artisanal processing and is sold as homemade sour milk (mala or lala) or yoghurt, while in the formal sector, very similar statistics prevail with 85 per cent of the milk being sold as fresh milk either as short life pasteurized milk or as long life UHT milk, yoghurt makes another 3 percent, fermented milk 7 per cent, powder milk 3 per cent, with cheese and butter making a paltry 2 per cent of value added products sold. Another report by Muriuki (2011) indicated that 85 per cent of the marketed milk in Kenya is sold raw. These statistics indicate that there is very little value addition in the dairy sector in Kenya. Value addition through product diversification is therefore one way of solving the problems associated with milk gluts during the rainy season, milk perishability and uncompetitiveness of the dairy sector in the country. While there are a number of aspects that influence a decision to pursue value addition through product diversification strategy, the following variables were investigated: inputs, technological innovation and markets. This study sought to find out the influence of these variables on dairy enterprise performance in Kenya.

#### ***General Objective:***

The general objective of the study was to investigate the influence of product diversification strategies on performance of dairy enterprises in Trans Nzoia County.

#### ***Specific Objectives:***

To determine how access to inputs influences performance of dairy enterprises in Trans Nzoia County.

#### ***Research Questions:***

How does access to inputs influence performance of dairy enterprises in Trans Nzoia County?

#### ***Hypotheses:***

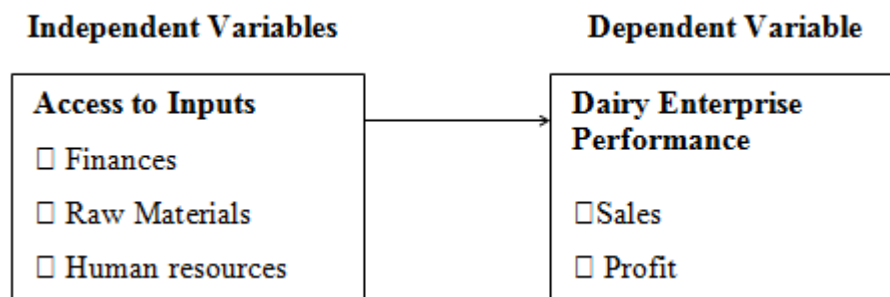
**H01:** Access to inputs has no influence on performance of dairy enterprises in Kenya.

## 2. LITERATURE REVIEW

### *Resource Based View (RBV) Theory:*

The Resource Based View (RBV) Theory tries to explain that for a firm to enjoy sustained competitive advantage, it must acquire and control valuable, rare, inimitable and non-substitutable resources and capabilities, plus have the organization in place that can absorb and apply them (Barney, 2007). He classified a firm's resources into three categories: First is Physical Capital Resources which includes physical technology - plant and equipment, geographical location and access to raw materials. Second is Human Capital Resources which includes training, experience, judgment, intelligence, relationships and insight of individual managers and workers in a firm. Third is Organizational Capital Resources which includes firm's formal reporting structure, its formal and informal planning, controlling and coordinating systems as well as informal relations among groups within a firm and between a firm and those in its environment. Grant (2007) argued that capabilities include what a firm can do as a result of teams of resources working together. He stated that development of capabilities can then be used as the basis of broadening a firm's product range which is a common feature of successful strategies of related diversification. Yuan *et al.*, (2004) suggested that diversified firms have higher financial leverage than non-diversified firms. Kraaijenbrink, Spender and Groen (2010) in their critique of the resource based view suggested that emphasis should not be placed on the dynamic capabilities but on incorporating time, space and uncertainty into the RBV debate and that continuous successful innovation is key in an organization because SCA is perishable. This study used access to inputs as the resource that were investigated. The theory formed the first variable which is access to inputs, where teams of resources in the form of finances, raw materials and skills were used to diversify a firm's product range leading to success especially with regard to related product diversification.

### **Conceptual Framework:**



### *Inputs:*

According to Grant (2001), resources are inputs into the production process and include among others, raw materials, financial strength, capital equipment, skills of individual employees, patents and brand names. He suggests that there are direct links between resources and profitability and that the ability to maximize productivity is particularly important in the case of tangible resources such as finance, plant and machinery and people. He alluded to the fact that it may involve using fewer resources to support the same level of business, or using the existing resources to support a larger volume of business. A study conducted by Techno Serve (2008) found that the informal dairy sector is able to pass on input price increases and decreases to consumers compared to the formal sector which has much less flexibility as retail prices do not change quickly and frequently. This suggests that dairy enterprises in the informal sector can be able to enjoy high profitability for their products without incurring additional costs as a result of fluctuations in input costs.

## 3. RESEARCH METHODOLOGY

This study employed the descriptive research design. The design was used to examine the relationships among variables (correlational). The design was deemed appropriate for the study as it attempted to describe a group of people, a phenomenon or an event (Salkind, 2010) based on the influence on another variable. A semi-structured questionnaire was used as the data collection instrument which contained closed-ended questions as well as open-ended questions. A questionnaire was used as the data collection instrument which contained closed-ended questions as well as open-ended questions. Cronbach's alpha test of reliability was used to measure the internal consistency of items in the questionnaire. To ensure content validity the researcher worked closely with the supervisors for their insight into the questionnaire. Analysis of data to be collected and the hypotheses testing was done using multiple regression analysis.

#### 4. DATA ANALYSIS, FINDINGS AND DISCUSSIONS

##### *Accessibility to inputs:*

The presentation and interpretation of data on respondents' views in this section attempted to answer the questions pertaining to the influence access to inputs on performance of dairy enterprises in Trans Nzoia County. According to Grant (1991), resources are inputs into the production process and include among others, raw materials, financial strength, capital equipment, skills of individual employees, patents and brand names. He suggests that there are direct links between resources and profitability and that the ability to maximize productivity is particularly important in the case of tangible resources such as finance, plant and machinery and people. He alluded to the fact that it may involve using fewer resources to support the same level of business, or using the existing resources to support a larger volume of business. The results are presented in percentages as shown in table 4.9 and each indicator is discussed accordingly.

##### *4. 1: Influences of access to inputs on performance of dairy enterprises in Trans Nzoia County:*

The results of frequencies and percentages from the table show that most of the respondents constituting 53.75 percent strongly agreed and 33.01 percent agreed that Access to finance results in more dairy products. On the other hand, only 2.57 percent strongly disagreed and 3.36 percent disagreed with the statement. From the study, a total of 86.76 percent of respondents were of the opinion that indeed Access to finance results in more dairy products. Respondents represented by 7.31 percent gave a neutral opinion. As shown from the analysis 66.21 percent and 19.37 percent of the respondents strongly agreed and agreed respectively that accessibility of finances to purchase raw materials results in production of more dairy products. However, 0.59 percent and 3.16 percent strongly disagreed and disagreed respectively. 10.67 percent were of a neutral opinion on the statement that accessibility of finances to purchase raw materials results in production of more dairy products. Further, the study data analysis revealed that 32.41 percent and 44.66 percent of the respondents strongly agreed and agreed respectively that Addition of training improves the production of dairy products, while 2.57 percent and 3.56 percent strongly disagreed and disagreed respectively. Those with neutral opinion were 16.8 percent on the statement of addition of training improves the production of dairy products. Results on the statement of a willingness of farmers to pay in order to obtain any training on producing a variety of dairy products indicated that, 34.98 percent and 51.78 percent of the respondents agreed and strongly agreed respectively that There is a willingness to pay in order to obtain any training on producing a variety of dairy products, while 1.77 percent and 2.77 percent strongly disagreed and disagreed respectively. Neutral opinion represented 8.7 percent. This means that the farmers are willingness to pay in order to obtain any training on producing a variety of dairy products in Trans Nzoia County.

**Table 4.1 access to inputs on performance of dairy enterprises in Trans Nzoia County**

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	(%)	(%)	(%)	(%)	(%)
Access to finance results in more dairy products	53.75	33.01	7.31	3.36	2.57
Accessibility of finances to purchase raw materials results in production of more dairy products	66.21	19.37	10.67	3.16	0.59
Addition of training improves the production of dairy products	32.41	44.66	16.8	3.56	2.57
There is a willingness to pay in order to obtain any training on producing a variety of dairy products	51.78	34.98	8.7	2.77	1.77

##### *The Relationship:*

The accessibility to input variable and the performance of dairy firm's variable were subjected to a Pearson's Product Moment Correlation Coefficient test at 0.05 level of significance. The results of this correlation test are shown in Table 4.2.

**Table 4.2: Results of Pearson's Product Moment Correlation test of accessibility to input on performance of dairy firms**

		Performance of dairy firms
Accessibility to inputs	Pearson's Correlation Sig. (2 -tailed)	0.429** .000

\*\* Correlation significant at the 0.05 level (2-tailed)

#### 4.3 Test of hypotheses one:

Hypotheses one of the study sought to determine the accessibility to inputs on performance of dairy firms. The hypotheses stated that:

H<sub>03</sub>: access to input does not a significant influence on performance of dairy firms in Trans Nzoia County.

The results of the correlation test run at 95% confidence level indicated that input accessibility have a small positive influence on dairy firm's performance ( $r = 0.429$ ,  $p = 0.000$ ). The null hypotheses therefore not supported and the alternative hypotheses supported that accessibility to inputs has a positive influence on performance of dairy firm though in a small manner.

#### The Linear Regression Analysis of performance of dairy firms.

The multiple linear regression was used because it enabled the researcher to predict the relationship between the independent variable and the dependent variable.

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where:

Y = is the dependent variable (Performance of Dairy Firms)

$\beta_0$  = Constant

$\beta_1$ , = Coefficient of independent variables

$X_1$  = Input Accessibility to

$\epsilon$  = Error term assumed to be a constant

The above linear regression equation gave the relationship between the independent variable and the dependent variable.

$$Y = \beta_0 + \beta_1 (\text{access to input}) + \epsilon$$

The linear regression analysis was used since its techniques of analysis are suitable in finding out the influence some factors when reliability of the model is of concern. The summary is as shown in Table 4.3 below.

**Table 4.3: Linear Regression Analysis Results on performance of dairy firms.**

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.917 <sup>a</sup>	.843	.836	1.0745	.000

Predictor: (Constant), input accessibility, ( $R = 0.917$ ;  $R^2 = 0.843$ ; Adjusted  $R^2 = 0.836$ , Standard error of the estimate = 1.0745).

As shown from the table, the R value was 0.917. R is a measure of correlation between the observed value and the predicted value of the dependent variable. Thus, 0.917 is the correlation coefficient between the non-performing loans as reported by the respondents and the levels as would be predicted by the predictor variables. The adjusted R value is high (0.836) indicating that 83.6% of the variance in the dependent variable is explained by the independent variables in the study. The adjusted R-square value indicates that this model is able to predict up to 83.6% of the variables in dairy firms' performance. This implies that up to 83.6% of the variation in dependent variable in the area under study is accounted for

by the independent variable. The model summary showed that the model can explain 83.6% variation in dairy firm's performance that was occasioned by any changes in the independent variables ( $R^2 = 0.843$ ; Adjusted  $R^2 = 0.843$ ) and table 4.4 presents the coefficient arising from the analysis.

**Table 4. 4: The Coefficients.**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		$\beta$	Std. Error	Beta		
1	(Constant)	52.996	4.003		12.986	.000
	Input Accessibility	0.5240	0.057	1.962	8.993	.000

- a. Predictor: (Constant), input accessibility  
 b. Dependent Variable: Performance of Dairy Firms.

From table 4.4, it is clear that input accessibility with standardized Beta coefficient of 1.962, and absolute t-value of 8.993 and  $p < 0.05$  had the largest impact on performance of dairy firms.

## 5. SUMMARY, CONCLUSION AND RECOMMENDATION

### *Influence of Accessibility to inputs on performance of dairy firms in Trans Nzoia County:*

The results on accessibility to inputs were analyzed and presented as follows. On the issue of access to finance a total of 86.76 percent of respondents were of the opinion that indeed Access to finance results in more dairy products. 66.21 percent of the respondents strongly agreed and agreed respectively that accessibility of finances to purchase raw materials results in production of more dairy products. 77.07 percent of the respondents strongly agreed and agreed respectively that addition of training improves the production of dairy products, 86.76 percent of the respondents agreed that there is a willingness to pay in order to obtain any training on producing a variety of dairy products in Trans Nzoia County. Hypotheses one of the study sought to determine the accessibility to inputs on performance of dairy firms.

#### **The hypotheses stated that:**

$H_{03}$ : access to input does not a significant influence on performance of dairy firms in Trans Nzoia County. The results of the correlation test run at 95% confidence level indicated that input accessibility have a small positive influence on dairy firm's performance ( $r = 0.429$ ,  $p = 0.000$ ). The null hypotheses was therefore not supported and the alternative hypotheses supported that accessibility to inputs has a positive influence on performance of dairy firm though in a small manner.

#### **Conclusion:**

The results of the correlation test run at 95% confidence level indicated that input accessibility have a small positive influence on dairy firm's performance ( $r = 0.429$ ,  $p = 0.000$ ). The null hypotheses was therefore not supported and the alternative hypotheses supported that accessibility to inputs has a positive influence on performance of dairy firm though in a small manner.

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