Supplier Collaboration Practices: Implications for Supplier Relationship Management on Firm Performance in Energy Sector In Kenya

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Abstract: The aim of this study was to explore supply collaboration practices with regard to its implications for supplier relationship management on firm performance in the energy sector in Kenya. In particular, the study set out to evaluate the influence of Supplier Collaboration in New Product Development Relationship practices (SCNPDRP) and assess the influence of Supplier Development Practices (SDP) on the performance of the Energy Sector Firms in Kenya. The research used a cross-sectional evaluation survey approach and quantitative method to select the respondents and collection of data. A sample size of 264 respondents was picked through stratified random sampling. Primary data was collected by use of questionnaires which were administered through the drop and pick method. Linear regression analysis and Pearson's correlation coefficient were run to determine the relationship between supplier relationship management practices and performance of energy sector firms in Kenya. The findings of the study show that SCNPDRP has a significant influence on the performance of Energy Sector Firms in Kenya. The regression coefficients for SCNPDRP was positively and significantly different from zero. The coefficients of SDP was both negative and moderate but the T-tests was significant. Therefore, the hypotheses for SCNPDRP on the performance of ESF was supported by the data; while the influence of SDP on the performance of ESF was negative. The study concludes that to improve the performance of Energy Sector Firms, SCNPDRPs need to be adopted.

Keywords: Supplier Relationship Management, Energy Sector Firm Performance, Supplier Collaboration in New Product Development Relationship practices, Supplier Development Practices.

1. INTRODUCTION

Recent approaches to performance measurement have identified inadequacies of solely relying on quantitative and short-term indicators and have henceforth developed comprehensive models such as performance pyramids and hierarchies, intangible assets scorecard, performance prism, success dimensions and the Balanced Scorecard with the aim of capturing both the financial and non-financial drivers; they recommended that in this era of economic and competitive environment achieving sustainable competitive advantage in hotels requires clear interaction between strategy and performance measures (Uzel et al., 2015).

Supplier relationship management (SRM) is the SCM process that provides the structure for managing relationships with suppliers; as the name suggests, this is mirror image of customer relationship management; just as close relationships need to be developed with key customers, management should forge close cross-functional relationships with a small number of key suppliers (Lambert et al., 2012). SRM practices are strategies. These links need to move from mere financial and non-financial data collection to identification of causal relationships among measures, outcomes and strategies (Cuccia & Rizzo, 2011). The Balanced Scorecard has been used widely in literature because it integrates performance measurement with strategic issues (Mohsin & Lockyer, 2010; Balances Scorecard, 2011). It is also the first tool that attempted to measure performance based on non-financial measures.

Castellano, Kendall, Nikomarov and Swemmer (2015) supported the view of the UN that there is a direct correlation between economic growth and electricity supply. Sub-Saharan Africa is starved for electricity. The region's power sector

is significantly underdeveloped, whether we look at energy access, installed capacity, or overall consumption. Electricity shortages mean that countries struggle to sustain GDP growth. From an electricity-access point of view, sub-Saharan Africa's situation is the World's worst; the only other region with a similar imbalance in South Asia (Castellano et al., 2015).

Energy Sector in Kenya constitutes firms in these three Industries: Petroleum, Electricity and Renewable Energy; and also the single statutory regulator named Energy Regulatory Commission under the Cabinet Secretary portfolio of Ministry of Energy and Petroleum for Policy setting and Energy Tribunal for dispute resolution. Kenya Bureau of Statistics (2016) reported that Energy sector performance in Kenya was measured by Electricity Supply, which contributed One Percent (1.0%) of the Gross Domestic Product (GDP); GDP for Kenya estimated to have expanded by 5.6 percent in 2015 compared to a 5.3 percent growth in 2014; the GDP and per capita GDP in 2015 were Ksh 6,224,370 Billion and Ksh 140,961respectively. Hence, Energy Sector contribution to GDP and GDP Capita was Ksh 62,244 Billion and Ksh 1,410 respectively.

Kenya is not one of the seven out of fifty-four African countries that have electricity access rates exceeding 50 percent; these are Cameroon, Côte d'Ivoire, Gabon, Ghana, Namibia, Senegal and South Africa (McKinsey & Company, 2017). An Indian tycoon named Ambani controls Kenya's oil import trade through Gulf African Petroleum Corporation (Gapco); Gapco dominates the business of importing oil into the Kenyan market; The company has bagged tenders for bringing in diesel, petrol and jet fuel more than any other firm; out of 25 of the 72 Oil Marketing Companies that operate in Kenya that have participated in the centralised fuel purchase and distribution system also known as the Open Tender System (OTS); Gapco has been outmuscling other players most of the time; the competitive rivalry among existing firms in reducing order from the highest intensity is Total Kenya, Vivo Energy, Galana, KenolKobil, Gulf Energy, Mogas, Dalbit, Oryx Energy's, Hass, Kencor and Hashi (Alushula, 2016).

There is evidence of SRM Practices in the Energy Sector firms in Kenya. SRM practices are fluid in the Business Environment described as VUCA. Sarkar (2016) defined the term VUCA - which stands for volatility, uncertainty, complexity and ambiguity - is a common phrase these days in the corporate world and was coined by the US Army. Rapid changes taking place in political, economic, social and technological fronts are making the organizational world increasingly VUCA. VUCA was subsequently adopted by strategic business leaders to describe the chaotic, turbulent, and rapidly changing business environment that has become the "new normal." By all accounts, the chaotic "new normal" in business is real. The financial crisis of 2008-2009, for example, rendered many business models obsolete, as organizations throughout the world were plunged into turbulent environments similar to those faced by the military (UNC Executive Development,2013). At the same time, rapid changes marched forward as technological developments like social media exploded, the world's population continued to simultaneously grow and age and global disasters disrupted lives, economies, and businesses.

This research was conducted to determine if SRM practices are helping the Energy Sector firms which seem to be performing better (KIPPRA, 2010; The East African, 2016 and KNBS, 2016;). Also to contribute the further development of SCM field in the theory and practice (Halldorsson et al., 2015 and Barasa, Namusonge, & Iravo, 2016). This study sought to fill this gap of knowledge by assessing the influence of supplier relationship management practices on performance of Energy Sector firms in Kenya. This is because the researchers hypothesized that SRM Practices could be the answer to the question of Firm Performance in the Energy Sector Firms.

Specifically, the study was guided by the following objectives:

1. To evaluate the influence of Supplier Collaboration in New Product Development Relationship practices on the performance of the Energy Sector Firms in Kenya.

2. To assess the influence of Supplier Development Practices on the performance of the Energy Sector Firms in Kenya.

2.   LITERATURE REVIEW

This study was informed by four theories: Principal-Agent Theory (PAT), Network Theory (NT), Resource-Based View (RBV) and Goal Setting Theory. The PAT theory is based on the separation of ownership and control of economic activities between the agent and the principal, various agency problems may arise, such as asymmetric information between the principal and the agent, conflicting objectives, differences in risk aversion, outcome uncertainty, behaviour based on self-interest, and bounded rationality. The PAT theory was used to understand Supplier Collaboration in New Product Development Relationship Practices; and Supplier Developments Practices on the performance of the Energy Sector Firms in Kenya.

The Resource-Based View (RBV) focus is to obtain the sources of competitive advantage through SCM (Rungtusanatham et al., 2007) or to analyse the structure of chains and industrial clusters (McIvor, 2009). The RBV deals with competitive advantages related to the firm's possession of heterogeneous resources (financial, physical, human, technological, organizational, and reputational) and capabilities (combination of two or more resources). RBV will provide a theoretical foundation for this research to examine: Supplier Collaboration in New Product Development Relationship Practices and Supplier Development Practices and on achieving Performance of Energy Sector firms in Kenya.

Fred (2011) argued that Goal Setting theory highlights the positive relationship between goals and performance. It provides that performance in organizations is enhanced when goals are specific and challenging. Goals are also used in organizations to evaluate performance. Goal setting theory affects the research on the influence SRM Practices on the performance of Energy Sector firms in Kenya performance because critical roles employees pay; specifically on the Supplier Development Practices variable. Based on the above theoretical framework, the following conceptual framework was derived:
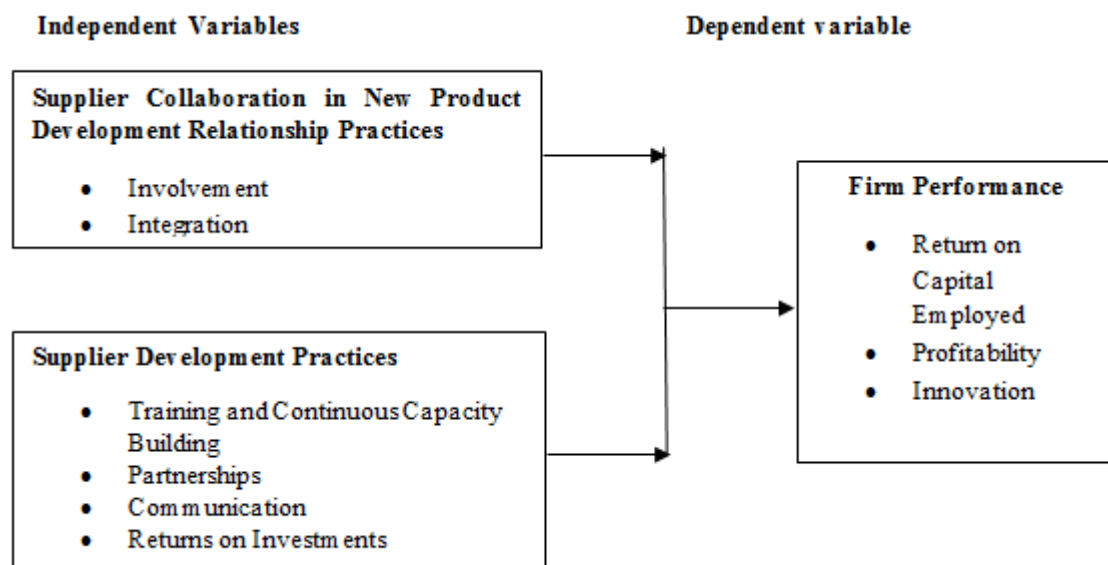
3. RESEARCH METHODOLOGY

The study adopted a quantitative and qualitative research design to establish the associations among the key study variables. The study population was Energy Sector firms in Kenya licensed by Energy Regulatory Commission and with known with registered physical locations and contacts in Eldoret, Mombasa, Nairobi, Nakuru, Kisumu and other Towns (ERC, 2016a; ERC, 2016b; ERC, 2016c; ERC, 2016d; & ERC, 2016e) as shown in the table below:

Table 3.1: Target Population

Town in Kenya	Electric Power Undertakings Industry	Solar Energy Systems Industry	LPG Trade	LPG Transport Industry	Fuels and Lubricants Trade	No. of Firms
Eldoret	1	0	5	0	27	33
Kisumu	2	0	2	1	28	33
Mombasa	5	1	29	5	71	111
Nairobi	3	19	103	47	304	476
Nakuru	9	0	0	0	29	38
Other Towns	29	0	23	9	94	155
Total	49	20	162	62	553	846

Source: (ERC, 2016a; ERC, 2016b; ERC, 2016c; ERC, 2016d; & ERC, 2016e)

This Research applied stratified sampling technique where the energy sector firms are located that is; Eldoret, Kisumu, Mombasa, Nairobi, Nakuru and other towns in Kenya. This research applied the formulae from Saunders, Lewis and Thornhill (2009); Uzel, Namusonge and Obwogi (2015) to determine the sample size of 264 as shown in the table below:

Table 3.2: Sample Size

Town in Kenya	Target Population	Sample Size
Eldoret	33	10
Kisumu	33	10
Mombasa	111	35
Nairobi	476	149
Nakuru	38	12
Other Towns	155	48
Total	846	264

Source: (ERC, 2016a; ERC, 2016b; ERC, 2016c; ERC, 2016d; & ERC, 2016e)

The collection of study data involved primary data that was collected by use of a self-administered semi-structured questionnaire using the key-informant method. Secondary data were obtained from both published and unpublished records. Data relating to the Energy Sector Firms in annual and published financial statements in national newspapers, during Annual General Meetings messages and in-house magazines were used to provide secondary data information on relevant Performance Indicators.

A pilot study on the questionnaire was done in Mombasa County in Kenya using the sample size of 35 respondents. All aspects of the questionnaire were pre-tested including question content, wording, sequence, form and layout, question difficulty and instructions. The feedback obtained was used to revise the questionnaire before administering it to the study respondents. The regression analysis was used to test the significant effect of independent variables on the measures of overall performance of CSR. The logistic regression model for this study took the form:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_i$

Where: -

Y = Dependent Variable Change Performance of Energy Sector Firms (ESFP)

X_1 = Change in Energy Supplier Collaboration in New Product Development Relationship practices (SCNPDRP)

X_2 = Change in Energy Supplier Development Practices (SDP)

$\beta_0, \beta_1, \beta_2$ = Regression Coefficient to be estimated

ε_i = Stochastic Term.

The following table outlines the relevant two-tail hypotheses tests and the respective regression models.

Table 3.3: Hypothesis Tests

Hypothesis Statement	Hypothesis test	Decision rule and anticipated model
H_{01}: there is no significant influence of SCNPDRP on performance of Energy Sector Firms in Kenya	-Karl Pearson's coefficient of correlation - T-test $H_0: \beta_1 = 0; H_0: \beta_1 \neq 0$	Reject H_{02} if p-value $\leq$ 0.05 otherwise Accept H_{04} if p-value is > 0.05 ESFP $= \alpha + \beta_4$ SCNPDRP $+ \varepsilon_i$
H_{02}: there is no significant influence of SDP on performance of Energy Sector Firms in Kenya	-Karl Pearson's coefficient of correlation - T-test $H_0: \beta_2 = 0; H_0: \beta_2 \neq 0$	Reject H_{02} if p-value $\leq$ 0.05 otherwise Accept H_{05} if p-value is > 0.05 ESFP $= \alpha + \beta_5$ SDP $+ \varepsilon_i$

4. FINDINGS

4.1 Descriptive statistics:

Respondents were asked to indicate agreement with each item used to measure the Independent variables and Dependent variables. Each item had a five-point scale ranging: 1=strongly disagree, 2=disagree, 3=Neutral, 4=agree, & 5=strongly agree; 1=Very Much below average, 2=below average, 3= average, 4= above average & 5=Very Much above average; and 1=Very Inferior, 2= Inferior, 3= average, 4= Superior & 5=Very Inferior.

4.1.1 Descriptive Statistics of Supplier Collaboration in New Product Development Relationship Practices:

Table 4.1: Descriptive data of Supplier Collaboration in New Product Development Relationship Practices

	SD	D	N	A	SA	All			
Test Items	**% of Frequency**						**Sample Size (N)**	**Mea n**	**Standard Deviation**
Our, Suppliers are involved early in the design efforts, in all projects and programmes.	0.00	0.00	0.00	54.03	45.97	100.00	124	4.46	0.500
We partnered with suppliers for the design of products.	0.00	4.84	8.87	50.00	36.29	100.00	124	4.18	0.787
Our, Suppliers are frequently consulted about the design of the products.	0.00	0.00	4.03	48.39	47.58	100.00	124	4.44	0.574
Our, Suppliers are selected after the design for the product was completed.	0.00	16.13	33.87	45.16	4.84	100.00	124	3.39	0.814
Our, Suppliers are an integral part of the design effort.	0.00	0.00	4.03	62.90	33.06	100.00	124	4.29	0.538
Overall Mean Score	0.00	4.19	10.16	52.10	33.55	100.00	124	4.15	0.642

From analysis shown in table 4.1, the respondents agreed that supplier collaboration in new product development relationship practices influenced the performance of energy sector firms with a mean of 4.15; 52.10% agreed, 33.55% strongly agreed, 10.16% were neutral, 4.19% disagreed and 0.00% strongly disagreed.

4.1.2 Descriptive Statistics of Supplier Development Practices:

Table 4.2: Descriptive data of Supplier Development Practices

	SD	D	N	A	SA	All			
Test Items	% of Frequency						Sample Size (N)	Mean	Standard Deviatio n
We, help our suppliers to improve their quality through training.	0.00	0.00	0.00	54.03	45.97	100.00	124	4.46	0.500
Our key suppliers provide input into our product development projects and /or programmes in the process of Capacity Building.	0.00	4.84	8.87	50.00	36.29	100.00	124	4.32	0.564
We, provide a fair return on investments to our suppliers	0.00	0.00	4.03	48.39	47.58	100.00	124	3.98	0.570
We maintain close communications with suppliers about quality considerations and design changes.	0.00	16.13	33.87	45.16	4.84	100.00	124	4.19	0.646
We, maintain cooperative relationships with our suppliers	0.00	0.00	4.03	62.90	33.06	100.00	124	4.25	0.694
Overall Mean Score	0.00	4.19	10.16	52.10	33.55	100.00	124	4.24	0.595

From analysis shown in Table 4.2, the respondents agreed that supplier development practices influenced the performance of energy sector firms with a mean of 4.24; 52.10% agreed, 33.55% strongly agreed, 10.16% were neutral, 4.19% disagreed and 0.00% strongly disagreed.

4.2 T-tests:

T-Tests were carried out on all variables to test for the equality of means in order to either accept or reject the Null Hypotheses. That is, if t-value=0 (If there's no significant difference expected between the means, at $\alpha = 0.05$, 2-tailed), Reject H0 if p-value $\leq \alpha$, otherwise Accept HA if the p-value is $> \alpha$.

4.2.1 T-tests on Supplier Collaboration in New Product Development Relationship Practices Measures:

The Firm's SCNPDRP was assessed by five measures but after factor analysis, these measures were reduced to four namely: Supplier Partnership and Supplier Integration. The significant results showed that the means were statistically different and the Null Hypothesis was rejected as shown in table 4.3.

Table 4.3: T- tests on Supplier Collaboration in New Product Development Relationship Practices Measures

Component: Number & Name	SCNPDRP Measures	Sample size (N)	Mean	Standard Error Mean	t- value	Significance (p-value)
1: Supplier Partnership	Suppliers are frequently consulted about the design of the products	124	4.435	.052	86.092	.000
	Suppliers are an integral part of the design effort	124	4.290	.048	88.868	.000
2: Supplier Integration	Involvement of Suppliers in the design projects and programmes	124	4.460	.045	99.244	.000
	Partnership with suppliers for the design of products	124	4.177	.071	59.141	.000
Overall mean score = 4.341 T-test for equality of means: t-value = 0 = (H_{04}: there was no difference expected between the means, at $\alpha = 0.05$, 2-tailed). Reject H_{01} if P-value $\leq \alpha$, otherwise fail to reject H_{01} if P-value $> \alpha$						

Overall, the intensity of SCNPDRP influence in the Energy Sector firm was considerably moderate (overall mean score = 4.341). The one sample t-test comparisons of the Firms' SCNPDRP mean scores indicate differences that were all statistically significant. Therefore, the extent of the influence of SCNPDRP P varied from one firm to another with the highest difference being noted in Supplier Partnership (t-value = 87.480, P< 0.05) and followed by Supplier Integration (t-value = 79.193, P< 0.05).

4.2.2 T-tests on Supplier Development Practices Measures:

The Firm's SCNPDRP was assessed by five measures but after factor analysis, these measures were reduced to two namely: Supplier Communication and Supplier Human Capital. The significant results showed that the means were not statistically different and the Null Hypothesis was accepted as shown in table 4.4.

Table 4.4 T- tests on Supplier Development Practices Measures

Component: Number & Name	SDP Measures	Sample size (N)	Mean	Standard Error Mean	t- value	Significance (p-value)
1: Supplier Communication	Effective communications with suppliers about quality considerations and design changes	124	4.194	.058	72.269	.000
	Co-operative relationships with suppliers	124	4.250	.062	68.188	.000
2: Supplier Human Capital	Suppliers provide input into product development and Capacity Building in the process	124	4.323	.051	85.376	.000
	Provide fair return on investments to suppliers	124	3.984	.051	77.824	.000
Overall mean score = 4.188 T-test for equality of means: t-value = 0 = (H_{01}: there was no difference expected between the means, at $\alpha = 0.05$, 2-tailed). Reject H_{05} if P-value $\leq \alpha$, otherwise fail to reject H_{01} if P-value $> \alpha$						

Overall, the intensity of SDP influence in the Energy Sector firm was considerably moderate (overall mean score = 4.188). The one sample t-test comparisons of the Firms' SDP mean scores indicate differences that were not all statistically significant. Therefore, the extent of the influence of SDP varied from one firm to another with the highest difference being noted in Supplier Human Capital (t-value = 81.600, P< 0.05) and followed by Supplier Communication (t-value = 70.299, P< 0.05).

4.3 Correlations:

4.3.1 Correlations of supplier relationship management practices and Energy Sector Firms performance:

In order to establish the relationship between supplier relationship management practices and Energy Sector Firms performance, a correlation matrix was used.

Table 4.5: Correlation Results

		SCNPDRP	SDP	ESFP
SCNPDRP	Pearson Correlation	1		
SDP	Pearson Correlation	.048	1	
ESFP	Pearson Correlation	.466**	.165	1

Table 4.5 shows that a varied degree of interrelationships among supplier relationship management practices and Energy Sector Firms performance. In summary, SCNPDRP had strong implications for the performance of Energy Sector Firms performance with a significant p-value of 0.01. This, therefore, means that if Performance of Energy Sector Firms performance is influenced by positively by SCNPDRP and SDP as an SRM practice. The results also show a significant positive correlation (r =0.466) between the SCNPDRP and Performance of Energy Sector Firms.

4.3.2 Multicollinearity:

Table 4.6: Multicollinearity of study variables

Model	Unstandardized Coefficients	Standardized Coefficients	Collinearity Statistics		
	B	Std. Error	Beta	Tolerance	VIF
Constant	32.861	11.207			
SCNPDRP	2.231	.392	.439	.904	1.107
SDP	-.540	.569	-.120	.338	2.954

Multicollinearity occurs when two or more predictors in the model are correlated. From the results, the correlation coefficients showed that all the independent variables were correlated to each other. Their relationships were positive and statistically significant which established that the study variables had a high tolerance level and were free from multicollinearity. This is because none of the Variance of Inflation Factor (VIF) for all the study variables exceeded 10, the threshold beyond which multicollinearity was a problem (Kock & Lynn, 2012).

4.4 Regression:

The study assumed the following regression model:

$Y=\beta_0+ \beta_1X_1+ \beta_2 X_2 +\varepsilon_i$

Where: -

Y = Dependent Variable Change Performance of Energy Sector Firms (ESFP)

X_1 = Change in Energy Supplier Collaboration in New Product Development Relationship practices (SCNPDRP)

X_2 = Change in Energy Supplier Development Practices (SDP)

β_0, β_1, β_2= Regression Coefficient to be estimated

ε_i = Stochastic Term.

4.4.1 Linear regression model on the influence of Supplier Relationship Management practices on performance of Energy Sector Firms in Kenya:

From the analysis in the Table 4.7, the linear regression analysis models on the dependent variable which is performance of Energy Sector Firms in Kenya and independent variable which is Supplier Relationship Management practices, the coefficient of determination (R^2) and correlation coefficient (R) shows the degree of association between the Supplier Relationship Management practices and the performance of Energy Sector Firms in Kenya. The results of the linear regression indicate that R^2=.217 and R= .466 this is an indication that there is a moderate linear relationship between Supplier Relationship Management practices and the Energy Sector Firms in Kenya. The independent variable can only explain 21.7% of the variability of a dependent variable.

Table 4.7: Model Summary for supplier collaboration in new product development relationship Practices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.466[a]	.217	.211	8.058
Note: a. Predictors: (Constant), SRM Practice X_4				

Table 4.8 shows the results of ANOVA test which reveals that the variable Supplier Quality Improvement Practices statistically significantly predicted the performance of Energy Sector Firms in Kenya, $F (1, 122) = 1.571$, $p< .05$, $R^2 = .217$

Table 4.8: ANOVA (F-test) Analysis for supplier collaboration in new product development relationship practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	128.633	1	128.633	1.571	.212[b]
	Residual	9988.101	122	81.870		
	Total	**10116.734**	**123**			
Note: a. Dependent Variable: Performance of Energy Sector Firms						
b. Predictors: (Constant), SRM Practice X_4						

From Table 4.9, Linear regression for model Supplier Relationship Management practices $Y=\beta_0+ \beta_2 X_2+\varepsilon$

Where:

Y = Performance of Energy Sector Firms

β_0, = Constant (Y- Intercept)

ε = Standard Error Term

β_1 = Coefficient of Performance in Energy Sector firms in Kenya equation

X_1 = Supplier Relationship Management practice

Performance of Energy Sector Firms in Kenya Y=25.035+2.369Supplier Relationship Management practice. From regression results, a unit increase in Supplier Relationship Management practice resulted in an increase of 236.9% change in Performance of Energy Sector Firm. The general regression model will be $Y=25.035+2.369X_4$.

Table 4.9: Coefficients for supplier collaboration in new product development relationship practices

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.035	8.484		2.951	.004
	SRM Practice X_4	2.369	.407	.466	5.814	.000
Note: a. Dependent Variable: Performance of Energy Sector Firms						

4.4.2 Linear regression model on the influence of Supplier Relationship Management practices on performance of Energy Sector Firms in Kenya:

From the analysis in the table 4.10, the linear regression analysis models on the dependent variable which is performance of Energy Sector Firms in Kenya and independent variable which is Supplier Relationship Management practices, the coefficient of determination (R^2) and correlation coefficient (R) shows the degree of association between the Supplier Relationship Management practices and the performance of Energy Sector Firms in Kenya. The results of the linear regression indicate that R^2= .027 and R=.165 this is an indication that there is a moderate linear relationship between Supplier Relationship Management practices and the Energy Sector Firms in Kenya. The independent variable can only explain 2.7% of the variability of a dependent variable.

Table 4.10: Model Summary for supplier development practices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.165[a]	.027	.019	8.981
Note: a. Predictors: (Constant),), SRM Practice X_5				

Table 4.11 shows the results of ANOVA test which reveals that the variable Supplier Quality Improvement Practices statistically significantly predicted the performance of Energy Sector Firms in Kenya, F (1, 122) = 3.425, $p<$ .05, R^2 = .027.

Table 4.11: ANOVA (F-test) Analysis for supplier development practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	276.235	1	276.235	3.425	.067[b]
	Residual	9840.499	122	80.660		
	Total	10116.734	123			
Note: a. Dependent Variable: Performance of Energy Sector Firms						
b. Predictors: (Constant),), SRM Practice X_5						

From Table 4.12, Linear regression for model Supplier Relationship Management practices $Y=\beta_0+ \beta_2 X_2+\varepsilon$

Where:

Y   = Performance of Energy Sector Firms

β_0, = Constant (Y- Intercept)

ε = Standard Error Term

β_1 = Coefficient of Performance in Energy Sector firms in Kenya equation

X_1 = Supplier Relationship Management practice

Performance of Energy Sector Firms in Kenya Y=59.037+0.746 Supplier Relationship Management practice. From regression results, a unit increase in Supplier Relationship Management practice resulted in an increase of 74.6% change in Performance of Energy Sector Firm. The general regression model will be $Y=59.037+0.746X_5$

Table 4.12: Coefficients for Suppliers Development Practices

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	59.037	8.226		7.177	.000
	SRM Practice X_5	.746	.403	.165	1.851	.067
Note: a. Dependent Variable: Performance of Energy Sector Firms						

4.5 Multiple Regression Results on the influence of Supplier Relationship Management practices on performance in terms of Return on Capital Employed by Energy Sector Firms in Kenya:

Table 4.14 shows a multiple regression results that predict the performance in terms of ROCE of Energy Sector Firms in Kenya from Supplier Relationship Management Practices; Supplier Quality Improvement Practices (SRM Practice) X_1, Supplier Trust-based Relationship Practices (SRM Practice) X_2, Supplier Lead Time Reduction Management Practices (SRM Practice) X_3, Supplier Collaboration in New Product Development Relationship Practices (SRM Practice) X_4, Supplier Development Practices (SRM Practice) X_5. The results of the multiple regression indicate that R^2=.220 and R= .469 an indication that there is a moderate multiple relationships between Supplier Relationship Management Practices and the performance in terms of ROCE of Energy Sector Firms in Kenya. The independent variables explained 22.0% of the variability of our dependent variable which is the performance in terms of ROCE of Energy Sector Firms in Kenya.

Table 4.13: Model Summary for performance in terms of Return on Capital Employed

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.469[a]	.220	.187	3.869
Note: a. Predictors: (Constant), SRM PracticeX_5, SRM PracticeX_4, SRM Practice X_2, SRM Practice X_1, SRM PracticeX_3				

Table 4.14 results from ANOVA test shows that the Supplier Relationship Management Practices statistically significantly predicted the performance in terms of ROCE of Energy Sector Firms in Kenya, F (5, 118) = 6.672, $p< .05$, $R^2 = .220$. All five variables added statistically significantly to the prediction, $p< .05$.

Table 4.14: ANOVA (F-test) Analysis for performance in terms of Return on Capital Employed

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	499.299	5	99.860	6.672	.000[b]
	Residual	1766.145	118	14.967		
	Total	**2265.444**	**123**			
Note: a. Dependent Variable: Finance Measures of Performance in Energy Sector Firms;						
b. Predictors: (Constant), SRM PracticeX_5, SRM Practice X_4, SRM Practice X_2, SRM Practice X_1, SRM Practice X_3						

From table 4.15, the multiple regression model for performance in terms of ROCE,

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$

Where:

Y = performance in terms of ROCE of Energy Sector Firms in Kenya

β_0, = Constant (Y- Intercept)

ε = Random Error of the Model

β_1, β_2, = Coefficient of performance in terms of ROCE of Energy Sector Firms in Kenya equation

X_1 = Supplier Collaboration in New Product Development Relationship Practices (SRM Practice)

X_2 = Supplier Development Practices (SRM Practice)

Performance of Energy Sector Firms in terms of ROCE, Y= 26.765+ 0.266Supplier Quality Improvement Practices - 0.533 Supplier Trust-based Relationship Practices +0.460 Supplier Lead Time Reduction Management Practices +0.965 Supplier Collaboration in New Product Development Relationship Practices -0.311 Supplier Development Practices. The general regression model arrived at was:

$Y = 26.765 + 0.266X_1 - 0.533X_2 + 0.460X_3 + 0.965X_4 - 0.311X_5$.

The Y-Intercept ($\beta_0 = 26.765$), predict that performance in terms of ROCE of Energy Sector Firms in Kenya performance in terms of ROCE of Energy Sector Firms in Kenya when all other variables are zero, implying that without the independent variables that include: Supplier quality improvement Practices; Supplier Trust-Based Relationship practices; Supplier Lead Time Reduction Management Practices; Supplier Collaboration in New Product Development Relationship Practices and Supplier Development Practices; the performance of Energy Sector Firms will be 26.765.

Regression results show that a unit change in Supplier Quality Improvement Practices resulted in 26.6% increase in Performance of Energy Sector Firm in terms of ROCE; a Unit change in Supplier Trust-based Relationship Practices resulted in 53.3% decrease in Performance of Energy Sector Firm in terms of ROCE; a Unit change in Supplier Lead Time Reduction Management Practices resulted in 46.0% increase in Performance of Energy Sector Firm in terms of ROCE; a Unit change in Supplier Collaboration in New Product Development Relationship Practices resulted to 96.5% increase in Performance of Energy Sector Firm in terms of ROCE and a Unit change in Supplier Development Practices resulted to 31.1% decrease in Performance of Energy Sector Firm in terms of ROCE.

Table 4.15: Coefficients for performance in terms of Return on Capital Employed

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	26.765	5.879		4.553	.000
	SRM PracticeX_1	.266	.113	.269	2.363	.020
	SRM PracticeX_2	-.533	.419	-.197	-1.271	.206
Note: a. Dependent Variable: Finance Measures of Performance in Energy Sector Firms						

The beta (β) values assist the Researcher to compare the relative strength of each independent variable's relationship with the dependent variable. From the table above Supplier Collaboration in New Product Development Relationship Practices X_1 (β =0.965, $p< 0.05$) has the strongest relationship with the Performance in terms of ROCE of Energy Sector Firms in Kenya followed by Supplier Development Practices X_2(β =-0.311, $p> 0.05$) which could not significantly predict the Performance in terms of ROCE of Energy Sector Firms in Kenya.

4.6 Summary of Hypotheses Test Results

Hypothesis	P - values	Decision
H_{01}: There is no significant influence of SCNPDRP on the performance of Energy Sector Firms in Kenya.	.000	Rejected
H_{02}: There is no significant influence of SDP on performance of Energy Sector Firms in Kenya	.345	Accepted

5. CONCLUSION AND RECOMMENDATIONS

The study findings showed Supplier Relationship Management practices that include; Supplier quality improvement Practices, Supplier Trust-Based Relationship practices and Suppliers Lead Time Reduction Management Practices significantly influence the performance of Energy Sector Firms in Kenya in terms of ROCE, Profitability and Innovation. This is supported by regression analysis findings with $F (5, 118) = 13.596$, $p< 0.05$, $R^2 = 0.366$. The Inferential analysis revealed that Supplier Collaboration in New Product Development Relationship Practices (SCNPDPR) SRM Practice X4 (β =2.231, $p< 0.05$) has the strongest relationship with the Performance of Energy Sector Firms in Kenya, then followed by Supplier Development Practices (SDP) SRM Practice X5(β =-0.540, $p> 0.05$) which could not significantly predict the Performance Energy Sector Firms in Kenya. Obviously, the researcher cannot suggest that Energy Sector Firms should not neglect SDP because of their insignificant influence on performance in the Study sample. Different benefits have been reported in the literature as a result of adopting these SRM practices. The results suggested that SDP was less important in influencing the performance of Energy Sector firms than the positively powerful than SCNPDRP.

The study is a justification that the firms that incorporate Supplier Relationship Management Practices that incorporate Supplier Collaboration in New Product Development Relationship Practices and Suppliers Development Practices have a positive and significant influence on the performance of Energy Sector Firms in Kenya in terms of ROCE, Profitability and Innovation.

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