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Abstract

This study sought to determine the moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya. The philosophical foundation of this study was positivism. Cross-sectional survey design was adopted. A sample of 478 respondents were used where 400 were farmers and 78 were the factory leaders. Regression analysis was used to establish the moderating effect. This was assessed using coefficient of determination (R-Square), Analysis of Variance (ANOVA) and the regression coefficients. Hierarchical regression analysis was performed with an interaction term (a product of Change Management and Situational Leadership) introduced as an additional predictor. The findings indicated that the P-value of the interaction term (CM*SL) is $0.000 < 0.05$ and the R^2 increased from 56.3%, 64.8% and 67 % after the interaction term and thus, Situational Leadership moderates the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya. The study rejected the null hypothesis and adopted the alternative hypothesis that there is a significant moderating effect of Situational Leadership in the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya. The study concluded that there exist a moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya. Situational leadership was confirmed to be a very effective leadership style to motivate farmers in different in the sugarcane sector. The study recommends that situational leadership will be core in incorporating the competence of managers to identify

the problems at hand and be able to diagnose for solution finding in the sugar factory sector. The sugar factories leadership needs to focus on running the sugar factories as a business that must survive in a fierce competitive environment.

Keywords: *Situational Leadership, Productivity, Sugarcane Factories*

1.1 Introduction

Kenya 13 mills in the sugar sub-sector now can deliver only about 500,000 tonnes sugar per year out of a designed potential of 800,000 tonnes of sugar per year (AFA, 2019). The mills fail to meet most of the national consumption demand of 1,031,055 metric tonnes per year for a population 47 million citizens. Gakunga (2020) indicates a widened sugar deficit of 58% relative to sugar consumption needs. Kenya therefore is a net importer of sugar under WTO sugar trade requirements. The country has sought WTO reprieves from the guidelines to protect her industry from COMESA (Kemigisha, 2016; Wachiye, 2012). There are many negative impacts on some world sugar sub-sectors' agribusinesses particularly for the ACP countries including Kenya, due to WTO trade requirements (Rakotoarisoa & Chang, 2017). The sugar trade globalization and a number of local negative impacts arising has justified this study for Kenya where low sugarcane and sugar productivity is now prevalent.

As for East Africa, there challenges of competitive advantage exist despite privatization for revitalization of productivity in Tanzania and Uganda. These challenges include government failure to limit sugar import quotas; poor farmer payments on inaccurate cane sugar content and weight; cultivation of low sugar varieties; presence of cane diseases such as smut; and lack of advocacy leaders for best sugar business practice (Tumusiime & Matotay, 2013). Despite these challenges, Tanzanian like Uganda delivers competitively priced sugar that is 60% cheaper than Kenya's (Mati & Thomas, 2019).Sometimes trade between EAC countries occurs under the common trade agreement referred to as The Common Market Protocol (2009).

Rivai (2009) define situational leadership as the competence of manager to identify an intimation of his environment, diagnosed, and adopted his leadership style based on the condition. Effective leadership delivers on goals for a vision to be attained by its motivated followers (Nanjundeswaraswamy & Swamy, 2014). Understanding of the leadership capability to harness into skills of followers is therefore very important in any business sector. Moreover, it involves matching the leader to the situation if possible or matching the leadership orientation to the follower maturity. These tools are not easily available for most of Africa and Kenya business sectors due to gaps in the leadership type studies (Kyosabira, 2018; NawoseIng'ollan & Roussel, 2017).

Sugarcane farming delivers amounts of farm produce in a quantifiable amount to a farmer for a sugar factory. The produce may be converted into productivity, which is defined generally as a ratio between the produce output volume and the volume of inputs to generate the produce (FAO, 2017). At farm level in the sugar sub-sector this measures how, for example, units of land area, in hectares, labour in man hours and capital in a currency, are able to give level of productivity, say in tonnes sugarcane per hectare. This is partial factor productivity or PFP presented as Tonnes cane per Hectare (TCH) (Fuglie et al., 2016). In this study model productivity, metrics involve only Partial Factor productivity (PFP) such as Tonnes Cane per Hectare (TCH), at farm level and tonnes sugar per year (Ts/Y) at the factory. Other productivity types are Total Resource Productivity (TRP) important in farming environmental impacts evaluations (Nadia, 2014).

1.2. Statement of the Problem

The Kenya sugar subsector cannot satisfy the citizenry consumption sugar needs at 1,031,055 metric tonnes per year in the period 2014-2018 (AFA, 2019). In 2020, the subsector was at 58% sugar availability on the 1,038,717 metric tonnes sugar per year (Gakunga, 2020). The 13-mill subsector is able to make less than 500,000 and not the rated 800,000 tonnes sugar per year. Import quotas fill the deficit in the Kenya sugar market demand from COMESA at USD 350 per tonne sugar. The country cannot enjoy exports under WTO guidelines of 2005 whose business outcome is to create trade competitiveness. Kenyas sugar produced at USD 750 per tonne is internationally uncompetitive and allows no exports to COMESA, EAC, AGOA and EU unless under special trade arrangements. Cheap sugar imports under WTO conditions inhibit sub-sector performance for lack adequate cane supply only at 4.95 million tonnes instead of 8.7million tonnes sugarcane per year. Intra-sub-sector challenges of cane farming and milling inefficiencies aggravated by political interference limit productivity. (Mitullah *et al*., 2017, AFFA 2019).

Extant literatures have found inconclusive results on the determinants of sugarcane Productivity. Methodologically, some studies revealed knowledge gaps. Okiiya (2013), Ndahiro, Shukla and Oduor (2015) used secondary data. The study by Ghazzawi, Shoughari and Osta (2017) was a critical theoretical review on the relationship between employee productivity and the situational leadership. Additionally, situational leadership has been conceptualized as independent variables in some studies (Nkari & Kibera, 2016; Ghazzawi *et al*., 2017). Contextually, the current study did not come across any study that has been carried out on change management in cane catchment areas in Kenya and the empirical evidence in Kenyan context was scanty.

1.3 Objective of the Study

To determine the moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya.

1.4 Research Hypothesis

Ho: There is no significant moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya

2.1 Literature Review

2.2 Theoretical Review: Situational Leadership Theory (SLT)

The situational leadership theory (SLT) was developed in the 1970s by Paul Hersey and Ken Blanchard. SLT refers to the type of leadership adopted by a leader with regards to a particular situation and is deemed most effective style of leadership from time to time. The validity of the theory is affected by the competence and the commitment of the follower. The SLT is premised upon a well-structured style of leadership that arises from the leadership need (Thompson & Glasø, 2015). Thompson (2008) avers that establishing a leadership style which is specific to a follower is sometimes difficult. Leaders must be able to adapt to the behaviours of their followers by assessing the situations Puni, Ofei and Okoe (2014) view the leadership styles as a behavior associated with the leader of the organization as it is affected by the surrounding environment. The theory is criticized as not encompassing all or what the leaders do. SLT has revealed some flops from the aspect of design involved in the research, the content and the

measurement (Thompson & Vecchio, 2009). The SLT is important to the study as it highlighted the relationship between the situational leadership and the sugarcane productivity.

2.3 Empirical Review

Ghazzawi, Shoughari and Osta (2017) looked at the situational leadership and its effectiveness in rising employee productivity. Structured questionnaires were used to collect data which were quantitative in nature. Stepwise regression was performed using SPSS. The findings revealed a positive relationship between situational leadership and employee productivity. However, the study considered the situational leadership as an independent variable. The current study will consider the situational leadership as a moderating variable on the relationship between change management and sugarcane productivity.

Raza and Sikandar (2018) using Hersey and Blanchard Situational Model examined the relationship between leadership style and students' performance. Readiness level scale was used to collect data. The study used experimental research design. The analysis involved both inferential and descriptive statistics. The study results reported significant influence of situational approach on students' performance. The situational approach had a strong positive a statistically significant effect on students' performance. The study however used experimental research design to assess the relationship between the study variables. This study used cross sectional research design.

Ruslan, Lian and Fitria (2020) examined the relationship between principal's situational leadership and teacher's professionalism and performance. The study used questionnaires to collect primary data. Secondary data was collected from various documentation. Data was analysed using SPSS. The study results showed a statistically significant relationship between principal's situational leadership and teacher's performance. The findings also revealed that there is significant relationship between teacher's professionalism and teacher's performance.

Ridlwan, Purwandari and Syah (2021) analysed the effect of situational leadership and organizational culture on employee productivity with job satisfaction as an intervening variable. The study employed Structural Equation Modelling analysis using a sample of 275 employees of fire management and rescue of the North Jakarta administration. The data were analyzed using Lisrel software. The results showed that situational leadership and organizational culture did not have a significant relationship with productivity directly. Situational leadership and organizational culture had a positive and significant effect on job satisfaction, while job satisfaction had a positive and significant effect on employee productivity. It is suggested that the organization needs to pay attention to job satisfaction which is a significant factor in improving employee productivity.

Mansour and Elziny (2020) assessed the impact of situational leadership style on enhancing employee productivity in quick service restaurants. The results of this study revealed that QSRs' employees working in Greater Cairo are affected by their managers' conduct of situational leadership. Consistent to these findings, QSRs' managers have to improve their relationship behavior with their subordinates; also, they should understand how high task behavior will influence them to mature in their performance and how effective the manager was in using situational leadership style.

Rahadiyan, Triatmanto and Respati (2019) examined the effect situational leadership style towards employee productivity through work satisfaction. The research design used was associative research, which aims to find out the relationship between two variables or more, with a function to explain, a symptom in the study using a quantitative correlation approach with the explanatory survey method. The population in this study were all employees and leaders in the development companies in East Java Province - Indonesia, the sampling technique was done by proportional random sampling. The data analysis technique uses a Structural Equation Model known as SEM (Structural Equation Modelling) so that testing can be done to determine the value between exogenous and endogenous variables. The results showed that Situational motivation and leadership style had an effect on productivity through job satisfaction, which meant that the better job satisfaction in the company provided more optimal performance, supported by the right motivation and good situational leadership to generate job satisfaction.

2.4 Conceptual Framework

The study's conceptual framework indicates a relationship between change management as the independent variable and sugarcane productivity as the dependent variable. Situational Leadership was a moderator. The conceptual model is illustrated in Figure 1.

Independent Variable   **Dependent Variable**

Change Management
- Innovation
- Training
- Access to land
- Access to funds
- Strategic changes
- Operational changes

Sugarcane Productivity
- Cane yield
- Extension service
- Cost of inputs
- Labour

Situational Leadership
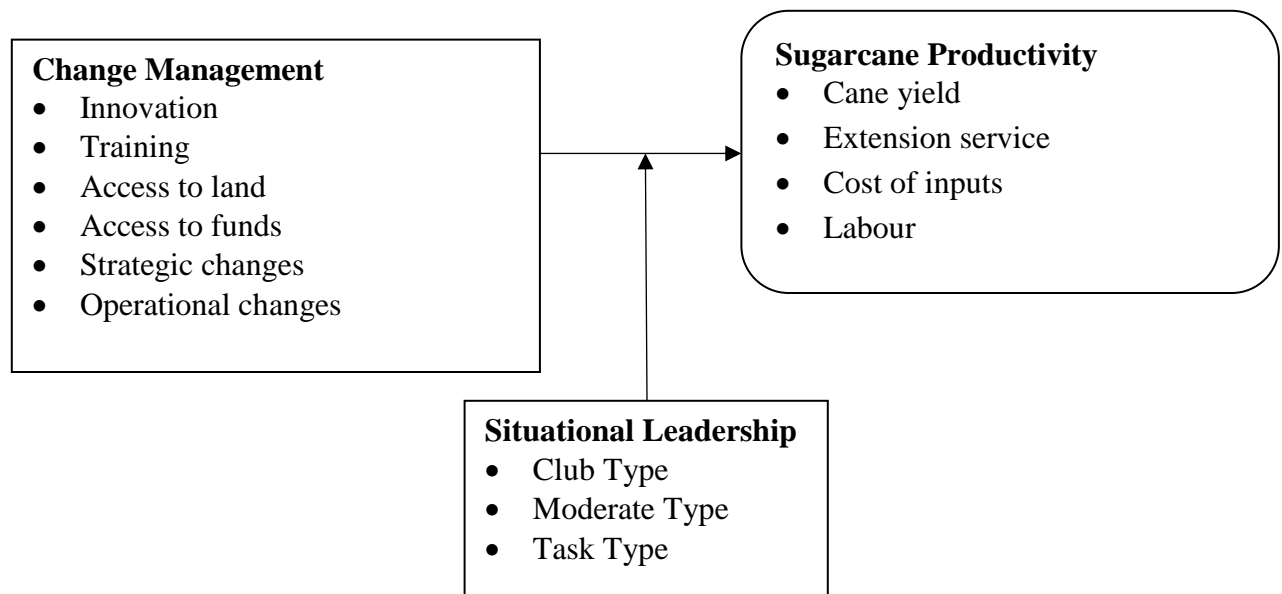- Club Type
- Moderate Type
- Task Type

Figure 1: Conceptual Model

3.1 Research Methodology

The philosophical foundation of this study was positivism, where quantitative data was used. This study thus adopts the positivist philosophy which is founded on objectivity, precision and scientific rigor to develop knowledge as opposed to the phenomenological approach which focusses on personal knowledge and subjectivity (Van Manen, 1997). The cross-sectional survey

design was adopted for this study in order to provide relevant information of the extent to which change management influences sugarcane productivity in sugar factory cane catchment areas.

The sugar sub-sector sugarcane production population of 394,321 individuals make a target population of 392,282 farmers and 2,039 extension service staff or leaders. This population works on a gross surface of 188449 hectares as catchments at 13 sugar mills of the sugar sub-sector. Slovin (1960) formula may be used in deriving a sample size, n, from a target population where 478 respondents was obtained. In addition, Cane catchment sugarcane farming 78 situational Leaders or extension staff pre -qualify for a domain of special skills (they each independently possess by their jobs descriptions at all the 13 mills; Managing Director, Head of Agriculture Operations, Cane Development Manager, Extension Services Manager, Agronomist. The researcher used structured questionnaires for data collection.

Regression analysis (process analysis method) as suggested by Baron and Kenny (1986) was used to establish the moderating effect of situational leadership on change management and sugarcane productivity in sugar factory cane catchments areas in Kenya. The model checks the prediction of the dependent variable, "SP", differs across levels of a third variable, "SL". Since the moderating variable affects the strength and direction between the independent and dependent variable, the test involves determination of the statistical significance of the interaction term (Whisman & McClelland, 2005).

$$SP = \alpha + (\beta_1 CM) + \varepsilon$$

$$SP = \alpha + (\beta_1 CM) + (\beta_2 SL) + \varepsilon$$

$$SP = \alpha + \beta_1 CM + \beta_2 SL + \beta_3 CM*SL + \varepsilon$$

Where:

SP= Sugarcane Productivity; CM= Change Management; SL= Situational Leadership; α = constant (intercept); β=Coefficient parameters to be determined, composite* =interaction term, ε = Error/disturbance)

ε = Constant error

4.1 Results and Findings

The study realized a success rate of 96% response. According to Mugenda and Mugenda (2003) and Kothari (2004), a response rate of above 50% is adequate for a descriptive study. Babbie (2004) also asserted that return rates of above 50% are acceptable to analyze and publish, 60% is good and 70% is very good. Thus 96% was considered very good for the study.

4.2 Correlation Analysis

Correlation analysis was carried out to determine the association between change management, situational leadership and sugarcane productivity. The mean score for each of the independent variables was calculated and the Pearson's correlation obtained using SPSS. The correlations were done at 0.05 significance level with one asterisk (*) or a 0.01 significance level with two asterisks. To determine whether the correlation between variables is significant, one needs to compare the p-value to the significance level used. A significance level (denoted as α or alpha) of 0.05 works well. An alpha of 0.05 indicates that the risk of concluding that a correlation exists when, actually, no correlation exists is 5%. The p-value indicate whether the correlation coefficient is significantly different from 0 or not. When the p-value is less than or equal to 0.05

the correlation is statistically significant. However, if the p-value is greater than 0.05 or the significant level then correlation is not statistically significant (Statistics Solution, 2018). The correlation results are presented in Table 2.

Table 2: Correlation Matrix

Variables		Sugarcane Productivity	Change Management	Situational Leadership
Sugarcane Productivity	Pearson Correlation	1.000		
	Sig. (2-tailed)			
Change Management	Pearson Correlation	.750**	1.000	
	Sig. (2-tailed)	0.000		
Situational Leadership	Pearson Correlation	.760**	.661**	1.000
	Sig. (2-tailed)	0.000	0.000	

The results indicate that change management is positively and significantly associated with sugarcane productivity in sugar factory cane catchments areas in Kenya (r= 0.750, p=0.00<0.05). Situational Leadership is positively and significantly associated with Sugarcane Productivity in sugar factory cane catchments areas in Kenya (r=0.760, p=0.00<0.05). Since the R-value was above 0.7, this is an indication that change management portrayed a high association with sugarcane productivity in sugar factory cane catchments areas in Kenya.

4.2 Hypothesis Testing

The objective of the study was to determine the moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya. Baron and Kenny (1986) moderation was used. The hypothesis stated in the null form is as follows:

Ho: There is no significant moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya.

The moderating effect of Situational Leadership was assessed and results explained using coefficient of determination (R-Square), Analysis of Variance (ANOVA) and the regression coefficients. Hierarchical regression analysis was performed with an interaction term (a product of Change Management and Situational Leadership) introduced as an additional predictor. This was done in 3 steps.

Table 3: R^2 for Change Management, Situational Leadership and sugarcane productivity

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.750a	0.563	0.562	0.77146
2	.805a	0.648	0.646	0.69357
3	.819a	0.670	0.648	0.69204

The results in Table 3 show that the R squared for the moderating effect had varying values. The first model for regressing Change Management against sugarcane productivity had 56.3% while the second step of regressing Change Management and Situational Leadership against sugarcane productivity had 64.8%. The third step which regressed Change Management, Situational Leadership and the interaction term CM*SL against sugarcane productivity had 67%. The R square for model increased from 56.3% to 64.8% and 67% after the interaction term and thus we conclude that Situational Leadership moderates the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya.

ANOVA results for Change Management, Situational Leadership and sugarcane productivity are as shown in Table 4.

Table 4: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	355.724	1	355.724	597.699	.000
	Residual	276.152	464	0.595		
	Total	631.876	465			
2	Regression	409.153	2	204.577	425.278	.000
	Residual	222.723	463	0.481		
	Total	631.876	465			
3	Regression	410.615	3	136.872	285.792	.000
	Residual	221.261	462	0.479		
	Total	631.876	465			

The ANOVA results indicate that all the three models were significant at 0.000<0.05. The F-Calculated for model one was (1, 464) = 597.699 which is greater than F-Critical (1, 464) = 3.84 at 95% confidence level. F-Calculated for model two was (2, 463) = 425.278 which is greater than F-Critical (2, 463) = 2.995 at 95% confidence level. F-Calculated for model three was (3, 462) = 285.792 which is greater than F-Critical (2, 463) = 2.604 at 95% confidence level. Therefore, the results confirm that the regression model one, two and three are significant. The regression of coefficients for change management, situational leadership and sugarcane productivity are as shown in Table 5.

Table 5: Regression coefficients for Moderating effect

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.714	0.100		7.140	0.000
	Change Management	0.751	0.031	0.750	24.226	0.000
2	(Constant)	0.385	0.095		4.053	0.000
	Change Management	0.409	0.043	0.409	9.512	0.000
	Situational Leadership	0.454	0.043	0.448	10.558	0.000
3	(Constant)	0.883	0.301		2.934	0.003
	Change Management	0.223	0.112	0.223	2.000	0.005
	Situational Leadership	0.267	0.115	0.264	2.322	0.021
	CM*SL	0.062	0.014	0.351	4.559	0.008

The regression of coefficients results shows that in step one, the regression model of change management on sugarcane productivity in sugar factory cane areas in Kenya was significant with $\beta=0.751$, $p=0.000<0.05$. In step two, the results show that the regression model of change management and Situational Leadership on sugarcane productivity in sugar factory cane areas in Kenya was significant with $\beta_1=0.409$, $p=0.000<0.05$: $\beta_2=0.45$, $p=0.000<0.05$. In step three, the results show that the regression model of change management, situational leadership and the interaction term CM*SL on sugarcane productivity in sugar factory cane areas in Kenya was significant with $\beta_1=0.223$, $p=0.005<0.05$: $\beta_2=0.267$, $p=0.021<0.05$: $\beta_3=0.062$, $p=0.008<0.05$.

The fitted models were:

Model 1:   SP= 0.714 + 0.751CM

Model 2:   SP= 0.385 + 0.409CM + 0.454SL

Model 3:   SP= 0.883+ 0.223CM + 0.267SL + 0.062CM*SL

Where

SP= Sugarcane Productivity

CM= Change Management

SL= Situational Leadership

CM*SL= Change Management*Situational Leadership

The moderation analysis adopted the Baron and Kenny (1986) method. Results indicate that the P value of the interaction term (CM*SL) is $0.000< 0.05$ and the R^2 increased from 56.3%, 64.8% and 67 % after the interaction term and thus, Situational Leadership moderates the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya. The study thus rejected the null hypothesis and adopted the alternative hypothesis that there is a significant moderating effect of situational leadership in the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya.

4.3 Discussion

The objective of the study was to determine the moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya. The hypothesis stated in the null form:

Ho: There is no significant moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya.

The moderating effect of Situational Leadership was assessed and results explained using coefficient of determination (R-Square), Analysis of Variance (ANOVA) and the regression coefficients. Hierarchical regression analysis was performed with an interaction term (a product of Change Management and Situational Leadership) introduced as an additional predictor. This was done in 3 steps. The regression of coefficients results shows that in step one, the regression model of Change Management on sugarcane productivity in sugar factory cane areas in Kenya was significant. In step two, the results show that the regression model of Change Management and Situational Leadership on sugarcane productivity in sugar factory cane areas in Kenya was significant. In step three, the results show that the regression model of Change Management, Situational Leadership and the interaction term CM*SL on sugarcane productivity in sugar factory cane areas in Kenya was significant. Since the P value of the interaction term (CM*SL) is $0.000 < 0.05$ and the R^2 increased from 56.3%, 64.8% and 67 % after the interaction term and thus, Situational Leadership moderates the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya. The study thus rejected the null hypothesis and adopted the alternative hypothesis that there is a significant moderating effect of Situational Leadership in the relationship between change management and sugarcane productivity in sugar factory cane areas in Kenya.

The results agree with those of Ghazzawi, Shoughari and Osta (2017) who looked at the situational leadership and its effectiveness in rising employee productivity and revealed a positive relationship between situational leadership and employee productivity. The findings are also consistent with Raza and Sikandar (2018) on the relationship between leadership style and students' productivity whose results reported significant influence of situational approach on students' productivity. The situational approach had a strong positive a statistically significant effect on students' productivity. Ruslan, Lian and Fitria (2020) on the relationship between principal's situational leadership and teacher's professionalism and productivity results showed a statistically significant relationship between principal's situational leadership and teacher's productivity. The findings also revealed that there is significant relationship between teacher's professionalism and teacher's productivity.

The result are in tandem with findings of Rahadiyan, Triatmanto and Respati (2019) who examined the effect situational leadership style towards employee productivity and established that Situational leadership had an effect on productivity through job satisfaction. This implied that better leadership in the company provided more optimal productivity, supported by the right motivation and good situational leadership to generate job satisfaction. The findings by Ghazzawi, Shoughari and Osta (2017) on Situational leadership and its effectiveness in rising employee productivity established a positive relationship between situational leadership and employee productivity. The findings by Kitonga (2017) studied Situational leadership and productivity further established that there is significant positive correlation between Situational leadership practices in general and sustainability in not-for-profit organizations. Specifically, the

study findings established positive correlations between determining strategic direction, developing human capital, ethical practices, strategic control and productivity.

The findings are in line with the outcome of Nanthagopan (2016) who examined the impact of Situational leadership and management capability on organizational productivity and the results show that, leadership and management capability are accounted for coefficient for determination with organizational productivity. The findings by Momanyi and Juma (2015) on effect of Situational leadership style on employee productivity of Kenya parastatals found out that Situational leadership involvement had a positive influence on employee productivity in the energy sector parastatals in Kenya.

5.1 Conclusion

The study concludes that there exist a moderating effect of situational leadership on the relationship between change management and sugarcane productivity in sugar factory cane catchment areas in Kenya. Situational leadership was proven to be an effective leadership style to motivate farmers in different in the sugarcane catchments of the 13 sugar factories. Situational leadership has an influential effect on employee's productivity, directly impacting organizational productivity. The leadership type motivates employees to reach desired organizational goals, promoting good leadership that leads to an increase in follower productivity. This is because situational leaders are flexible, manage followers like sugarcane farmers according to prevailing business situations. The leaders have known how to direct and coach, and to encourage teams to participate in decision making when their readiness for delegation is high.

6.1 Recommendations

From the study, it became clear that the sugar companies landed in the situation of unproductivity due to lack of good situational leadership. The study has demonstrated that situational leadership with the input of change management has a positive impact on sugarcane productivity. Thus, the study recommends that situational leadership will is core in incorporating the competence of managers to identify the problems at hand and be able to find sugarcane productivity solutions the Kenya sugar sub-sector. The sugar factories will then run concerned about survival in a fierce competitive environment as one created by the WTO guidelines. Any sugar factory will every time mainstream strategic change management needs for enhanced and assured business continuity for desired competitive results.

The moderating effect of situational leadership on the relationship between change management and sugarcane productivity provides direction on managers to ensure adoption of the appropriate leadership that drives productivity of the sugar companies. The study found that situational leadership moderates this relationship. This study therefore advocates that the managers incharge of sugar factories in the sugar sub-sector critically consider situational leadership style in their companies for sustainable and competitive business.

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