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INFLUENCE OF DECISION SYNCHRONIZATION ON PERFORMANCE OF NEW KENYA COOPERATIVE CREAMERIES LIMITED

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Abstract

The purpose of the study was to analyze the influence of decision synchronization on Performance of New Kenya Cooperative Creameries Limited. Milk processing firm performance was measured by market share, profitability, client satisfaction and competitive advantage. The study was guided by the Resource Based View Theory and Transaction Cost Economics Theory. To gather the necessary data the study adopted descriptive survey research design. The target population comprised dairy farmers who supply fresh milk to New Kenya Cooperative Creameries Limited and customers of processed milk products buying at retail supermarket. The study targeted 10,488 fresh milk suppliers and 13,906 customers of processed milk products. The sample size was 384 suppliers and customers. Stratified sampling was used to select the suppliers of fresh milk and customers of the processed milk. The questionnaire was the main research instrument for collecting data. Data was analyzed with spss version 20. The findings of the study revealed that there is significant effect between Decision Synchronization and Performance of NKCC with regards customer. Future studies may be conducted on the influence of decision synchronization on performance of other firms but under different social, economic and political conditions.

Keywords: *Decision synchronization, Supply Chain Collaboration and performance*

1.0 INTRODUCTION

Simatupang and Sridharan (2005) explain decision synchronization as the processes where supply chain partners plan operations that maximize supply chain planning and benefits. Synchronized supply eliminates one decision point and merges the replenishment decision with the production and materials planning of the supplier. Scholars argued that trust and transparency are important in joint decision making since it involves an exchange of information as well as sharing of resources and processes (Biehl and Johnston, 2006; Potocan, 2009). When firms realize they need each other to be successful, operations can be enhanced and specific outcomes will be achieved. The study established how decision synchronisation influences the performance of NKCC in Transnzoia and County. However the uncertainty of another partner like Suppliers' delivery time going wrong remains a big challenge and the study examined the influence of decision synchronisation on performance of NKCC.

Statement of the Problem

As a consequence of increased globalization, the competition among companies is growing and new ways have to be found to ensure successful firm performance in the new business climate. Weele (2010) considers that the top management commitment and internal cross-functional coordination of collaborating parties are very important especially in decision making. The uncertainty of another partner like Suppliers' delivery time going wrong remains a big challenge and the question is "does decision synchronization have a significant effect on performance of NKCC?"

Research Objective

1. To analyze the influence of decision synchronization on Performance of New Kenya Co-operative Creameries Limited.

Hypotheses of the Study

$H0_1$ Decision synchronization does not have a significant effect on Performance of New Kenya Co-operative Creameries Limited.

Research Questions

1. Does decision synchronization have a significant effect on Performance of New Kenya Co-operative Creameries Limited?

Significance of the Study

The study is in line with the aspirations of Second Medium Term Plan (MTP) (2013-2017) of Vision 2030 and the Jubilee Manifesto. It will enable the board identify policies that will enhance the performance of milk processing firms in Kenya. It will enable the board identify policies that will enhance the performance of milk processing firms in Kenya. To the academicians and other scholars, the study will shed more light in the field of Performance in the milk processing firms by using as a point of reference.

2.0 LITERATURE REVIEW

The study was guided by the following theories;

Resource Based View Theory

Resource Based View (RBV) theory has been widely applied in management research. RBV is generally used to explain the factors affecting resource utilization of firms in order to improve their competitive advantage and firm performance (Barney, 2001). RBV is also a popular theory in SCM research (Cao and Zhang, 2011). RBV has been combined with TCE to gain both views of cost reduction and competitiveness of the firm (Carter and Rogers, 2008; Barney et al., 2001). The main concepts of RBV include the firms' resources, capabilities, and strategic assets. RBV has a primary focus on explaining the impact of firms' strategic resources, core competencies and capabilities on the performance, economic rents and sustained competitive advantage of the firm.

Transaction Cost Economics Theory

Transaction Cost Economics is a theory that offers an alternative approach to the traditional mainstream economics through a lens of "choice" (Williamson, 2002). TCE has been applied to understand the behaviour

in supply chain collaboration (Wilding and Humphries, 2006) and its impacts on supply chain relationships and performance (Cao and Zhang, 2011; Nyaga *et al.*, 2011). Hence TCE is considered to fit with the nature of SCM research. It has been shown that lower transaction costs favour outsourcing and higher transaction costs favour in-house operations (Williamson, 2008).

Conceptual Framework

The independent variable was decision synchronization while the dependent variable is performance of NKCC.

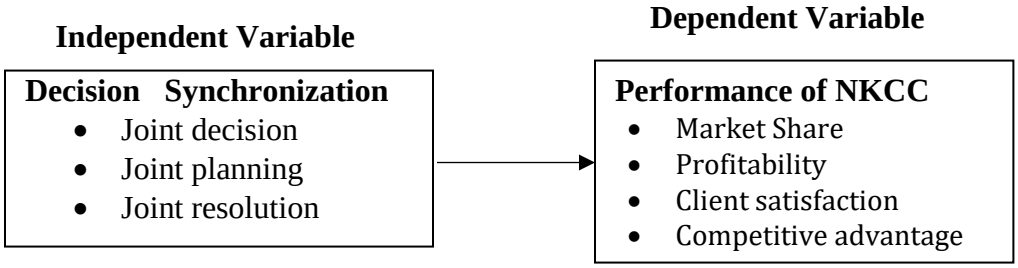

Figure 2.1: Conceptual Framework

Effects of Decision synchronization on Performance of NKCC

SCM involves supply chain collaboration, which in turn is founded on long-term and trustworthy relationships (Mentzer *et al*., 2001; Ou *et al.*, 2004). When stakeholders in the supply chain such as the customers, suppliers, and the firm (whether manufacturing or service) collaborate, they are able to make joint decisions and share benefits and costs from these decisions (Simatupang and Sridharan, 2005). The study established decision synchronization in terms of joint decision, joint planning and joint resolutions in the milk processing firms.

Kumar (2001) pointed out that supply chain collaboration is, in fact, more than just information sharing it also involves sharing of decision-making power. If properly executed and if founded on a trusting and long-term relationship, supply chain collaboration indeed leads to better operational performance (Anbanandam *et al.*, 2011; Hua *et al.*, 2009). Soosay *et al.*, (2008) reported that having collaborative relationship is important in inculcating a culture of continuous innovation. They also reported that performance varies according to the level of collaboration between supply chain parties. Fawcett et al. (2008) emphasized the importance of a nurturing organizational culture to achieve high collaboration. Hadaya and Cassivi (2007), however, observed that while a strong relationship is necessary for collaboration to exist, joint decision-making activities in fact strengthens even more an existing partnership. Supply chain collaboration, however, is not developed overnight.

3.0 RESEARCH METHODOLOGY

The study adopted descriptive survey research design to collect quantitative data. The target population comprised of fresh milk suppliers to NKCC processing plant and customers of buying processed milk products of NKCC at Nakumatt supermarket. The study targeted 10,488 dairy farmers supplying to NKCC and 13,906 customers buying processed milk products.

The following formula was adopted from Mugenda, (2008) to determine the sample size:

$N = Z^2 pq$

$$n = \frac{d^2}{(1.96)^2 (0.50) (1 - 0.50)} = \frac{}{(0.05)^2} = 384$$

For this study, questionnaire was the main tool used to collect data.

The following multiple regression model was used to establish the relationship between the variables.

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

Where: Y= Dependent variable

β_0, β_1= Regression co-efficient to be estimated

X1-n=Independent variables

X_1 = Decision Synchronization

ε = Error term

4.0 RESEARCH FINDINGS

The researcher distributed a total of 384 questionnaires to suppliers. Out of the 384 questionnaires, 342 from were filled correctly, returned and gave a response rate 89 percent. However for customers, only 314 were correctly filled, returned and gave a response rate of 82 percent. The response rate was sufficient to make generalizations.

Factor Analysis

Supplier Total Variance Explained on Decision Synchronization

The results in table 4.1 below shows three components with Eigen values greater than one were extracted, which represented 70.466 percent of variance in DS. The relative importance of three factors is equalized for this data. This means that DS can be explained by first three components. Factor 1 account for 36 percent of the variability in all variables, factor 2 accounted for 20 percent and factor 3 accounted for 13 percent.

Table 4.1 Supplier Total Variance Explained on Decision Synchronization

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum%
1	3.275	36.389	36.389	3.275	36.389	36.389	2.601	28.899	28.899
2	1.814	20.159	56.548	1.814	20.159	56.548	2.144	23.825	52.724
3	1.253	13.917	70.466	1.253	13.917	70.466	1.597	17.742	70.466
4	.819	9.101	79.567						
5	.636	7.066	86.633						
6	.431	4.790	91.422						
7	.414	4.600	96.022						

8	.196	2.177	98.200
9	.162	1.800	100.000

Extraction Method: Principal Component Analysis.

Customer Total Variance Explained on Decision Synchronization

With regards to customer the results are on table 4.2 below and three components with Eigen values greater than one extracted represented 62.860 percent of Decision Synchronization. This means that Decision Synchronization can be explained by first three components. Factor 1 accounted for 45percent of the variability in all variables and factor 2 accounted for 17 percent.

Supplier Rotated Component Matrix on Decision Synchronization

The rotated component matrix in table 4.3 shows factor loadings (FL) of Decision Synchronization. Five items loaded in the first factor, the second factor and third factors were explained respectively.

Table 4.2 Customer Total Variance Explained on Decision Synchronization

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	3.650	45.623	45.623	3.650	45.623	45.623	2.578	32.222	32.222
2	1.379	17.237	62.860	1.379	17.237	62.860	2.451	30.637	62.860
3	.970	12.123	74.983						
4	.541	6.762	81.745						
5	.520	6.505	88.250						
6	.400	5.001	93.251						
7	.291	3.635	96.886						
8	.249	3.114	100.000						

Extraction Method: Principal Component Analysis.

Table 4.3 Supplier Rotated Component Matrix on Decision Synchronization

	Component		
	1	2	3
Fixing of milk prices done are done as required	.117	.827	-.141
Weights disparities between farmers and NKCC well resolved	-.313	.765	
Quality control measures are understood by dairy farmers	.657		.333
Extension services are offered to increase production of milk	.830	-.107	
Extension services are offered to increase quality of milk	.841	.140	
Demand for early milk deliveries is understood by dairy farmers	.248		.759
Dairy farmers receive record of their daily deliveries			.900
Tenders offered to transporters, coolers are done as required	.603	.641	.239
Product inventory levels are understood by dairy farmers	.486	.653	.141

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Customer Rotated Component Matrix on Decision Synchronization

Table 4.4 Shows Rotated Component Matrix on Decision Synchronization. The rotated component matrix shows factor loadings (FL) of Decision Synchronization "Five items on the first factor and had strong FL of 0.579 to 0.853. The factors loading on the second factor was FL (0.462 to 0.888).

Table 4.4 Customer Rotated Component Matrix on Decision Synchronization

	Component	
	1	2
NKCC product prices are reasonable and understood	.143	.874
Price variations between NKCC products and others are understood		.888
Quality of products are understood by customers	.439	.493
Promotions services are offered to increase demand	.418	.404
Promotions services are done according to customers' demands	.815	-.142
NKCC products offer solution to customers	.806	.149
Firm's products are timely introduced	.687	.463
Promotions of products are done rightfully in the retail store	.636	.484

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Supplier KMO and Bartlett's Test on Decision Synchronization

Table 4.5 shows the results of KMO and Bartlett's Test on Decision Synchronization. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. (Field, 2009), for these data the value is 0.627, which falls in to range and so we should be certain that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.5 Supplier KMO and Bartlett's Test on Decision Synchronization

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.627
Bartlett's Test of Sphericity	Approx. Chi-Square	1287.368
	Df	36
	Sig.	.000

Customer KMO and Bartlett's Test on Decision Synchronization

With regards to customer, the results on table 4.6 shows value is 0.785, which falls in to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.6 Customer KMO and Bartlett's Test on Decision Synchronization

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	997.583

Descriptive Analysis

Supplier Descriptive Statistics

The results on table 4.7 below show supplier descriptive statistics on an overall rating of five-point Likert scale, on decision synchronisation for 342 respondents. Respondents were requested to provide information on the statements below and results were produced below:

Table 4.7 Supplier Descriptive Statistics

Statements	SD %	D %	N %	A %	SA %	Total %
Fixing of milk prices are done as required	36.8	34.8	11.1	13.5	3.8	100.0
Weight disparities between dairy farmers and NKCC are well resolved	37.4	32.7	13.2	16.7	0.0	100.0
Quality control measures are understood by dairy farmers	6.1	4.1	9.9	70.5	9.4	100.0
Extension services are offered to increase production of milk	10.8	23.7	12.3	46.5	6.7	100.0
Extension services are offered to increase quality of milk	14.6	28.1	19.0	32.5	5.8	100.0
Demand for early milk deliveries is understood by the dairy farmers	0.3	8.5	6.1	50.6	34.5	100.0
Dairy farmers receive record of their daily deliveries	0.3	2.3	4.7	56.1	36.5	100.0
Tenders offered to transporters , coolers are done as required	11.7	13.7	49.4	19.3	5.8	100.0
Product inventory levels are understood by dairy farmers	15.2	23.7	38.0	17.0	6.1	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

Customer Descriptive Statistics

Table 4.8 shows the customer descriptive statistics on an overall rating of five-point Likert scale on Decision Synchronization for 314 respondents. Respondents were asked questions in form of statements and the response was calculated in percentages below:

Table 4.8 Customer Descriptive Statistics

Statements	SD %	D %	N %	A %	SA %	Total
NKCC Products prices are reasonable and understood	2.5	14.0	24.8	42.7	15.9	100.0
Price variation between NKCC products and others are understood by customers	4.5	13.4	25.2	49.7	7.3	100.0
Quality of products are understood by customers	0.3	8.3	20.7	51.3	19.4	100.0
Promotion services are offered to increase demand	.6	11.1	36.0	40.4	11.8	100.0
Promotion efforts are done according to customers' demands	8.9	28.0	31.5	23.2	8.3	100.0

NKCC products offer solutions to customers	4.5	22.9	22.6	41.7	8.3	100.0
Firm's products are introduced timely	6.4	17.2	18.2	50.6	7.6	100.0
Promotion of products are done rightfully in the retail store	5.7	22.3	12.1	48.4	11.5	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

Regression Analysis

Supplier Correlations Results

The results on the Table 4.9 below show supplier correlations of all variables of the study model. Correlation is often used to explore the relationship among a group of variables and in turn helping in testing for multicollinearity (Pallant, 2010). Numbers are Pearson correlation coefficients, which go from -1 to 1. The closer to 1 means strong correlation. A negative value indicates an inverse relationship. The correlation analysis of the study revealed that DS (r= .094, p=.042) indicating there positive relationship on Performance of NKCC.

Table 4.9 Supplier Correlation Results		Performance	Decision
Pearson Correlation	Performance	1.000	
	Decision	.094	
Sig. (1-tailed)	Performance	.	
	Decision	.042	.

Correlation is significant at 0.05 level of confidence (1-tailed)

Customer Correlations Results

Table 4.10 shows the Pearson correlation matrix for all variables of the study model. Numbers are Pearson correlation coefficients, which go from -1 to 1. The closer to 1 means strong correlation. A negative value indicates an inverse relationship. The correlation analysis of the study revealed that DS (r= .269, p=.000) indicating a positive relationship on Performance of NKCC.

Table 4.10 Customer Correlations Results

		Performance	Decision
Pearson Correlation	Performance	1.000	
	Decision	.269	
Sig.(1-tailed)	Performance	.	
	Decision	.000	.

Correlation is significant at 0.05 level of confidence (1-tailed)

Model Summary

The results on table 4.11 below displays computed correlation coefficient (R=0.094). Other statistics are ($R2_=$ 0.009), adjusted ($R2_=$ 0.006) and Standard Error of Estimate (0 .78594). Durbin-Watson is also showed (2.045).

The coefficient of determination R^2 statistic is the proportion of variation (in the y-variable) that is explained by the regression model (on the x-variable). The values of R squared range from 0 to 1. Small values indicate that the model does not fit the data well. In this study, the results showed only 0.9 percent proportion of the

variability in performance of NKCC which does not fit the data well. Conversely, that means that 91.1 percent of the variability in performance of NKCC is shared with other factors than those measured on the model.

Table 4.11 Supplier Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.094[a]	.009	.006	.78594	2.045

a. Predictors: (Constant), Decision
b. Dependent Variable: Performance

Customer Model Summary

With respect to customer the results on table 4.12 below shows computed correlation coefficient (r=0.269). Other statistics ($R2_{=}$ 0.072), are adjusted ($R2_{=}$ 0.069) and Standard Error of Estimate (0.67148). Durbin-Watson was also computed (1.411). For the customer respondents the results showed that only 7.2 percent of the variability is explained by the model. Conversely, that means that 98.8% of the variability in performance of NKCC is shared with other factors than those measured on the model.

Table 4.12 Customer Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.269[a]	.072	.069	.67148	1.411

a. Predictors: (Constant), Decision
b. Dependent Variable: Performance

Supplier ANOVA Results

The output below on table 4.13 tests the significance of the correlation coefficient by analysis of variance (ANOVA). F-test ratio is 3.003 p value= 0.084. That is, we would accept the H_0, and conclude that there is no significant positive linear relationship between the two variables. For the model F-ratio is 3.003 ($p > 0.05$) our model is not significant.

Table 4.13 Supplier ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.855	1	1.855	3.003	.084[b]
	Residual	210.020	340	.618		
	Total	211.874	341			

a. Dependent Variable: Performance
b. Predictors: (Constant), Decision

Customer ANOVA Results

The output below on table 4.14 tests the significance of the correlation coefficient by analysis of variance (ANOVA). F-test ratio is 24.331, p value= 0.000 which is $p < 0.05$. That is, we would reject the H_0, and conclude that there is significant positive linear relationship between the two variables. For the model F-ratio is 24.331 ($p < 0.05$) our model is significant.

Table 4.14 Customer ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.970	1	10.970	24.331	.000[b]

	Residual	140.676	312	.451
	Total	151.646	313	

a. Dependent Variable: Performance
b. Predictors: (Constant), Decision

Supplier Coefficients

The next output on the table 4.15 below shows the coefficients for the regression equation. In this study, the y-intercept (Constant) is +3.019 and the slope (decision) is +.073. Thus, in this study, the regression equation $Y= \beta_0 + \beta_1 + \varepsilon$, can be explained as Y = 3.019 +0.073+ 0. 141.

Table 4.15 Supplier Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.019	.141		21.435	.000	2.742	3.296		
	Decision	.073	.042	.094	1.733	.084	-.010	.156	1.000	1.000

a. Dependent Variable: Performance

Customer Coefficients

The next output on the table 4.16 below shows the coefficients for the regression equation. In this study, the y-intercept (Constant) is +2.809 and the slope (decision) is +0.232. Thus, in this study, the regression equation $Y= \beta_0 + \beta_1 + \varepsilon$, can be explained as Y = 2.809 +0.232+ 0. 171.

Table 4.16 Customer Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.809	.171		16.451	.000	2.473	3.145		
	DECISION	.232	.047	.269	4.933	.000	.139	.324	1.000	1.000

a. Dependent Variable: Performance

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Concerning Decision synchronization supply chain practitioners gave their opinions that they arrive at join decision when there is oversupply and the market is not good and thus agree on price reduction. Also when supply exceed demand the firm sit with the farmers to agree on price reduction. They also gave their opinions on instances they incorporate supply chain partners. They said when there is long drought resulting to low supply of milk they mobilize. They also pointed instances of making join resolutions with supply chain partners "is when there is shortage of milk". They said another instance to make join resolution with supply chain partners is during the dry season when the animal feeds are inadequate. The effect of incentive alignment according to them is "the milk volume will go up'. The farmers also will deliver the milk because the feeds will be available.

Based on the findings it could be concluded that milk processing firm complement their Decision Synchronization by focusing on joint decision, joint planning and joint resolution. Based on the findings it could be concluded that Decision Synchronization for customer of NKCC had a positive significant linear relationship on performance of NKCC. The relationship was established by Pearson correlation coefficient.

Based on results decision synchronization and performance of NKCC, the results were contradictory. The study recommends to the firm to find other ways to influence farmers and customers. The firm should collaborate with key stakeholders by join decisions and share benefits. They find ways of ensuring that their decisions, planning and resolution are understood.

Future studies may be conducted on the influence of DS on performance of other firms but under different social, economic and political conditions.

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