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The Role of Structural Decisions on the Manufacturing Performance of Sugar Manufacturing Firms in Kenya

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Abstract:
The overarching goal of sugar manufacturing firms is long term survival and the ability to wade off competition evident in the industry. This requires manufacturing firms to rapidly develop emanating from manufacturing technological advancements, frequent innovations, as well as rapid developments in their structural capacities. The purpose of the study was to assess the effect of structural decisions on performance. Specifically, the study sought to: explore the effect of capacity on the performance, assess the effect of process on the performance, examine the effect of structure on the performance, and to determine the effect of operations and development on the performance of sugar manufacturing firms in Kenya. The study was based on Routine Based Theory and adopted both descriptive and experimental research designs anchored on realism ontology, and used both quantitative and qualitative approach. The unit of analysis was sugar manufacturing plant. The respondents were sought through both purposive and simple random sampling strategies, yielding a sample of 165 respondents. Structured questionnaires and interview schedule were used to collect primary data. Data was processed both descriptively and inferentially using Microsoft Excel 2010 and SPSS version 21. EFA, correlation analysis and regression analysis, were equally used, while qualitative data analysis was done through expert judgment, scenario mapping and critical thinking. The overall study results revealed that structural decisions have insignificant effect on performance.

Keywords*: Structural decisions, decision areas, operations, performance*

1. Introduction

It is no secret that the world's sugar manufacturing sector is under pressure. The industry is facing stiff competition from low-cost sugar firms from well-established global economies. The expansion of world sugar production into the foreseeable future is unlikely (Ketema, 2015; Tyler, 2013). These technological developments hence require that the managers of manufacturing firms devise strategies and make astute structural decisions in order to ensure survival, and improve manufacturing performance of the sugar firm. In this regard, managers must craft and implement appropriate strategies at all levels.

The current economic crunch being experienced in the world consequently has led to closure of several sugar mills. Specifically, the poor performance by Kenya sugar sector has led several sugar firms be closed or be put under receivership, while the government has to bail out some of them. In addition, revenues are below production cost for a growing number of millers (Czarnikow, 2013; Tyler, 2013). Globally, there has been a structural deficit in sugar production, and as Czarnikow (2013) further outlines, the projected world sugar production deficit has been steadily rising from 8.51 Metric Tons Raw Value (MTRV) in 2012 to 9.29 MTRV in 2015. To bridge this gap, it requires large-scale and efficient factories in order to achieve economies of scale (Czarnikow, 2013). Unfortunately, this production dream has remained a mirage.

A study by Gachene, Kathumo, Gicheru, and Kariuki (2012) identifies low productivity at factory level leading to low sugar yields and capacity under-utilization, among other challenges. In addition, Tyler (2013) intones that ultimately, the sugar manufacturing factories need to be big and to operate with high capacity utilization in order to process cane at low cost. This requires that these sugar manufacturing firms should diversify their strategies to attain the required production scales and standards. In this regard, the sugar firms need to refocus their strategies, and as Hallgren (2010) would postulate, structural decisions offer firms a structured approach to decision making in facilitating production so as to improve their competitiveness, survival and and performance to achieve the set objectives.

1.1. Statement of the Research Problem

Although manufacturing sector is far from largest in Kenya in terms of output or employment, its growth is an instrumental driver for economic development. The sugar manufacturing sector accounts for eleven percent (11%) of gross domestic product (GDP) (Mbalwa, Kombo, Chepkoech, Koech and Shavulimo, 2014). However, this is considered low compared to most middle income countries. A study by Gachene, Kathumo, Gicheru, and Kariuki (2012) identifies low productivity at factory level leading to low sugar yields and capacity under-utilization. In addition, Tyler (2013) intones that ultimately, the sugar manufacturing factories need to be big and to operate with high capacity utilization in order to process cane at low cost. Several sugar firms in Kenya are documented as large, in terms of their capital outlay. This begs the question as to what exactly ails these large firms' production capacity?

Unfortunately, the identification and application of structural decisions into business strategies is insufficient, and it is difficult today to find manufacturing companies that use their structural decisions' functions as a strategic manufacturing weapon, yet it is a core functional level strategy that helps manufacturing firms gain competitive advantage (Ketema, 2015; Gognon, 2009). The current study thus postulated that the cardinal problem resides in the identification and application of structural decisions, as a strategy.

2. Literature Review

2.1. Theoretical Framework

In order to explicitly explain the inter-relationships among the study phenomena (Ngumi, 2013), the current study was hinged on Routine Based Theory (RBT). Its arguments and implications to structural decisions and manufacturing performance were explored. This in-depth assessment of the theory facilitates a clear understanding of the contribution of structural decisions to manufacturing performance of sugar manufacturing firms (Suzana, 2014), especially in Kenya.

Routine – based view is a theoretical perspective emphasizes the importance of routines (Ketema, 2015) for a manufacturing process. Accordingly, the theory demands that sugar manufacturing firms develop various routines in an evolutionary path in their manufacturing process. Sugar manufacturing emphasizes routine operations in their manufacturing process. Since the whole manufacturing is the sum of sub-processes, routine based theory help anchor these operations from the input point, and traces these interrelated operations to the output point. In this respect, the process routines so established by these sugar manufacturing firms enable the continuity of the manufacturing firm, which in turn, leads to internal stability of the manufacturing process (Rahmeyer, 2006).

Given that sugar manufacturing firms continuously introduce technical and organizational innovations into their manufacturing processes, this is likely to improve their adaptability in case of an unsatisfactory market performance and hence may help the firm open up new activities that may enable it have a comparative advantage over market rivals. The adaptation of the sugar manufacturing firm over time will enable the firm drive evolutionary change corresponding to their respective firm – specific routines dependent on the structural capacities of the manufacturing process, given that sugar manufacturing firms differ for efficiency reasons in the level of unit production costs.

Ketokivi and Schroeder (2004) further intone that the theory helps determine critical drivers to superior manufacturing performance. The current study hypothesized that the sugar manufacturing firms, through time have developed certain inherent routines, which have been in use over time. These successful routines are hence used by the firms in their processes, systems, culture, practices, and/or relationships to oversee performance of the whole manufacturing process most efficiently. In essence, the routine based theory is of the view that these critical routines may be more important for an organization more than structural and infrastructural resources alone for competitiveness. Successful routine therefore, is a critical tool in their totality, considered together with both structural and infrastructural decisions.

2.2. Conceptual Framework

The conceptual framework helps researcher make conceptual distinctions and organize study ideas during research. There are two sets of variables depicted in the conceptual framework: (1) structural decisions comprising (a) Capacity, Processes, Structure, and Operations and Development (2) manufacturing performance comprising (a) efficiency and (b) effectiveness. The study hypothesized that structural decisions linearly and directly influences manufacturing performance of sugar manufacturing firms in Kenya. In view of the above statement of the research problem, the stated study objectives, as well as the theoretical foundation of the study, a framework depicting conceptual relationships among the study variables as presented in figure 1 was developed.

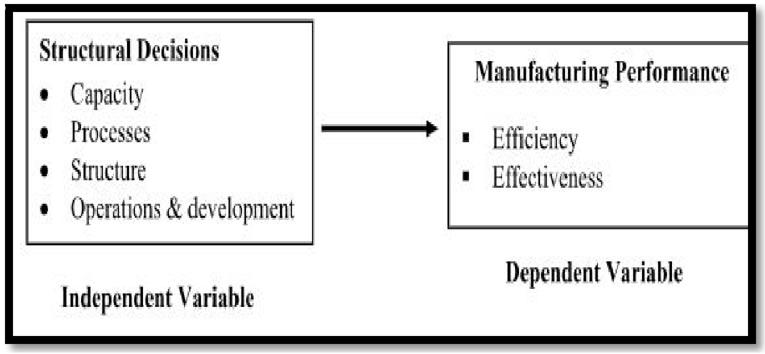

Figure 1

2.2.1. Manufacturing Performance

According to Malonza (2014) manufacturing performance is the measurable aspect of an organization's process by quantifying the process for efficiency and effectiveness of an action taken. According to Kasie and Belay (2013), manufacturing firms have continued to incorporate the "best practices" in their operations.

Davidson (2013) argues that effective measuring, analyzing, and improving manufacturing metrics is not as simple. In addition, while there are certain metrics that work well for specific job roles, there exists multiple combinations of metric indicators needed to ensure that business objectives are being met. In view of the above, the current study hence proposes to use an Operations Performance Measurement Model (OPMM) (Hallgren, 2010), as a strategic management system performance measure, whose indicators are efficiency and effectiveness. The use of OPMM is advanced by Kasie and Belay (2013) and further note that firms which measure their performance using a combination of financial and non-financial measures achieve better performance, and which have not been integrated with each other, with financial measures as well as with strategic objectives of sugar manufacturing firms to offer a more pragmatic view of measuring manufacturing performance of these sugar manufacturing firms.

While sugar firms are more likely to adopt a combination of the above cited measurement indicators, Littlefield and Shah (2008) are of the opinion that the adoption of these indicators can never take place in a vacuum, and the key to improved performance lies in simultaneous use of multiple performance dimensions. This is in agreement with s study by Gong (2013) which advances that to realize improved operations performance, it is vital for a sugar manufacturing firm to formulate a strategy that seeks a fit between business strategy in different functional units within the firm and performance.

2.2.2. Structural Decisions

According to Slack and Lewis (2011) structural decisions as those which shape the "building blocks" of the operations and hence define a manufacturing firms' overall tangible shape and architecture. Structural decisions relate to tangible aspects of the firm, facilities, the way equipment and personnel are organized in processes and inter – linkage relationships within the manufacturing firm (Stoup and Christensen, 2000). Strategy for sugar manufacturing firms, is essentially about how the specific firm seeks to survive and prosper within its environment over the long-term, hence the structural decisions and actions taken within its operations have a direct impact on its long – term performance.

Structural decisions often involve major capital investment decisions, which once made will set the direction of operations, and ties the operations of the sugar firm long- term. These decisions have a long – term effect on the resources and capabilities of the sugar manufacturing firm, and influences it's the firms' future performance, and as Barnes (2012) would intone, such expensive strategic decisions must be considered only ones for the benefit of the sugar manufacturing firm. For example, since a manufacturing firm's rate of output is structurally dependent on the competitive priorities that the specific sugar firm chooses, it must be closely tied to the capacity decisions that will influence the output rate and volume. Equally, Barnes (2012) concludes that a firm's manufacturing cost is affected by structural design, while the quality is influenced by the fit between structural design, capacity and the market requirements. Thus the sugar manufacturing firm must also have protective capacity in order to deal with disruptions in delivery, while flexibility – when demand stabilizes – there may be excess capacity, which can result in high costs per unit and wasted resources.

A sugar manufacturing firm needs to make a decision between high volume of homogeneous products and low volume of differentiated products. In this respect, Gong (2013) presents a product – process matrix to examine market – manufacturing congruence problems and to help manufacturing process decisions. The matrix relates to process structure dimensions that describe the process choice and the stages of the product – life cycle that may be appropriate to fulfill the demand. From Gongs' elucidation, the matrix can further be used to facilitate a winning competitive advantage by sugar manufacturing firms in Kenya.

A study by Ketema (2015) analyzed drivers of manufacturing performance in medium and large scale firms in Ethiopia. Data was gathered at plant level from 197 MLSF by use of a quant – emphasis mixed method approach along with cross – sectional survey design, and the collected data was analyzed qualitatively. The hypothesized relationships were analyzed by Structural equation modeling (SEM). Importance to the current study is that structural decisions have 68.2%

effect on operations performance. In addition, the study concluded that structural decisions have a significant influence on manufacturing performance when a firm seeks to achieve quality and delivery priorities.

The current study outlines that the structural decisions by manufacturing firms is measured by a firm's production capacity, manufacturing process, the structure and the location of the manufacturing plant. The current study thus is based on the premise that as sugar manufacturing firms choose appropriate tangible and architectural dimensions as a distinct strategy at functional areas, the operations performance improves as well. And it is on this premise that the study formulated the relevant null hypothesis stated as:

- H_{01}: There is no significant effect of structural decisions on performance of sugar manufacturing firms in Kenya.

3. Research Methodology

Research methodology is a conceptual structure within which a research is conducted, and it outlines the blue print for collecting, measuring, and analysing data (Kothari, 2010). Research methodology is hence a detailed procedure to be followed to realize the research objectives.

3.1. Research Philosophy

In this study, the research methodology detailed procedure to be followed to realize the research objective. The theoretical frame work underpinning the research process adopted realism view which emphasizes objectivity and assumes that reality is imperfect, and that human intelligence is flawed and situations may not be easily manipulated (Lee, 2006). Due to large quantity of data that was expected, the methodology found appropriate (Abdulkareem, Adel, and Anchor, 2010). Moreover, the methodology was equally appropriate for the current study since it allowed situational information to be collected from their natural settings, with an objective of assessing the causative effect of structural decisions on performance of sugar manufacturing firms in Kenya.

3.2. Research Design

Whereas Kothari (2010) defines research design as the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy with procedure, Creswell (2003) reasons that the cardinal role of research design is to minimize the chance of drawing incorrect causal inferences from the data set so collected and analyzed. This, in effect, infers that a research design proposed for the current study is a logical task undertaken to ensure that the data collected will enable the researcher to test the above stated hypotheses as unambiguously as possible.

In order to achieve the set objectives, the current study adopted both descriptive survey and experimental research designs, and used both quantitative and qualitative methods. Whereas Kombo and Tromp (2009) avow that descriptive research design involve measurement, classification, analysis, comparison and interpretation of data, Kothari (2010) is of the view that descriptive research aims at exploring and describing the state of affairs as it exists. Descriptive research design was hence used to diagnostically determine the frequency with which the study variable constructs occur, and further explored relationships between operations strategies and operations performance, to facilitate predictions, accompanied by narration of facts and characteristics as they were observed.

An experimental research design was employed in order to facilitate testing of the stated hypotheses and help explore the cause – effect relationships among the study variables that the study proposes (Kothari, 2010). For quality control, randomization was used to select sample respondents from the floor workers (Kothari, 2010; Onen and Yuko, 2009). The choice of the combination of the two research designs was found appropriate since they allowed the researcher to collect situational data in their natural settings, in order to assess both the significance and direction of relationship among the stated study variables. To generate data for this study, a cross – sectional survey design was used to collection of quantifiable data by use of structured questionnaire from more than one case at a single point in time about several variables, and is examined for patterns for associations (Kothari, 2010).

3.3. Target Population

Several authors have defined population differently. Whereas Kombo and Tromp (2006) define it as a group of individuals, objects or items from which samples are drawn for measurement, both Kothari (2010) and Onen and Yuko, (2009) views it as the researchers 'universe'. For a specific study, Kothari (2010) describes population as a collection of all elements under consideration, from which a researcher intends to make inferences. Going by these divers definitions, the target population sampling frame included all the twelve (12) sugar manufacturing firms registered, and as licensed by Kenya Sugar Board as at June 2015, which were equally the unit of analysis for the current study.

3.4. Sample and Sampling Techniques

The sample was selected in such a way as to ensure that every element in the population was represented in the sample in proportion to their numbers in the population. This ensured that it replicated characteristics of population it purports to represent (Kothari, 2010; Onen and Yuko, 2009). This study followed an argument by Ketema (2015) that it is customary to use informants/respondents (single or multiple) in collecting data about organizational attributes and/or practices.

The researcher used both purposive and simple random mixed sampling techniques to get the respondents sample size. According to Kothari (2009), purposive sampling involves a deliberate selection of particular units of the universe to constitute a sample. In addition, Ngumi (2013) notes that purposive sampling applies expert knowledge of the population to select in a non-random manner, a sample of elements that represents a cross-section of the population. Thus purposeful sampling enabled the researcher select specific respondents who were to provide the most extensive information about the variables under study. In this regard, production managers (n_1 = 12), operations supervisors (n_2 = 35) and finance managers (n_3 = 12) were purposively sampled.

To determine the sample size of floor workers thorough random simple sampling techniques, the study adopted a formula provided by Nassiuma (2000).

$n = \frac{Nc^2}{c^2+(N-1)e^2}$, where n = Sample size, N = Population, c = covariance, while e = standard error.

The study used a coefficient variation of 21% and a standard error of 2%. The lower limits for coefficient of variation and standard error were selected so as to ensure low variability for stability of sample data set, and to minimize the degree of error. The application of the formula to the category of floor workers gives a total sample size of 99. A sample respondent per sugar manufacturing firm was obtained by proportionately apportioning a sample size to each firm, and then, respondents were randomly sampled. The overall sample size for the study was one hundred and sixty five ($n_1 + n_2 + n_3 + n_4$) respondents selected for the study. However, figures were rounded up for statistical analysis.

Surveying managers, who make decisions, and both supervisors and floor workers who execute the strategies by the management in their daily work, are more likely to provide more insights into the level of strategic consensus within a particular plant. Further, by identifying multiple respondents for the study, was a preliminary precaution mechanism to ensure reliability, allows informants to address particular issues in their areas of expertise/or scope, as well as minimize Common Method Variance (CMV) problem (Ketema, 2015).

3.5. Data Collection Method and Instruments

This study collected both primary and secondary data and utilized both quantitative and qualitative approaches. According to Coopers and Schindler (2013), quantitative data is one that describes data distribution by use of numerical, while qualitative data is one that is organized according to emerging themes. Primary data was collected from their natural settings by use of structured questionnaires and interview schedule, while secondary data was done through document analysis.
Structured questionnaires were administered to operations supervisors as well as floor works, while interview schedule was administered to both the production and finance managers, while relevant documents of individual company were perused through to extract the relevant information to validate the information for the study (Onen and Yuko, 2009). The questionnaire items had fixed – response alternatives, requiring the respondents to select from the stated options, located using five – point Likert type scale. The intent of the Likert scale is that the statement represents different aspects of the same attitude (Allen and Seaman, 2007). The respondents were required to indicate the extent of their perception of various questionnaire items along the Likert scale. The interview guide had open ended set of pre – determine questions which were highly standardized that form a basis for and guides the interviewing process; it provides a structure that aids in obtaining the necessary information (Kothari, 2007).

3.6. Pilot Testing

Pilot testing was done prior to carrying out the actual research in order to ensure that the research tools developed for use in the research are suitable in their content, and that the respondents are interpreting the questions in a manner intended by providing proxy data for a selection of a probability sample (Coopers and Schindler, 2013; Kothari, 2010). The researcher, therefore, was able to refine the data collection instruments accordingly. Data collection instruments were pre-tested on a pilot survey targeting respondents from two sugar firms similar to, but which were not included in the actual study.

The responses obtained from the pilot study were used to determine the validity and reliability of the questionnaire of which the relevant amendments were made to the questionnaire items before administering it to the actual study respondents. From the pilot study reliability statistics shown in table 1 indicated that all the structural decisions and performance measurement items met the minimum reliability threshold, hence was conclude that the instruments were sufficiently reliable for the study.

Piloted Study Variables	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Performance	.875	.865	9
Structural Decisions	.917	.906	16

Table 1: Pilot Study Variable Reliability Statistics

To ensure validity, Ketema (2009) advises that construct measures and their indicators be taken from several conceptual and empirical literatures, as the current study had done, evidenced from various cited sources. To attain content validity, the research instrument scales were built on the basis of prior literatures, which were validated in different empirical studies. To ensure both construct and convergent validity, the study used the KMO Measure of Sampling Adequacy test for factor loadings to extract the least number of factors that accounted for the common variance of a set of variables and showed by how much the co-variation among the observed variables each one accounted for. The KMO Measure of Sampling Adequacy test of structural decisions study measurement items was 0.738 above the recommended minimum index (Hair, Black, Babin, Anderson, and Tathan (2010).

3.7. Data Processing and Analysis

Data analysis involved scrutinizing the acquired information and making inferences. Collected data was processed and analyzed using IBM's SPSS version 21 and, while Microsoft Excel 2010 was used to generate various means to facilitate generation of statistics inferentially. Upon collection, data was cleaned by editing to ensure accuracy, uniformity, completeness, consistency, and arranged, then coded by assigning unique identifiers to aid its traceability, then entered in the Statistical Package for Social Sciences (SPSS) version 21.0 software prepared data base for analysis. This software is ideal for its analytical superiority, availability and the ability to handle large quantity of data (Field, 2003). The SPSS database was designed based on the pre-coded questionnaires sub-themes. The responses of each identified questionnaire items were keyed into the prepared database. Results of data analysis were presented in frequency distribution tables in chapter four. The study generated both quantitative and qualitative data.

The quantitative data collected was analyzed by use of both descriptive and inferential statistics to determine trends and to enable comparisons among the study variables in order to make deductions; interpretations; conclusions; and possible recommendations. Qualitative data collected was condensed by editing, paraphrasing, and summarized in order to derive meaning from it. Qualitative data collected was organized according themes and patterns of occurrence derived from the five objectives of the study, and were analysed using content analysis technique. The qualitative data responses through semi – structured interview schedule were analyzed through expert judgment, scenario mapping and critical thinking. This, according to Kosikoh (2014) involves reading through the questionnaires, developing codes, coding the data, and drawing connections amongst various discrete pieces of data.

4. Research Findings and Discussions

4.1. Response Rate

Although the study had intended to collect data from a sample of 165 respondents, data was successfully obtained from 131 of them. This represents a response rate of 79.4 percent of the target population. A study by Boyer and Lewis (2002) found a return rate of 40.6 percent, while a study by Malaba, Ogolla, and Mburu (2014) had a return rate of 74.5 percent. Comparatively a return rate of 79.4 percent was considered good enough to validate the current study results, which surpasses the 10 percent of the total population as recommended by Mutunga, Minja, and Gachanja (2014) and Kothari (2010).

4.2. Demographic Profile of Respondents

The study explored the demographic data of the valid respondents by analyzing their experience and academic qualifications. To assess the level of work experience, the study required the respondent to indicate on a continuum how long they had worked in the organization. The study results are represented in table 2

		Frequency	Percent	Cumulative Percent
Valid	Less than 1 year	9	6.9	6.9
	1 - 5 years	32	24.4	31.3
	6 - 10 years	43	32.8	64.1
	Over 10 years	47	35.9	100.0
	Total	131	100.0	

Table 2: How Long Have You Worked in This Organization

The study assumed that experience gained through extended working period injects high level and yet competencies necessary in carrying out ones duties (Abdulkareem, *et al.,* 2010). The level of work experience as illustrated in table 3 indicates that 6.9 percent had worked in their current organization in less than a year, 24.4 percent had worked between one and five years, 32.8 percent had worked for between six and ten years, while 35.9 percent had worked for over ten years. This implies that an accumulation of 68.7 percent of the respondents were found to have gained the necessary competences embedded in skills, knowledge and experience as key to competitive advantage.

In the same vain, from the strategic perspective, the competencies gained through time are contingent of function, routines and processes in an organization. At one instance, the researcher came across one manager who confessed to have had a twenty (20) years' experience working with one of the firm, twelve of which in the same position. The manager indicated that he had mastered the routines "mentally" and needed no reminder of what to do and when to do it. This level of experience was assumed to have led to the development of critical path routines that contributed to the success of the system.

		Frequency	Valid Percent	Cumulative Percent
Valid	Less than 3 year	23	17.6	17.6
	4 -6 years	36	27.5	45.0
	7-9 years	30	22.9	67.9
	Above 10 years	42	32.1	100.0
	Total	131	100.0	

Table 3: For How Long Have You Worked at the Current Position

Table 3 determined the experience of respondents in their current position, of which, 17.6 percent of respondents had worked for less than three years, 27.5 percent had worked between four and six years, 22.9 percent had worked between seven and nine years, while the majority (32.1 percent) had worked at their current position. These study findings confirms argument by Katema (2015); Bhargava and Anbazhagan (2014), and Abdulkareem, *et al*., (2010) that respondents with a high working experience have the technical knowledge that assists in providing reliable data on the study problem under investigation. This indicates that on average, an accumulation of 93.1 percent had prerequisite experience and thus understood technical issues on the variables under study. In assessing the level of experience both at organizational level and the current position, these study findings are consistent with the Resource Based View theory which in this case, would view these intangible resources as specific to individual firms

4.3. Descriptive Statistics for Performance Measurement Items

Frequencies, expressed as a percentage of the sample, were used to explain the number of times the respondents (dis)agreed with the hypothesized state. Descriptive statistics were generated for each performance construct and results were as shown in table 4.

Efficiency Items		SD	D	N	A	SA	Mean	S. D
The process procedures improve efficiency	(%)	0	1.5	0.8	67.9	29.8	4.26	0.55
Employees productivity is much higher that the industry average	(%)	2.3	28.8	4.6	47.5	17.6	3.50	1.15
The firm regularly improves internal operations processes	(%)	0	10.7	3.1	67.2	19.1	3.95	0.81
Key Performance Metrics are reviewed frequently	(%)	0.8	13.7	3.1	59.5	22.1	3.89	0.93
Impediments that hold up progress are resolved on time	(%)	3.8	20.6	3.1	54.2	18.3	3.63	1.12
Effectiveness Items								
Scale of operation is sufficient to produce the required volume	(%)	0	20.6	0.8	55	23.7	3.82	1.02
Operations maintain flexibility while increasing accountability	(%)	3.1	17.6	8.4	53.4	17.6	3.65	1.06
The activities are undertaken as scheduled	(%)	3.1	19.8	3.1	51.1	22.9	3.71	1.12
Sugar products meet prescribed quality standards	(%)	0	0	1.5	71.8	26.7	4.25	0.47

Table 4: Descriptive Statistics for Efficiency and Effectiveness Items
Means: 1 – 1.8 = SD, 1.9 – 2.7 = D, 2.8 – 3.3 = N, 3.4 – 4.2 = A, Above 4.2 = SA
Key: SD =Strongly Disagree, D =Disagree, N = Neutral, A = Agree, SA =Strongly Agree

The study sought to assess how best the presented study statements described the efficiency of the sugar manufacturing system. To assess the extent to which the production procedures improve efficiency, 97.7 percent generally agreed while 1.5 percent dissented. The item had a mean of 4.26 with standard deviation of 0.55. To determine the productivity of employees', 65.1 percent generally agreed while 31.1 percent generally disagreed that employees are more productive than the industry average, with the item averaging at 3.50 and a standard deviation of 1.15.

In addition, 86.3 percent generally agreed compared to 10.7 percent who disagreed that an individual firm regularly improves internal operations processes. The item had a mean response of 3.95 and a standard deviation of 0.81. Moreover, 81.6 percent of the valid respondents generally agreed that Key Performance Metrics are reviewed frequently compare to 14.5 percent that dissented. The efficiency item had a mean response of 3.89 with a standard deviation of 0.93. To assess whether the impediments that hold up progress are resolved on time, 72.5 percent of the valid respondents generally agreed compared to 24.4 percent that generally disagreed.

The study results revealed that all the efficiency indicators had a mean greater than 3.2, about which the respondents generally agreed and is an indication that the efficiency measurement items listed are of considerable importance (Abdulkareem *et al.,* 2010). To assess how best the presented study statements described the effectiveness of the sugar manufacturing system, the study results equally revealed means of 3.82, 3.65, 3.71, and 4.25, all of which are above 3.2. This further proves the respondents generally agreed that the effectiveness measurement items were of considerable importance.

4.4. Exploratory Factor Analysis for Operations Performance

The validity of the model constructs was assessed by subjecting the variable item responses from the questionnaires to Exploratory Factor Analysis (EFA) to assess the extent to which the observed indicators represents an underlying latent construct fitted with the pre-specified theoretically driven model (Hair, Black, Babin, Anderson, and Tathan, 2005), and aid to identify the least number of factors which can account for the common variance of a set of variables.

The initial part of the factor extraction process was to determine the linear components within the data set (eigenvectors). All of the nine performance measurements items were subjected to the factor analysis. By use of Kaiser criterion, SPSS was used to retain components with Eigen values ≥ 1. Consequently, only one component was extracted as presented in table 5.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.242	74.743	74.743	2.242	74.743	74.743
2	.453	15.108	89.851			
3	.304	10.149	100.000			

Table 5: Total Variance of Performance Items Explained
Extraction Method: Principal Component Analysis

Presented in table 5 is a list of eigenvalues associated with the linear component (factor) upon extraction. Accumulatively, the extracted factor explained 74.743 percent of the total variance in the operations performance items. This implies that the system identified one factor structure with the relative importance. This underscores the assertion of Brown (2006) that it important to conduct a factor analysis in order to produce a solution with the best simple structure.

From the extracted factor is highly and positively related with "Activities are taken as scheduled" with a coefficient of 0.887, followed by "Key performance metrics are reviewed frequently" (0.877), and lastly "Regular improvement of internal operations" had a positive coefficient of 0.829. From the extracted study items, the component extracted is mapped onto efficiency. This implies that efficiency was identified as the most preferred performance indicator by the study.

	Component
	Efficiency
Activities are taken as scheduled	.887
Key performance metrics are reviewed frequently	.877
Regular improvement of internal operations	.829
Extraction Method: Principal Component Analysis.	

Table 6: Component Matrix[a] for Operations Performance
a. 1 Components Extracted

These results confirm a study by Malonza (2014) which sought to explore the contribution of manufacturing efficiency on operational performance of Mumias Sugar Company Limited. The study findings revealed that overally, the factory efficiency has a 50.9 percent emphasis ($R^2 = 0.509$) on operational performance and consequently, when amplified, led to a reduction of waste but improved quality in operations due to improved efficiencies and standardization of processes. The results further confirm assertion by Wamalwa et al. (2014) that factory efficiency determines factory production operations throughout the production period without interruptions, and as such, it is an important indicator to operational performance of a manufacturing industry. In addition, although a study by Raheman *et al.,* (2010) revealed a small magnitude improvement of efficiency to large-scale manufacturing, its contribution was concluded to be important to performance. The above studies confirm assertion by several supervisors that core to their operations is efficiency, which was the main focus of their individual management achievements. This, according to the managers, had a direct bearing on the costs of operations and overall performance of the production section.

From the extracted communality matrix associated with efficiency measurement items, the average of the communalities is given by 0.748. In order to validate construct validity of operations performance, the KMO of Sampling Adequacy and Bartlett's Test of Sphericity as a measure of sampling adequacy was conducted to determine appropriate items for analysis (Field, 2003), results of which is presented in table 7

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.710
Bartlett's Test of Sphericity	Approx. Chi-Square	149.165
	df	3
	Sig.	.000

Table 7: KMO and Bartlett's Test for Performance Items

For adequacy, the KMO test statistic had an index of 0.710 which is greater than the conventional minimum probability value of 0.5, implying that factor analysis is good and hence appropriate for the data set. Equally presented in table 4.6 is Bartlett's Test of Sphericity which contains an approximated Chi-square of 149.165, with an associated p – value lower than the conventional probability value of 0.05 (Hair *et al*., 2013; Williams *et al.,* 2010; Field, 2003). It was hence concluded that the factor analysis was appropriate for assessing construct validity of the scale. Consequently, from the Bartlett's Test of Sphericity results, the study rejected the null hypothesis which means that the variables have a strong association.

4.5. Descriptive Statistics for Structural Decisions Measurement Items

On average, all the capacity, process, and operations development structural decisions measurement items had a mean above 3.2. However, of the process construct, the "management structure is decentralized" measurement item had a mean of 2.88, with standard deviation of 1.30. Of the valid respondents, an accumulation of 50.8 percent generally disagreed with the hypothesized state compared to 44.6 percent that generally agreed. This indicated that the respondents were non-committal whether or not the management structure is centralized. The mean of the item confirms that authority resides in high chain of command, as well as the fact that the management operates on strict rules and prescribed procedures. This further confirms the fact that these sugar manufacturing firms have highly centralized their operations.

Even though 95.4 percent of the valid respondents strongly agreed that authority resides in high chain of command (mean 4.28, standard deviation of 0.54), and that 93.9 percent of the respondents equally agreed that the management operates of strict rules and procedures with a mean of 4.29 and standard deviation 0.63, it would have been easy for them to indicate whether or not the structure is decentralized, with 50.08 percent of the respondents generally disagreeing compared to an accumulation of 44.06 percent generally agreeing that the management structure is decentralized.

Capacity measurement Items		**SD**	**D**	**N**	**A**	**SA**	**Mean**	**S. D**
The capacity of the firm is adequately utilized	freq	5	42	6	51	26	3.39	1.24
	%	3.8	32.3	4.6	39.2	20.0		
The scale of production system is adequate to meet the demand	freq	0	51	10	46	24	3.33	1.17
	%	0	38.9	7.6	35.1	18.3		
The capacity of stores adequate to accommodate the production	freq	0	0	0	90	41	4.31	0.47
	%	0	0	0	68.7	31.3		
The arrangement of floor area allows for free movement	freq	0	1	3	88	38	4.25	0.53
	%	0	0.8	2.3	67.7	29.2		
Process measurement items								
Structural enhancements meet current code requirements	freq	1	5	5	87	33	4.12	0.71
	%	0.8	3.8	3.8	66.4	25.2		
The operations system gets the right information real time	freq	1	8	8	69	44	4.13	0.84
	%	0.8	6.2	6.2	53.1	33.8		
Lots of repeated work is done in the production process	freq	0	12	9	58	52	4.15	0.90
	%	0	9.2	6.9	44.3	39.7		
The production technology currently in use is adequate	freq	6	52	3	50	20	3.2	1.24
	%	4.6	39.7	2.3	38.2	15.3		
Structure measurement items								
Authorization resides in the high chain of command	freq	0	0	6	82	43	4.28	0.54
	%	0	0	4.6	62.6	32.8		
The management structure is decentralized	freq	20	46	6	46	12	2.88	1.30
	%	15.4	35.4	4.6	35.4	9.2		

Capacity measurement Items		SD	D	N	A	SA	Mean	S. D
The operations is divided into areas of specialization	freq	0	18	9	69	35	3.9	0.94
	%	0	13.7	6.9	52.7	26.7		
Management operates on strict rules and procedures	freq	0	2	6	75	48	4.29	0.63
	%	0	1.5	4.6	57.3	36.6		
Operations Development								
Production system continuously makes minor improvements	freq	5	25	1	80	20	3.65	1.07
	%	3.8	19.1	0.8	61.1	15.3		
The management frequently appraise the process	freq	3	5	6	82	35	4.08	0.82
	%	2.3	3.8	4.6	62.6	26.7		
K. P. I are relayed to affected parties for real time action	freq	0	3	6	85	37	4.19	0.62
	%	0	2.3	4.6	64.9	28.2		
Management benchmarks best practices with competitors	freq	4	21	9	64	33	3.77	1.09
	%	3.1	16.0	6.9	48.9	25.2		

Table 8: Descriptive Statistics for Structural Decisions Measurement Items
Means: 1 – 1.8 = SD, 1.9 – 2.7 = D, 2.8 – 3.3 = N, 3.4 – 4.2 = A, Above 4.2 = SA
Key: SD =Strongly Disagree, D =Disagree, N =Neutral, A= Agree, SA = Strongly Agree

The study results confirm the interview with managers, which revealed that the management style by private sugar manufacturing firms was more directives, with little room for manipulation, unlike the public sugar firms. The managers and supervisors of these firms confessed to this, since they receive instructions from the top management as regards to the execution of these instructions. Following this, some plant supervisors lamented about the frustrations that they experience, especially when operations fall out of place with the targeted plans. In as much as some managers revealed that the technology in use is adequate given their scale of operation, they however, seemed to have agreed on the fact that they tend to emphasize on repeated work routines, as a way of attaining the standard code requirements. This however, negates that data from floor workers, going by the low mean from the measurement item.

In addition, the interview information revealed that the firms benchmark, and even borrow best manufacturing practices. This was equally confirmed by 74.1 percent of workers who generally agreed that the management benchmarks best practices with competitors. This shows that the management of sugar manufacturing firms in Kenya allows for benchmarking of the best practices operations with other competitors. The managers perceived the centralized structure as inhibitive to decision making. This feeling was equally echoed by several floor workers who felt that most of privately owned firms do not give them room to exercise their autonomy in decision making. In essence, this deters the flow of work since a lot of consultations have to be made. In addition, the state owned firms suffer similar but of a lesser fate.

4.6. Normality Test

The Shapiro – Wilk test statistics distribution of occurrence for the variables for normality revealed that all the measures had a significance index more than the stated $\alpha = 0.05$. The test statistics confirm that the deviations from normality are insignificant, an indication that data collected relating to structural decisions is approximately normal (Doan and Seward, 2011).

4.7. Reliability Test for Structural Decisions

The measures of the structural decisions was subjected to reliability test using Cronbach's alpha coefficient in order to assess construct reliability. As depicted in Table 9, the Cronbach's Alpha reliability coefficient was 0.758, which was considered reliable ensuring sufficient construct reliability (Sekaran, 2003; Ketema, 2009).

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.758	.780	16

Table 9: Reliability Statistics for Structural Decisions

4.8. Exploratory Factor Analysis for Structural Decisions Items

The validity of the structural decisions measurement items was assessed through EFA to assess the extent to which the observed indicators represents an underlying latent construct fitted with the pre-specified theoretically driven model (Hair *et al.*, 2005), and aid to identify the least number of factors which can account for the common variance of a set of variables and, to show by how much the co-variation among the observed variables each one accounts for. Structural decisions with sixteen measurement items were subjected to the factor analysis, out of which three components were extracted as presented in table 10.

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	2.397	34.245	34.245	2.397	34.245	34.245	2.076	29.656	29.656
2	1.358	19.400	53.645	1.358	19.400	53.645	1.453	20.752	50.407
3	1.173	16.763	70.409	1.173	16.763	70.409	1.400	20.001	70.409
4	.670	9.572	79.981						
5	.563	8.041	88.022						
6	.442	6.313	94.335						
7	.397	5.665	100.000						

Table 10: Total Variance of Structural Decisions Explained
Extraction Method: Principal Component Analysis

On an individual basis, component one accounted for 34.245 percent of the total variance, component two 19.4 percent, while component three accounted for approximately 16.763 percent of the total variance of structural decisions. After extraction and rotation, factor one accounts for approximately 29.66 percent, factor two accounted for 20.752 percent, while factor three accounted for approximately 20.0 percent of the total variance of structural decisions strategies as used by these sugar manufacturing firms in in Kenya. From the study results of the Rotated Component Matrix table 11, the system identified three important factors to be loaded in the analysis. The rest are dropped from the analysis.

	Component		
	ODI	Process	Structure
KPI are communicated real time	.816		
Management frequently appraise the system	.810		
Management benchmarks with competitors	.770		
Technology currently in use is adequate		.820	
Structural enhancements meet code requirements		.765	
Operations is divided into specialized areas			.842
Capacity of stores accommodates production			.776

Table 11: Rotated Component Matrix[a] for Structural Decisions Items
Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation Converged In 6 Iterations

From the rotated component matrix, factor one is highly and positively related with the “KPI are communicated real time” measurement item with a coefficient of 0.816, followed by the “Management frequently appraise the system” measurement item (0.810), while the “Management benchmarks with competitors” measuring item (0.770) respectively. The second component was highly and positively related with the “Technology currently in use is adequate” measuring item (0.820), followed by the “Structural enhancements meet current code requirements” measuring item with correlation coefficient of 0.765. Component three was positively related with the “Operations is divided into specialized areas” measuring item with a coefficient of 0.842 followed by the “Capacity of stores accommodates production” measuring item (0.776). From the extracted components of the structural decisions in table 4.28, component one is mapped onto Operations Development and Improvements, component two is mapped onto Process, while component three is mapped onto Structure constructs respectively. There exists empirical study results (Ward *et al.,* 2008) that shows a functional relationship between process choice and competitive priorities by a manufacturing firm.

From the communality table of structural decisions the average of the communalities was given by 0.747 which is more than the minimum threshold of 0.70, which according to Field (2003), is an indication that the extracted items are sufficient enough as a show of accuracy of the identified items of measurement. In order to validate construct validity of structural decisions, the KMO of sampling adequacy in table 12 had an index of 0.738. Moreover, the Bartlett's Test of Sphericity contains an approximated Chi-square of 215.48, with an associated p – value lower than the conventional probability value of 0.05. It was hence concluded that the factor analysis was appropriate for assessing construct validity of the scale (Williams *et al*., 2010; Field, 2003).

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.738
Bartlett's Test of Sphericity	Approx. Chi-Square	215.479
	Df	21
	Sig.	.000

Table 12: KMO and Bartlett's Test of Sampling Adequacy

4.9. Correlation Analysis

The current study analyzed the relationships that are inherent among the extracted structural decision study factors. Consequently, Operations Development and Improvements, Process, and Structure were the three constructs with the common factors that account for common variance of structural decisions which were extracted as shown in table 13.

		ODI	Process	Structure
ODI	Pearson Correlation	1		
Process	Pearson Correlation	.504*	1	
	Sig. (2-tailed)	.036		
Structure	Pearson Correlation	.210**	.165*	1
	Sig. (2-tailed)	.006	.012	

Table 13: Correlations Output of ODI, Process and Structure Variables
**. Correlation Is Significant at the 0.05 Level (2-Tailed)*
***. Correlation Is Significant at the 0.01 Level (2-Tailed)*

Pearson Correlation results in table 4.30 showed that operations development and improvements is moderately and positively related with process. In addition, the relationship was found to be significant (r = 0.504, $\rho < 0.05$). Equally, the relationship between structure and process and operations development and improvements were both weak but positively significant (r = 0.165, $\rho < 0.05$) and (r = 0.210, $\rho < 0.01$) respectively. From the correlations table 4.31 all the correlation coefficients among the study constructs are between low (r = 0.165) to moderate (r = 0.504), implying that multicollinearity is minimal among the set of identified structural decisions variable indicators (Field, 2003).

4.10. Regression Analysis

The second objective of the study was to assess the effect of structural decisions on the performance of sugar manufacturing firms in Kenya. The study predicted that the relationship between structural decisions and performance is not statistically significant. The resultant structural decisions were measured by operations development and improvements, process and structure constructs and results presented in table 14.

Model	R	R^2	Adj. R^2	S. E of The Estimate	Change Statistics					Durbin-Watson
					R^2 Change	F Change	Df1	Df2	Sig. F Change	
1	.785[a]	.616	.232	.23117	.616	8.694	1	1	.426	2.187

Table 14: The Model Summary[b] of Operations Development, Process and Structure
A. Predictors: (Constant), Operations Development & Improvements, Process, Structure
B. Dependent Variable: Efficiency

The model summary indicates that operations development and improvements, process, and structure generally accounted for 61.6 percent variation in performance of sugar manufacturing firms (R^2 = 0.616). However, the regression results revealed a statistically insignificant but positive linear relationship (R^2 = 0.661, $\rho > 0.05$). This study results however, disagree with study by Rodrı´guez and Padilla (2014) that found a significant relationship between an emphasized structural decision and performance. The value of Durbin-Watson statistic (d = 2.187) used to conduct an autocorrelation analysis was found to be with the conservative rule (Gujarati, 2014; Field, 2003).

The model coefficient parameters in table 15 show the β-value which indicates the relationship between the structural decisions measurements. The three structural predictors had varied contributions to efficiency. For instance, the contribution of operations development and improvements was found to be statistically significant (t (1.96) = 2.784, $\rho < 0.05$. However, both the process and structure had insignificant contribution (t (1.96) = 1.709, $\rho > 0.05$) and (t (1.96) = 2.571, $\rho >$

0.05) respectively. From the magnitude of the ***t*** – statistics, Operations Development and Innovations has a better contribution followed by structure and then process.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. E	Beta			Tol	VIF
1	(Constant)	3.525	.731		4.822	.116		
	ODI	.103	.037	.211	2.784	.027	1.000	1.000
	Process	.323	.189	.496	1.709	.338	.984	1.017
	Structure	.576	.224	.643	2.571	.066	.951	1.052

Table 15: Beta Coefficients[a] of Structural Decisions Variables
a. Dependent Variable: Efficiency

The hypothesis test criteria was that the null hypothesis H_{01} be rejected if $\beta \neq 0$ and p-value ≤ 0.05 otherwise fail to reject. Consequently, the study sought to test null hypothesis stated thus:

H_{01}: There is no statistical significant effect of Structural Decisions on the performance of sugar manufacturing firms in Kenya.

The study found a significant relationship between operations development and innovations and efficiency (t (1.96) = 2.784, $\rho < 0.05$, whereas there was an insignificant relationship between process and efficiency (t (1.96) = 0. 1.709, $\rho > 0.05$), and between structure and efficiency (t (1.96) = 2.571, $\rho > 0.05$). From the magnitude of the *t* – statistics, the study revealed that operations development and improvements had a better contribution to operations efficiency, followed by structure then process. However, the contribution of both process and structure were found to be insignificant. From the model in table 15, it can hence be deduced that the linear functional relationship between competitive priorities measurements and performance of sugar firms follow the following regression model:

$$\text{Performance} = \beta_0 + \beta_1 ODI + \beta_2 P + \beta 3S + \varepsilon_i$$
$$= 3.525+(0.103ODI)+(0.323S)+(0.576S) + \varepsilon_i \quad \text{........Equation 4.1}$$

where: ODI = Operations Development and Improvements
P = Process, while
S = Structure

From the beta coefficient table 4.32, the study therefore failed to reject the null hypothesis since $\beta \neq 0$ and p-value $> \alpha$, hence concluded that structural decisions have a statistical but insignificant and positive relationship with efficiency of sugar manufacturing firms in Kenya, implying that structural decisions make a positive contribution, even though the contribution is insignificant, to performance of sugar firms for this model.

Structural decisions have been regarded as the "building blocks" of the operations and hence define a manufacturing firm's overall tangible shape and architecture (Slack and Lewis, 2011). Further, they essentially define how a specific manufacturing firm seeks to survive and prosper within its environment over the long-term; hence the structural decisions and actions taken within its operations have a direct impact on its long – term performance. Since structural decisions involve heavy capital investment decisions and once made, ties the operations of sugar manufacturing firms' in the long – term. It therefore associates a significant contribution to performance to a manufacturing process. This study results however, dismisses the assumed relationship.

In equal measure, empirical evidence by Iyer, Koudal, Saranga, and Seshadri (2011) suggests that operations process (which are regarded as structural constructs) and quality management practices contribute to the better performance of manufacturing functions a corporate level in just a few sectors. In addition, Rodrı´guez (2014) found no significant relationship between the decisions in the dimensions of quality management systems and overall performance. A study by Sanjay, Gajendra and Usha (2013) acknowledge that product layout process as a more suited to handle standardized products in large volume. In this line, Sanjay *et al.* (2013) did further conclude that a standardized manufacturing process is a necessity to improved performance.

Contrary to this study results, several studies have found a significant contribution of structural decisions to manufacturing process. For instance, Gong (2013) presented a product – process matrix in which structural dimensions were found to be appropriate facilitation of a winning competitive advantage by a manufacturing firm, while a study by Rodrı´guez (2014) found a statistical and significantly positive relationship between structural decisions and its contribution to performance. Moreover, Ketema (2015) revealed that structural decisions improve operations performance by 68.2 percent, while a study by Szumbah and Imbambi (2014) concluded that maintenance tasks related to structural designs have meaningful effects on the achievement of factory performance indicators, with respondents acknowledging that five out of seven performance indicators (approximately 71.5%) are very frequently affected by the structural decisions, and all scored a mean response above 3.80.

However, a study by Zeithaml *et al.* (2012) concludes that given that each operations strategy is not equally effective under all conditions, certain manufacturing firm's actions have a better fit than others, as a results of different manufacturing complexities and uncertainties of their situations. Accordingly, these differing technological and environmental dimensions demand that these sugar manufacturing firms adopt different structures, strategies and decision processes. This could be the reason in the study results.

5. Summary, Conclusions and Recommendations

Based on above findings, conclusions were made as a basis of making both policy and research recommendations to the beneficiaries of the study for practice and academia. In addition, areas for further research were identified in the study.

5.1. Summary of Research Findings

The specific objective of the study was to assess the effect of structural decisions on the operations performance of sugar manufacturing firms in Kenya. Structural decisions were operationalized using capacity, process, structure, as well as operations development and improvement constructs. Descriptively, operations development and improvements measurement items had a mean of 3.92, followed by process (3.90), then structure (3.84), while capacity measurement items had a mean of 3.82. All the measurement items indicated that the respondents generally agreed with the hypothesized state, given that the items averaged on a mean above 3.3, an indication that the structural decisions items were of considerable importance.

Sixteen structural measurement items were subjected to EFA to extract the least number of factors which can account for the common variance. Upon extraction and rotation, three factors were identified (operations development and improvements, process, and structure), which accumulatively accounted for 70.409 percent of the total variance. The extracted factors had an average communality of 0.747, which was considered sufficient to show accuracy of the identified items of measurement of competitive priorities. To validate construct validity of structural decisions, the KMO of sampling adequacy had an index of 0.738. In addition, Bartlett's Test of Sphericity was performed to determine the appropriateness of using factor analysis (Hair *et al.,* 2013), and was found to have a p – value less than 0.05, with an approximated Chi-square of 215.479.

The Pearson Correlation results showed that operations development and improvements is moderately and has a significant positive relationship with process ($r = 0.504$, $\rho < 0.05$). Equally, the relationship between structure and process and operations development and improvements were both weak but positively significant ($r = 0.165$, $\rho < 0.05$) and ($r = 0.210$, $\rho < 0.01$) respectively. Although, the correlations of operations development and improvements is strongly and positively correlated with efficiency ($r = 0.835$, $\rho > 0.05$), and the relationship between structure and efficiency was found to be moderately positive ($r = 0.562$, $\rho > 0.05$). However, the relationships were found to be highly insignificant at 5% level of significance. In addition, the relationship between process and performance was found to be strong and positively insignificant ($r = 0.662$, $\rho < 0.05$).

The study findings revealed a positive but an insignificant statistical effect of structural decisions on performance of sugar manufacturing firms in Kenya ($R^2 = 0.616$, $\rho > 0.05$). However, at individual level, the study found an insignificant effect of operations development and innovations on performance ($R^2 = 0.250$, $\rho > 0.05$), structure ($R^2 = 0.330$, $\rho > 0.05$), while process equally had insignificant effect on performance ($R^2 = 0.261$, $\rho > 0.05$). At 5% level of significance, the study accepted the null hypothesis and hence concluded that structural decisions have no significant effect on performance of sugar manufacturing firms in Kenya. Overally, the study established that structural decisions are strongly and positively related to performance, although the relationship was found to be insignificant at 5 percent level of significant ($r = 0.785$, $\rho > 0.05$).

5.2. Conclusions

An assessment of the overall effect of structural decisions on performance revealed a strong but insignificant effect on performance. This implies that even if the manufacturing company did improve their "hardware", performance is not likely to be significantly improved. Therefore, the sugar manufacturing firms need not to enormously spend funds to develop the structural aspect.

5.3. Recommendations

Based on the study findings, the study recommended that the management of manufacturing firms especially in Kenya as a developing economy need to identify appropriate strategies to improve the performance, since there was an insignificant contribution of structural decisions made by these sugar manufacturing firms. The differential advantage of these strategies shall help to separate one firm form another in planning for resources, strategy implementation, and success of the operations strategies.

5.4. Proposed Areas for Further Research

The study results are as a result of explored factors that contribute to common variance in every operations strategies and leadership styles through EFA. As a result, several constructs of the study variables were dropped from the analysis. There is need for further research on the constructs to critically examine their significance especially in a manufacturing sector. Further, contrary to literature, the study found an insignificant contribution of structural decisions to performance. Researchers are encouraged to explore these variables so as to test their significance to manufacturing system, and their extent of their contribution.

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