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Effect of Competitive Priorities on the Operations Performance of Sugar Manufacturing Firms in Kenya

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Abstract:
The stiff competition in Kenya's sugar sector is competing away industry profits. As a result, these sugar firms find themselves in debts and losing money. To explore the critical factors of these sugar manufacturing firms, the study sought to assess the effect of competitive priorities on their operations performance. The specific objectives were to: assess the effect of cost on the performance; to explore the effect of delivery on the performance; determine the effect of flexibility on the performance; and to assess the effect of quality on the performance of sugar manufacturing firms in Kenya. The study hypotheses were statistically tested at $\alpha = 0.05$. The study was hinged on both Strategic Contingency Theory as well as RBV, and adopted both descriptive survey and experimental research designs anchored on realism ontology, and used both quantitative and qualitative approach. The unit of analysis was sugar manufacturing plant, and targeted all the 12 licensed sugar manufacturing firms in Kenya. The respondents were sought through both purposive and simple random sampling strategies, and a sample of 165 respondents was generated. Structured questionnaires and semi-structured interview schedule were the main tools to collect primary data. A pilot study was done to test the validity and reliability of the survey tools. Data was processed and analyzed both descriptively and inferentially using Microsoft Excel 2010 and SPSS version 21. EFA, correlation analysis and regression analysis, correlation analysis were equally used, while qualitative data analysis was done through expert judgment, scenario mapping and critical thinking, presented using frequency distribution tables. The overall study results revealed that competitive priorities have a significant effect on performance. Based on the findings, the study concluded that the management of these sugar firms needs to identify appropriate critical factors on which to compete.

Keywords*: Competitive priorities, operations, performance*

1. Introduction

The current wave of globalization has resulted into fierce competition and as a result, the sugar firms soon realize that the current "competing on cost" strategy is an untenable, hence the need to refocus their strategies by deploy their potentially scarce resources into efficient transformation process (Ketema, 2015).The current economic crunch being experienced in the world consequently has led to closure of several sugar mills (Czarnikow, 2013; Tyler, 2013). In this regard, managers must identify critical factors in which to compete. Competitive priorities offer this platform.

The industry faces a myriad of challenges including stiffest competition from low cost producers. The Kenya sugar industry currently produces 68 per cent (68%) of Kenya's domestic sugar requirements making the country a net importer of sugar (Ambia, 2014). This requires that these sugar manufacturing firms should diversify their competitive priorities strategies to attain the required production scales and standards so as to improve their competitiveness, survival and growth and performance to achieve the set objectives.

1.1. Statement of the Research Problem

Literature has emphasized the strategic role of a firm's competitive strategies as a key competitive weapon (Ketema, 2015; Sanders, 2014; Sohel and Rodger, 2012; Hallgren, 2010; Slack and Lewis, 2011; Gagnon, 2009; Rodrigues and Dorrego, 2008).Both the recent deregulation of Kenya sugar sector and the restructuring of EU sugar protocol, have posed a myriad of challenges leading to a volatile production environment (Rein *et al*., 2011), and consequently resulting to a 39% price cut (Ketema, 2015; Tyler, 2013), making international competitiveness difficult even for the most efficient sugar producer. This liberal regime if not well managed, the Kenya sugar firms shall find it difficult to sustain competition, given that it has been able to achieve 50-60% of their production targets (Ambia, 2014) leaving the country with a net deficit (Mbalwa, *et al.,* 2014). Although both Marangu *et al.* (2014) and Mutunga and Minja (2014) allude that Kenya sugar manufacturing sector position strategically by applying generic strategies, if this is so, why then is there high levels of production inefficiencies among these sugar firms? Moreover, Omollo, (2015); Wamalwa, Onkware & Musiega, (2014) argue that among the challenges facing the performance of Kenya sugar industry include high cost of production. Unfortunately, the identification and application of competitive priorities into business strategies is still insufficient, and it is difficult today to find manufacturing companies that use their competitive priorities functions as a competitive weapon, yet it is a core functional level strategy that helps a manufacturing firm gain competitive advantage (Ketema, 2015; Gognon, 2009). The current study thus postulated that the cardinal problem resides in the identification and application of competitive priorities, as a strategy.

2. Literature Review

2.1. Theoretical Framework

To explain the inter-relationships among the study phenomena (Ngumi, 2013), this study was hinged on both the Strategic Contingency Theory and Resource Based Theory. Their arguments and implications to competitive priorities and performance were explored. This study proposed an integrated theoretical approach rather than a single theoretical perspective to facilitate clear understanding of the contribution of competitive priorities to performance of sugar manufacturing firms (Suzana, 2014).

The strategic contingency theory of organizations offers a theoretical lens through which manufacturing decisions and performance is described (Helkiö, 2008). Due to differing environmental and organizational needs and structures that affect an organization, coupled with differing resources and capabilities, the strategic contingency theory would hold that no single way to compete is best in every situation; hence managers need to study individual and situational differences before deciding on a course of action. Ketema (2015) further suggests the need to integrate at least two paradigms together, for instance, competing through cost and delivery choices. When applied correctly, the theory allows for a maximum performance that can be achieved by a unit contingent on a set of competitive priorities (Vastag, 2009). The application of the theory thus helps sugar manufacturing firms adopt and survive various strategies, thereby maximizing its manufacturing performance (Helkiö, 2008).

The Resource-Based View of a firm helps to identify and appraise firms' strategic resources relative to its competitor. According to Brown and Squire (2016); Mbithi *et al.,* (2015) and Ovidijus (2013, the RBV approach describes a firm as a collection of productive resources, and as such, needs to identify critical factors on which to compete (Brown and Squire, 2016). According to Ovidijus (2013), the RBV is considered an "inside – out" process of strategy, making it a more flexible strategic choice, and offers a manufacturing firm a platform for superior performance, contingent on the way an organization acquires, develops and deploys its rare resources and then builds its capabilities rather than the way it positions itself in the market place (Barnes, 2012). By identifying these critical factors, the current study postulates that individual sugar manufacturing firms use RBV as a source of competitive advantage, by emphasizing maximum utilization of critical yet scarce resources in these areas.

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) competitive priorities comprising (a) cost, (b) delivery, and (c) quality priorities, (2) operations performance comprising (a) efficiency and (b) effectiveness. The current study hypothesized that competitive priorities linearly and directly influences operations 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 foundations of the study, a framework depicting conceptual relationships among the study variables as presented in figure 2.1 was developed.

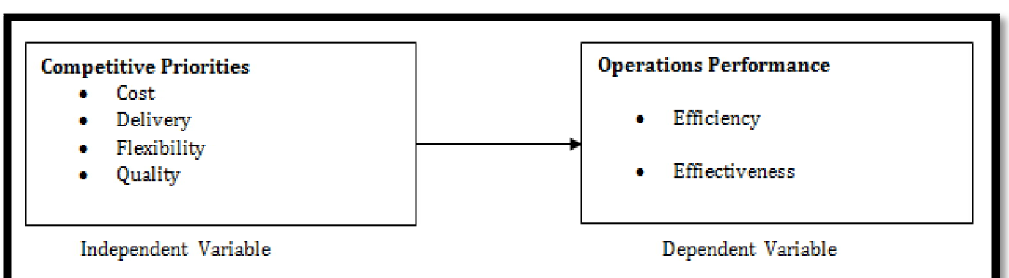

Figure 2.1: Conceptual Framework

2.3. Competitive Priorities

Competitive priorities have been christened differently. Whereas Gates (2010); Rodrigues and Dorrego (2008) refer to them as critical success factors, and consequently defines them as the handful of key areas where an organization must perform well on a consistent basis to achieve its mission, Hallgren (2010) argues that they are as a set of manufacturing objectives; and as such, as Slack and Lewis (2011) would note, they offer the link between a firms' performance and the market requirements. In addition, Klaus and Charlotte (2015) refer to them as key success factors (KSF) and looks at them in four different ways: a) as a necessary ingredient in a management information system, b) as a unique characteristic of a company, c) as a heuristic tool for managers to sharpen their thinking, and d) as a description of the major skills and resources required to be successful in a given market.

A historical outline offered by Rodrigues and Dorrego (2008) argues that the concept of critical success factors was developed by Hofer and Schendel in 1977 and further deepened by Rockert in 1979 and Ohmae in 2004. In the current murky market environment, the Kenya's sugar manufacturing firms fight with competitors on equal circumstances, and as Rodrigues and Dorrego would affirm, the only factor will be developing competitive priorities as a distinct strategy at functional areas. In this connection, Abdulkareem, Adel and Anchor (2013) argue that competitive priorities are the dimensions that a firm's production system must possess to support the demands of the markets in which the firm wishes to compete.

Identifying a firm's competitive priorities has long been considered a key element in manufacturing strategy (Sohel and Rodger, 2013). According to Sciuto and Filho (2013), the assemblage of competitive priorities has changed over time. However, despite the numerous competitive priorities offered in the operations strategy literature, Klaus and Charlotte (2015); Suzana and Harvey (2014) and Sciuto and Filho (2013) identify the widely accepted competitive priorities as cost, delivery, quality and flexibility.

In addition to the four stated competitive priorities, Suzana and Harvey introduce a fifth competitive priority called innovativeness, while both Sciuto and Filho (2013) and Boyer and Lewis (2002) introduced service in the mix. In spite of this however, Sciuto and Filho (2013) argue that some of these competitive priorities become mismatched and consequently, a company has to choose to prioritize their competitive priorities, depending on their levels of competence already accumulated. The current study however, sought to discuss the four agreed upon manufacturing competitive priorities consistent with various researchers (Klaus and Charlotte, 2015; Ketema, 2015; Sanders, 2014; Sohel and Rodger, 2013; Hallgren, 2010; Slack and Lewis, 2011).

A study by Boyer and Lewis (2002) contents that competitive priorities emphasis strategic position of sugar manufacturing firm on developing firms' specific manufacturing capabilities that may enhance a plant's position in the marketplace. The strategic position, guides decisions and choices regarding the production process, capacity, technology, planning, and control adopted by the firm. While measuring and examining the relative importance of competitive priorities to a manufacturing firm, Adebayo, Vila and Gimenez (2012) avers that over the years, there exists a divergence view about what factors constitute competitiveness priorities for a manufacturing firm, and the discrepancy about which of the chosen factors are to be considered. This, therefore, further underscores the various terms by which they are referred to and their number, further compounding the challenge of identifying the specific factors to be used.

An underlying assumption when using competitive priorities to measure the contribution of competitive priorities to a firms' performance is that there should be a relative ranking of the importance of different priorities (Boyer and Lewis, 2002). Several researchers (Sciuto and Filho, 2013; Slack and Lewi, 2011; Hallgren, 2010) believe that some competitive priorities become mismatched and hence a company must choose to prioritize a subset of criteria competitive priorities, depending on their levels of competence already accumulated. In addition, trade-offs are not static and will continuously change with time and circumstances under which manufacturing takes place within the operation areas.

The basic question that is in the lips of every manufacturer therefore has been: is a trade – off among competitive priorities a possibility? Accordingly, there has been a heated debate has ensued over the need for trade – offs in the priorities. While some researchers have called for manufacturing plants to focus on a single manufacturing capability and hence as such devote its valuable yet limited resources accordingly, other researchers argue that the use of advanced technologies should allow concurrent improvements in competitive priorities (Adebayo *et al.*,2012; Boyer and Lewis, 2002). Yet, Boyer and Lewis acknowledge the fact that there is limited empirical evidence pro or against the trade – off model.

2.4. Empirical Literature Review

Several authors have argued that sugar manufacturing firms in Kenya face both high cost of production and stiff competition from within the industry and Common Market for Eastern and Southern Africa (COMESA) (Motaroki and Odollo, 2016; Omolo, 2015; Malonza, 2014; Wekesa, 2014; Hongo, 2013). Specifically, a descriptive study by Wekesa (2014) concluded that cost leadership is the main strategy that sugar manufacturing firms use, with 78.8% of the respondents indicating that the company prices its products lower than its competitors. In contrast, a cross sectional survey by Abdulkareem *et al.* (2013) in the Jordian industrial sector in Qatar revealed that competitive priorities has a 77.5% influence on competitiveness of the manufacturing firms. In addition, a multiple regression analysis showed a significant positive relationship of each competitive priorities with explanatory variable standardized coefficients as 0.568 (quality), 0.312 (cost), 0.121 (delivery), and 0.209 for flexibility respectively.

These findings confirm study findings by Sohel and Roger (2013) which concluded that the majority of manufacturing firms rank quality as the most important competitive priority. Interestingly, like the study results by Katema (2015), Sciuto and Filho study results revealed that "cost" was never cited by managers as a critical feature of the process. This underscores the conclusion earlier made that different companies differently emphasize competitive priories, and that researchers are often divided on which competitive priorities dimensions and their number are to be used as drivers to superior performance. In their study, a Mann – Whitney U – test showed that the firms differ on their main competitive priorities. However, the study concluded that firms emphasize low price, which herein referred to as cost. In addition, the study concluded that those firms that excel in cost do so at the expense of delivery speed and delivery reliability. The study results confirms a study survey by Littlefield and Shah (2008) which found that in the face of demand uncertainty, market pressures drive manufactures to focus on manufacturing operations with 63 percent of the sampled firms need to reduce manufacturing costs.

An empirical study conducted by Boyer and Lewis (2002) sought to investigate the need of attaining a meaningful trade – off among the competitive priorities. A large, yet a focused case study sample of 271 manufacturing plants were surveyed. Data was collected from multiple respondents each of the manufacturing plants to allow inter – rater reliability. Self – administered questionnaires with sixteen (16) likert – scale questions targeting a plant manager and an operator were sent out, with a response rate of 40.6 percent. The study found a significant correlation between quality and flexibility ($r = 0.37$, $\rho < 0.01$), while the correlations between delivery and cost priorities were found to be insignificant.

In addition, the study results by Abdulkareem *et al*. are congruent with the study findings by Ketema (2015) that identified competitive priorities as the main drivers of both structural and infrastructural decisions and manufacturing performance. However, study results by Abdulkareem *et al.* are inconsistent with Wekesa (2014) as of which competitive constructs are more important.

3. Research Methodology

3.1. Research Philosophy

The current study adopted realism view (also known as post – positivism), emphasizes objectivity and assumes that reality is imperfect, and that human intelligence is flawed and situations may not be easily manipulated (Lee, 2006). The methodology was used to assess process – oriented and is more concerned with underlying causal tendencies. In addition, the methodology was found appropriate due to the need for large quantitative data that was expected to satisfy the stated study objectives (Abdulkareem et al., 2010). Moreover, the methodology allowed situational information to be collected from their natural settings, with an objective of assessing the causative effect of competitive priorities on the performance of sugar manufacturing firms in Kenya.

3.2. Research Design

In order to achieve the set objectives, this study adopted both descriptive survey and experimental research designs, and used both quantitative and qualitative methods. Descriptive research design was 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).

The choice of the combination of the two research designs was found appropriate since them 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. According to Kothari (2010), a cross – sectional survey involves a 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.

3.3. Target Population

The target population in this study were the entire twelve (12) sugar manufacturing firms as registered and 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. The production managers ($n_1 = 12$), operations supervisors ($n_2 = 35$) and finance managers ($n_3 = 12$) were purposively sampled. Besides conveniently sampling respondents, a sample of floor workers were drawn through a simple random technique. To determine the sample size of floor workers, 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.

Following Nassiuma (2000) assertion that in most surveys, a coefficient of variation in the range of $21\% \leq C \leq 30\%$ and a standard error in the range $2\% \leq e \leq 5\%$ is acceptable, the current 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. Respondents per sugar manufacturing firm were obtained by proportionately apportioning a sample size to each firm, and then, respondents were randomly sampled, yielding overall sample size of one hundred and sixty five ($n_1 + n_2 + n_3 + n_4 = 165$) respondents selected for the study. However, figures were rounded up for statistical analysis.

3.5. Data Collection Method and Instruments

This study collected both primary and secondary data and utilized both quantitative and qualitative approaches. It is critical to use both as one is insufficient on its own to capture all trends in a study (Schindler, 2013).Primary data was collected by use of structured questionnaires, interview schedules, and document analysis. Structured questionnaire 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 use of questionnaire was guided by nature of data to be collected as well as the objectives of the study. The entire questionnaire items had fixed – response alternatives, requiring the respondents to select from the stated options, located using five – point Likert type scale. Given the purpose of the study, the researcher was mainly concerned with views, opinions, perceptions, feelings and / or attitudes of the respondents. Such kind of information can only be objectively collected by use of questionnaires (Onen and Yuko, 2009; Kothari, 2007). In addition, the respondents for the current study were considered literate so they had no problem of responding to questionnaire items.The study equally used a semi – structured set of predetermined questions and of highly standardised techniques of recording while administering personal interviews with both operations and finance managers.

3.6. Pilot Test and Other Diagnostic Tests

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, in order to ensure that the study instruments measures what it was supposed to measure. 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.

3.6.1. Validity of Research Instruments

In this study, the questionnaire items were guided by the conceptual framework constructs (figure 2.1) in order to measure competitive priorities and operations performance. Moreover, Ketema (2009) advises that to assure validity, the 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. Moreover, the questionnaires were given to two research experts to evaluate the relevance of each item in the instruments to the study objectives. Consequently, the CVI index of the pilot study instrument yielded an index of 0.867, which was considered sufficient (Onen and Yuko, 2009). To ensure both construct and convergent validity, the study used 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.

3.6.2. Reliability of the Research Instruments

To ensure reliability, questionnaire was piloted in two similar sugar firms that were not included in the study to improve their validity and reliability coefficients. This helped to check the suitability and clarity of the questions of the instrument designed, relevance and comprehension of the information being sought, the language used, logic and content validity of the instruments from the responses given. Items that were either unclear or ambiguous were rephrased accordingly. The Cronbach Alpha coefficients calculated for the competitive priorities items were found to be sufficient as shown in table 1.

Piloted study variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Competitive Priorities	.934	.937	16

Table 1: Pilot Study Variable Reliability Statistics

4. Research Findings and Discussions

4.1. Response Level, Data Coding and Cleaning

Although the study had intended to collect data from a sample of 165 respondents, data was successfully obtained from 131 of them (Table 2). 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 both Mutunga *et al.* (2014) and Kothari (2010). The return rate of 79.4 percent was attributed to the use of self-administered questionnaires.

Sampled	Responded	Response Rate (%)
165	131	79.4

Table 2: Data Response Rate

Upon collection, the individual questionnaires were cleaned, coded and entered in the SPSS version 21.0 software prepared database, checked for data entry errors, and examined for the accuracy and validity of the assumptions of normality (Gujarati, 2014; Butt, 2009; Field, 2003), in order to facilitate quantitative analysis.

4.2. Demographic Profile of Respondents

The study explored the demographic data of the valid respondents by analyzing their experience and academic qualifications, by enquiring the respondent to indicate on a continuum how long they had worked in the organization. The study results are represented in table 3.

		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 3: 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 vein, 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 4: For How Long Have You Worked at the Current Position

Table 4 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.

In order to determine the academic qualification attained by the respondents, the results are presented in table 5. From the table, 6.9 percent of the valid respondents had Certificate qualification, 37. 4 percent had Diploma, 41.2 percent had Bachelor degree, while 14.5 percent had Master's Degree qualification. This indicates that the target respondents were qualified in their technical areas with technical knowledge and skills on the study problem and thus provided the study with reliable information on the study variables.

		Frequency	Valid Percent	Cumulative Percent
Valid	Certificate	9	6.9	6.9
	Diploma	49	37.4	44.3
	Bachelors	54	41.2	85.5
	Masters	19	14.5	100.0
	Total	131	100.0	

Table 5: What Is the Highest Academic Qualification Attained So Far

However, several managers could not appreciate the link between higher academic qualification and general performance of the firm. In addition, a production manager indicated that all that the production process needs is "hands on" experience to perform. This however contradicted several studies that positively associate higher qualification with better performance (Ketema, 2015; Odollo, 2015; Bhargava and Anbazhagan, 2014).

4.3. Analysis of Study Variables

4.3.1. 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 dependent construct. The respondents were required to specify on a continuum, the extent to which they felt about various performance indicator items. Table 6 shows descriptive statistics results for performance measures.

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 6: 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.

4.3.2. Diagnostic Tests

4.3.2.1. Normality test

The distribution of each measurement item was examined by conducting Shapiro – Wilk test for normality distribution as shown in table 7. From the study results, all the performance measurement items had significance level greater than the stated significance level ($\alpha = 0.05$). The test confirms that the deviations from normality are insignificant, implies that data collected relating to performance is approximately normal.

Performance measurement items	**Shapiro-Wilk**		
	Statistic	df	Sig.
Production process improves efficiency	.647	131	.084
Productivity of employees is higher	.820	131	.139
Regular improvement of internal operations	.707	131	.089
Key performance metrics are reviewed frequently	.756	130	.169
Impediments are resolved timely	.798	131	.306
Scale of operation able to meet the volume required	.756	131	.157
Operations maintain flexibility	.819	131	.340
Activities are taken as scheduled	.802	131	.303
Sugar products meet prescribed quality standards	.618	131	.074

Table 7: Tests of Normality for Efficiency and Effectiveness Items

A. Lilliefors Significance Correction

4.4. Reliability Test for Performance Measurement Items

TheCronbach's Alpha reliability coefficient for performance was found to be 0.803 which wqs considered sufficiently reliable (Sekaran, 2003); Katema, 2009). Based on these findings, the study hence concluded that the indicator items were reliable to measure what they were intended to measure, and hence can be used in the subsequent analyses of data in assessing the relationships between and among the study constructs.

Cronbach's Alpha	**N of Items**
.803	9

Table 8: Reliability Statistics for Performance Items

4.5. 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 9.

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

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 component matrix for performance items presented in table 10, it 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

Table 10: Component Matrix[a] for Operations Performance
Extraction Method: Principal Component Analysis
A. 1components 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 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, which confirms the argument by Field (2003) that for accuracy purposes, the communality extracted for a sample should be greater than or equal to 0.70. In order to validate construct validity of competitive priorities, Kaiser-Meyer-Olkin Measure (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 11

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

Table 11: KMO and Bartlett's Test for Performance Items

The results presented in table 11, the KMO of sampling adequacy 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 12 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.

4.5.1. Effect of Competitive Priorities on Performance

The objective was to analyse the effect of competitive priorities on performance of sugar manufacturing firms in Kenya. Competitive priorities were assessed using four constructs, namely: cost, flexibility, delivery, and quality. Each competitive priorities construct was measured by four indicators. The following section presents descriptive, various diagnostic tests, correlation and regression analyses of each of the construct of competitive priorities.

4.5.1.1. Competitive Priorities Descriptive Analysis

Frequencies, expressed as a percentage of the sample, were used to describe the number of times the respondents (dis)agreed with the hypothesized state. The respondents were required to indicate the extent to which they felt about various competitive priorities items.

From table 12, all flexibility, delivery, and quality measurement items had their means above 3.3, which indicate that the respondents generally agreed on the importance of the items as a measure of competitive priorities, and by extension, are of considerable importance in sugar manufacturing performance in Kenya. However, an accumulation of 45 percent of respondents generally disagreed that the sugar manufacturing firms have low manufacturing unit cost. This is an indication that the cost management is elusive in these firms. In this connection, (Abdulkareem *et al*., 2013), argue that competitive priorities facilitate creation of operations and hence the management of these sugar manufacturing firms need to improve them in order to enhance their competitive advantage.

Cost Items		**SD**	**D**	**N**	**A**	**SA**	**Mean**	**S. D**
The company has low manufacturing unit cost	%	3.8	41.2	2.3	45	7.6	3.11	1.15
Operations costs are managed effectively	%	0.8	15.3	9.2	44.3	30.5	3.89	1.04
Firms make efforts to control production cost	%	0	0.8	6.9	72.5	19.8	4.12	0.53
Firms control materials supply and product distribution	%	2.3	6.1	14.5	58.8	18.3	3.85	0.87
Flexibility Items								
The production system allows for adjustment on the design	%	0	7.6	13.0	51.9	27.5	4.00	0.84
Resources deployed as per changes in technology	%	1.5	8.4	6.9	48.1	35.1	4.07	0.95
manufacturing system is able to perform different processes	%	2.3	15.3	6.9	49.6	26.0	3.82	1.06
The workforce is able to perform a range of tasks	%	0	3.8	7.6	58.8	29.8	4.15	0.71
Delivery Items								
The system is able to deliver products on-time	%	0	16.0	12.2	49.6	22.1	3.78	0.97
Queuing period is reduced	%	0	22.9	6.9	51.9	18.3	3.66	1.03
Short manufacturing cycle	%	1.5	16.0	14.5	46.6	21.4	3.70	1.03
The system deliver products on demand on time	%	6.1	8.4	8.4	56.5	20.6	3.77	1.06
Quality items								
The products produced as per the pre-established standards	%	0	4.6	3.1	55.0	37.4	4.25	0.73
The process ensure consistency in operations	%	14.	30.5	3.1	42.0	10.7	3.06	1.31
Customers complaints are effectively dealt with on time	%	6.1	22.9	12.2	36.6	22.1	3.46	1.24
Manufacturing system meets environmental requirements	%	0	2.3	6.1	55.7	35.9	4.25	0.67

Table 12: Descriptive Statistics for Competitive Priorities 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

However, in as much as these descriptive results do agree on the overage importance of the contribution of cost, flexibility, delivery and quality constructs of competitive priorities, an analysis of comments by both production and finance managers tended to converge towards cost as the major factor of focus among the various sugar manufacturing firms. This results into a complex goal – focus, where the floor workers and supervisors are conflicting with the goal of policy makers – the managers.

As Abdulkareem *et al.,* (2013) cautions, each manager should be aware that each competitive priority is a complex construct which has a unique influence on operations strategy of a firm. In addition, since firms face varied factors, it is important for managers to identify and pursue the right competitive priority(s) at the operations level (Sohel and Rodger, 2013). Conclusively, Rosenfield (2014) is of the opinion that focusing on lower costs, often did not contribute to overall performance since they may have a reducing effect on other operational objectives of the firm, hindering the capacity to obtain a trade – off among the chosen competitive priorities.

4.5.2. Diagnostic Tests

This section contains various diagnostic tests performed on the competitive priorities measurement items before the actual inferential analyses were done of the study variables.

4.5.3. Normality Test

Table 13 shows the distribution of occurrence for the variables for normality done by conducting a Shapiro – Wilk test.From the study results represented in table 13, all the measurement items of competitive priority had significance level greater than the stated significance level ($\alpha = 0.05$). The test confirms that the deviations from normality are insignificant, implies that data collected relating to competitive priority is approximately normal (Doan and Seward, 2011).

Competitive Priorities measurement items	**Shapiro-Wilk**		
	Statistic	df	Sig.
The company has low manufacturing cost	.796	131	.136
Operations costs are managed effectively	.817	130	.295
Firm puts effort in controlling costs	.682	130	.231
The firm controls materials supply	.799	131	.084
Production system allows for adjustment on the design	.814	130	.180
Resources deployed in response to changes in technology	.785	131	.203
Manufacturing system performs different processes	.813	131	.194
The workforce is able to perform a range of tasks	.768	131	.305
The system delivers products on time	.825	131	.083
Queueing period is highly reduced	.797	131	.231
Short manufacturing cycle time	.854	131	.093
System takes a shorter time to deliver products on demand	.781	131	.206
Products meet the pre-established standards	.730	131	.088
Process ensures consistency in operations	.843	131	.192
Customers complains are handled on time	.872	131	.225
Manufacturing system meets environmental requirements	.757	131	.287

Table 13: Tests of Normality for Competitive Priorities Items

a. Lilliefors Significance Correction

4.5.4. Reliability Test for Competitive Priorities Measurement Items

The Cronbach's Alpha reliability coefficient for competitive priorities was 0.807. This relibility statistic is greater than the minimum accepted Cronbach's alpha coefficient of 0.70, ensuring construct reliability. This was considered to be reliable in that they all had alpha coefficient (O'Connor, 2011; Ketema, 2009;Sekaran, 2003). Based on these results and findings, the study hence concluded that the specific indicators shown in table 14 are reliable and accurate to measure what they are intended to measure, and hence can be used in the subsequent analyses of data in assessing the relationships between the constructs (O'Connor, 2011).

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.807	0.811	16

Table 14: Reliability Statistics for Competitive Priorities Items

4.5.5. Exploratory Factor Analysis for Competitive Priorities Variable

The validity of the model constructs was assessed by exposing the thirteen (13) competitive priority measurement items to factor analysis, in order 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 shows by how much the co-variation among the observed variables each one accounts for. By use of Kaiser criterion, components with Eigen values ≥ 1 were retained. Consequently, two components were extracted (table 15).

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var.	Cumul %	Total	% of Var.	Cumul %	Total	% of Var.	Cumul %
1	2.684	53.675	53.675	2.684	53.675	53.675	2.327	46.543	46.543
2	1.152	23.047	76.722	1.152	23.047	76.722	1.509	30.179	76.722
3	.594	11.880	88.602						
4	.372	7.436	96.038						
5	.198	3.962	100.00						

Table 15: Total Variance of Competitive Priorities Explained
Extraction Method: Principal Component Analysis

Before extraction, five linear factors were identified, while after extraction, two components were extracted, and displayed eigenvalues associated with each factor representing the variance explained by that particular linear component. Accumulatively, the two extracted factors explained 76.72 percent of the total variance. This indicates that the amount of information loss is relatively small when the number of indicators was reduced, meaning that fewer indicators can be used to analyse the data.

However, on an individual basis, component one accounted for 53.68 percent of variance while component two accounted for approximately 23.05 percent of the total variance of competitive priorities. Rotation has the effect of optimizing the factor structure and states the relative importance of the factor. However, after extraction and rotation, factor one accounts for 46.54 percent of variance, while factor two accounts for approximately 30.18 percent of the total variance of competitive priorities.

From the rotated component matrix in table 16, factor one is highly and positively related with “Queuing period is highly reduced” (0.925) followed by “The system takes a shorter time to deliver products on demand” (0.899). The second factor highly and positively related with “Production system allows for adjustment on the design” with a positive relation coefficient of 0.854, followed by the “Manufacturing system performs different processes” with a coefficient of (0.830).

	Component	
	Delivery	Flexibility
Queueing period is highly reduced	.925	
The system delivers products on time	.879	
System takes a shorter time to deliver products on demand	.811	
Production system allows for adjustment on the design		.854
Manufacturing system performs different processes		.830

Table 16: Rotated Component Matrix[a] for Competitive Priorities Items
A. Rotation Converged In 3 Iterations.
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

From table 16, component one is mapped onto delivery while component two is mapped onto flexibility construct respectively. This implies that the study identified both delivery and flexibility as the important competitive priority strategies that these sugar manufacturing firms use. These results however, contradicted the general perception of sugar firms' managers who were in agreement that their firms focused more on cost at all levels. There appears a paradox between cost focus and the performance. The managers however submitted that as much as their policy is to minimize costs across operations areas, over time, the firms' production costs seem to ever increasing lowering their bottom line.

Comparatively, this study results confirm a study by Wamalwa *et al*. (2014) which examined effects of manufacturing techniques implementation on factory time efficiency of Mumias Sugar Company. Interestingly, the study results revealed that Mumias Sugar has only adopted practices relating to delivery and further concluded that there is little impact of these delivery practices to factory time efficiency. Although the study identified only two priorities out of four, Adebayo *et al*., (2012) acknowledges that over the years, there exists divergent views of what factor exactly constitute competitive priorities for a particular manufacturing firm, and there is equally a discrepancy about which of these chosen factors are to be pursued (Suzana and Harvey, 2014; Sciuto and Filho, 2013);Boyer and Lewis, 2002).

The competitive priorities study construct items which contributed most to the constructs were thus identified in their order of importance. These results concur with a study by Sohel and Schroeder (2013) which identified Delivery importance over Innovation, Efficiency and Quality respectively. These study findings however, were inconsistent with study results by Abdulkareem, *et al.* (2010) which ranked quality with an average of 4.213 as the most important competitive priority followed by cost (3.27). Flexibility and delivery were ranked third and fourth with an average of 3.127 and 3.081 respectively. In addition, Ward *et al.* (2008) equally ranked flexibility over delivery.

Although Abdulkareem *et al.* (2010) used arithmetic mean to rank different competitive priorities, the current study utilized factor analysis to extract the factors that explains the common variance. Moreover, in as much as a study by Abdulkareem, *et al*., ranked flexibility over delivery, the current study however, ranked delivery over flexibility. However, Ward *et al* (2008) is of the opinion that manufacturing firms which value flexibility greatly will tend to choose job – shop type processes. Conversely, flexibility as a strategic capability tends to be lower for firms that have flow – type process designs, just like these sugar manufacturing firms are set up.

From communality generated, competitive priorities had an average communalities coefficient of 0.77. In order to validate construct validity of competitive priorities, the the KMO had an index of 0.762 whereas Bartlett's Test of Sphericity contains an approximated Chi-square of 253.026, with an associated p – value of 0.000, which is 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. Consequently, from the Bartlett's Test of Sphericity results, the study rejected the null hypothesis which means that the variables have a strong association.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.762**
Bartlett's Test of Sphericity	Approx. Chi-Square	253.026
	df	10
	Sig.	.000

Table 17: KMO and Bartlett's Test of Sampling Adequacy

4.6. Correlation Analysis

The study analyzed the relationships that are inherent among the extracted competitive priorities study components. Table 18 shows the analyzed correlations results amongst the study variables. The Pearson Correlation results showed that delivery is moderately and positively correlated with flexibility, and significantly ($r = 0.588$, $\rho < 0.05$). The correlations output equally indicate that delivery is positively related with efficiency performance of sugar manufacturing process. Moreover, the relationship was found to be significant ($r = 0.723$, $\rho < 0.05$). In addition, the study found a weak but positive correlation between flexibility and efficiency. The relationship was however found to be insignificantly related with efficiency ($r = 0.068$, $\rho > 0.05$).

		Delivery	**Flexibility**	**Efficiency**
Delivery	Pearson Correlation	1		
Flexibility	Pearson Correlation	.588*	1	
	Sig. (2-tailed)	.012		
Efficiency	Pearson Correlation	.723*	.068	1
	Sig. (2-tailed)	.027	.032	

Table 18: Construct Level Correlations Matrix
**. Correlation Is Significant At the 0.05 Level (2-Tailed)*

The strong correlation coefficient between delivery and efficiency performance was expected given that there is always a high complementarity in the implementation of a flexible manufacturing decisions or practices, in an effort to gain a competitive advantage. This equally explains the above moderate yet significant correlation between the identified competitive priorities constructs, that is delivery and flexibility ($r = 0.588$, $\rho < 0.05$). Given that various competitive priorities decisions are often made together in order to achieve strategic goals of a manufacturing firm (Ketema, 2015), this could explain the above average correlations between delivery and flexibility.The significant correlation statistic between flexibility and delivery ($r = 0.588$, < 0.05) implies the substitutability between the two identified competitive priorities. This study results confirm study results by several researchers which found a possible trade – off between delivery and flexibility (Suzana and Millar, 2014; Gong, 2013; Boyer and Lewis, 2002).

However, these results are inconsistent with study results by Wekesa (2014) which concluded that the majority (78.8 percent) of sugar manufacturing firms in Kenya use cost leadership as their main competitive priority strategy. In addition, a study results by Abdulkareem *et al.* (2013) ranked cost second (mean 0.312) after quality (mean 0.568). However, this study results confirms results by Abdulkareem *et al.* which ranked cost (mean 0.312) second after quality. On overage, there seems a mismatch between the management's goal of cost drive and the actual requirement of production system that demands flexibility and speed of delivery in the process.

On individual measurement items, the competitive priorities Extracted Correlation Matrix shows the correlations coefficients among the extracted competitive priorities measurement items are all positive and significant. The strong correlation between delivery and flexibility is however consistent with existing literature due to the complementarity between the two constructs. However, the weak and insignificant correlation coefficient between flexibility and operations efficiency ($r = 0.068$, $\rho > 0.05$), is inconsistent with the study results by Zakaria, Dahalan, and Musaibah (2012) which determined a significant and positive relationship between flexibility and performance ($r = 0.394$, $\rho < 0.05$).

4.7. Regression Analysis

The objective of the study was to analyze the effect of competitive priorities on the operations performance of sugar manufacturing firms in Kenya. The study predicted that the relationship between competitive priorities and performance is not statistically significant. The resultant competitive priorities were measured by delivery and flexibility constructs. The aggregate mean scores of the extracted competitive priorities constructs measurement items were regressed against the aggregate mean scores of the extracted performance measures items, and a summary of the regression results is presented in the model summary table 19.

Model	R	R^2	Adj. R^2	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R^2 Change	F Change	df1	df2	Sig. F Change	
1	.661[a]	.437	.326	.23733	.437	5.094	1	2	.041	1.996

Table 19: Model Summary[b] of Delivery, Flexibility and Efficiency Variables
A. Predictors: (Constant), Delivery, Flexibility
B. Dependent Variable: Efficiency

The study results showed that delivery and flexibility jointly accounted for 43.7 percent variation in efficiency of sugar manufacturing firms ($R^2 = 0.437$). This implies that 56.3 percent is accounted for by other variables other than delivery and flexibility. The regression results revealed a statistically significant and positive linear relationship between delivery, flexibility and efficiency of sugar manufacturing firms ($r = 0.661$, $\rho < 0.05$). This study results confirm a study findings by Abdulkareem *et al.* (2010) which, significantly determined that competitive priorities jointly account for 77.5 percent variation in performance ($R^2 = 0.775$, $\rho < 0.01$). Interestingly, a study by Bolo (2011) showed that 24.8 percent of variations in corporate performance is significantly explained by core capabilities ($R^2 = 0.248$, $\rho < 0.01$). In view of this, Bolo (2011) however found a weak explanatory power of core capabilities on performance.

The model parameters table 20 shows the β-value which indicates the relationship between delivery, flexibility and performance of sugar manufacturing firms. The test on the beta coefficients of the resulting model indicates that the model is a significant estimator of the relationship among delivery, flexibility and performance variables.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	S. Error	Beta			Tol.	VIF
1	(Constant)	4.669	.418		11.17	.025		
	Delivery	2.388	.251	3.66	9.514	.038	.974	1.027
	Flexibility	1.733	.287	2.689	6.038	.018	.976	1.025

Table 20: Beta Coefficients[a] of Delivery, Flexibility and Efficiency
a. Dependent Variable: Efficiency

The model parameters in table 20 indicate that when delivery component is used as a predictor, it makes a significant contribution to the model (t (1.96) = 9.514, ρ< 0.05). In addition, the predictive contribution of flexibility in the model is equally significant (t (1.96) = 6.038, ρ< 0.050. From the magnitude of the ***t*** – statistics, delivery was found to have a better contribution to operations efficiency.

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

- **H_{01}:** There is no significant effect of Competitive Priorities on the performance of sugar manufacturing firms in Kenya.

From the model in table 20, it can hence be deduced that the linear functional relationship between delivery, flexibility and efficiency measurements of sugar firms follow the following regression model:

Performance = $\beta_0 + \beta_1\text{Delivery} + \beta_2\text{Flexibility} + \varepsilon_i$
$= 4.669 + (2.388\text{Delivery}) + (1.733\text{Flexibility}) + \varepsilon_i$ ….Equation 4.1

From a foregoing discussions, several studies have supported the strategic role ofcompetitive priorities to operations performance (Ketema, 2015; Wekesa, 2014; Sohel and Roger, 2013; Abdulkareem *et al.*, 2010; Boyer and Lewis, 2002), which have found a strong and significant relationship between competitive priorities and firm performance. However, Abdulkareem *et al.,* (2010) however, cautions that each manager, in their operations areas should be alive to the fact that each competitive priority is a complex construct which has a unique influence on the planning and implementation of the operations strategy of a firm. In addition, Ward *et al.* (2008) found operations measure a key driver to any manufacturing decision making. This implies that these competitive priorities are useful to both the policy makers and researcher, since they are core in guiding operational decisions.

The usefulness to researchers of better measures of competitive priorities is evident since there existsempirical study results of the strategic contribution of competitive priorities as a managerial utility in aiding the operations strategy of the sugar manufacturing firm and choosing an appropriate priority to be emphasized in line with the strategic objective of the firm. These results are inconsistent with the expectations of the theory that competitive priorities have a significant contribution to performance. Although this might not be new, they come from an area which traditionally has not been extensively studied in manufacturing research. It appears that in Kenya, just like other developing economies, the sugar manufacturing firms strategically pursue different competitive priorities portfolio.

Literature emphasizes the importance of identifying and pursuing the right competitive priority(s) at the operations level (Sohel and Rodger, 2013). Competitive priorities are strategic preferences chosen by a firm to compete on, as a response to marketplace requirements. However, organizations may choose to pursue the same competitive priority yet their performance on that competitive priority may vary widely. The individual firms' factors that influence which of the competitive priorities to pursue are varied. For example, Rosenfield (2014) concludes that focusing on competitive priority programs that achieve operational objectives (e.g. lower costs), often did not contribute to overall performance since they may have a reducing effect on other operational objectives of the firm. However, obtaining a trade – off between flexibility and delivery offers a simulative alternative way of thinking since, rather than remaining static, the manufacturing system must continuously improve, and preferably improve along more than one dimension at the same time.

This study results however, contradicts a study by Rusjan (2005) that found no significant relationship for three manufacturing competitive priorities results (quality, flexibility, and speed of delivery). However, Rusjan (2005) justifies this insignificant relationship by arguing that competitive priorities are traditionally related to manufacturing strategic decision areas are impacted by decisions made in other business functional areas. In addition, a study by Jardón (2011) concluded that even though competitive priorities can generate best performance, the process of their deployment is not sufficiently known, since most authors assess the direct effect of some or all defined competitive priorities whereas their impact in a process can occur indirectly through other competencies that the firm has accumulated.

5. Summary, Conclusions and Recommendations

5.1. Summary of Research Findings

The pilot study and preliminary findings were in line with other studies around the world which have studied competitive priorities and its contribution to performance in the manufacturing sector, for instance Ketema (2015), Sciuto and Filho (2013), Gong (2013), James (2011), Hallgren (2010), Slack and Lewis (2009), Gagnon (2009), Davis *et al.* (2002).

A statistically acceptable number of targeted samples completed and returned the data collection instruments, all of which were analyzed. The response rate of 79.4 percent of the target population was comparable to previous studies for example,Malaba, *et al.,* (2014) Mutunga, *et al.* (2014), and Boyer and Lewis (2002). This response rate was considered good enough to validate the current study results, which surpasses the 10 percent of the total population as recommended by both Kothari (2010) and Boyer and Lewis (2002). The use of "drop – and – pick" method improved the response rate, while calling the heads of the chosen functional units through telephone personalized the exercise.

5.1.1. Competitive Priorities and Performance

The objective of the study was to analyze the effect of competitive priorities on the operations performance of sugar manufacturing firms in Kenya. Competitive priorities were measured using four constructs namely: cost, delivery, flexibility, and quality. Descriptively, flexibility measurement items showed a mean of 4.01, followed by quality measurement items with a mean of 3.755, and then cost items (3.74), while delivery items had a mean of 3.73 respectively.

All the sixteen (16) measurement items of competitive priorities were subjected EFA to extract the least number of factors which can account for the common variance of a set of competitive priorities variable. Upon extraction and rotation, two factors were identified (delivery and flexibility), which accumulatively accounted for 76.722 percent of the total variance. The extracted factors had an average communality of 0.77, which was considered sufficient to show accuracy of the identified items of measurement of competitive priorities. To validate construct validity of competitive priorities, the KMO of sampling adequacy had an index of 0.762. 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 253.026. It was hence concluded that the factor analysis was appropriate for assessing construct validity of the scale.

Pearson Correlation results showed that delivery is moderately and positively correlated with flexibility, and significantly different from zero at 5% level of significance ($r = 0.589$, $\rho < 0.05$). Equally, is positively related with performance of sugar manufacturing process. However, the relationship was found to be highly insignificant ($r = 0.637$, $\rho > 0.05$). In addition, the study found a weak and negative correlation between flexibility and performance. The relationship was equally found to be insignificantly with $r = -0.388$, $\rho > 0.05$.

The study findings revealed a positive and a significant statistical effect of competitive priorities on performance of sugar manufacturing firms in Kenya ($R^2 = 0.437$, $\rho < 0.05$). Moreover, at individual level, the study found an insignificant effect of flexibility on performance ($R^2 = 0.151$, $\rho < 0.05$) in addition to delivery which equally had a significant effect on performance ($R^2 = 0.130$, $\rho < 0.05$). Therefore, at 5% level of significance, the study rejected the null hypothesis and hence concluded that competitive priorities have a significant effect on performance of sugar manufacturing firms in Kenya.

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