The influence of Knowledge Application on Sustainability of Sugar Companies in Kenya

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Abstract: Sugar companies in Kenya like many other firms in the world have used Knowledge Management Practices (KMP’s) for almost six decades since 1959, to transform knowledge to enhance their performance and sustainability but have realized dismaying results as their performance consistently decline with the companies sinking under heavy debt burden. As most companies downsize on their workforce others get shortlisted for privatization for being on the verge of collapse at a time when domestic demand for sugar remains highly incomparable to level of production causing rising sugar imports from 4000 tonnes in 1984 to 249,336 tonnes in 2001. Studies have been conducted on KMPs’ with focus to corporate performance but few have fully considered the influence of KMPs’ particularly knowledge application on organizational sustainability of sugar companies in Kenya. This study aimed at testing the null hypothesis that Knowledge application has negative influence on sustainability of sugar companies in Kenya. A sample population of 250 respondents from all the five operational state owned sugar companies’ managerial staff were studied using Census. The outcome of this study is expected to cause a paradigm in improving management, performance and sustainability of sugar companies and adds stock of invaluable literature materials for reference by future scholars. The study concludes that the companies should implement knowledge management reward based system to encourage group discovery and innovativeness.

Key words: Knowledge Management Practices, Sustainability

1.0: INTRODUCTION

1.1: Introduction
Effective Knowledge Management Practices (KMP) such as knowledge creation, sharing, acquisition and application are fundamental to organizations’ performance and sustainability. According to PPI,(2008) America and the rest of the world changed dramatically by the end of the 20th century by succumbing to the demands of knowledge era and that with the dawn of industrialisation their growth depended on the new knowledge economy- the level of knowledge application.

It is one major factor in addition to ecological (environmental) factors (Wagner, 2005) and organizations’ culture that influence competitive advantage of a firm and thus their sustainability.

In Mesopotamia, Egypt, India and China KMPs’ (knowledge acquisition and utilization) enabled people to improve their ecosystems, adapted to it and diminished its impact on their civilization (Jean, 2010). Underperformance of Kenya sugar companies that has shattered the country’s dream for sustainability could however be remedied by companies’ embracing appropriate Knowledge application to rekindle the country’s diminishing hopes for improving sugar productivity, the company’s growth and sustainability.

Sugar Companies in Kenya: Historical perspective
The development of sugar companies in Kenya resulted from the introduction of industrial sugar in...
the country by Asians in 1902 as an attempt to empower Kenyans to cultivate a crop that was hitherto white settlers’ and Asians’ dominated activity for both domestic and export (Migot-Addhola, (1984); Odada, (1986). Mumias was the first sugar company to be set up in Kisumu in 1922 followed by Ramisi (presently referred to as Kwale International Sugar Company limited (KISCOL)) in Coastal province in 1927 (Wanyande, 2001). Other state owned companies such as Muhoroni in 1966, Chemelil in 1968, Mumias in 1973, Nzoia in 1978 and South Nyanza (SONY) in 1979 were also established through Sessional Paper no. 10 of 1965 for purposes of accelerating economic development, redressing regional imbalance, creating job opportunities, promoting indigenous entrepreneurship (growth of subsidiary industries) and promoting foreign investment (Odek et al., 2003). Later more privately owned sugarcane companies such as West Kenya (Kabras) in 1981, Butali sugar company in 2004, Soin in Kericho in 2006, Transmara in 2007, Sukari industries Ltd in 2009 and Kibos Allied Industries came in stream. Pursuant to the above policy goals, the development of sugar industry became a political issue and hence sugar became a political commodity (Odek et al., 2003). As the Parliament resolved in 1965 to provide financial and technical support to the sugar industry to facilitate governments’ realization of objectives, Sugar was viewed further both as a strategic and a political commodity.

The companies spread countrywide across western Kenya, Nyanza, Rift Valley and Coastal region in areas that share common favourable characteristics of lying on altitude 1600m above the sea level, hot climate with temperature range of between 21°C - 27°C with reliable rainfall pattern of at least 1270 mm per a year and rich geological landscape of deep well drained alkaline soil with Ph of 4.8 – 8.5 that supports cane farming. The government and other key players such as Kenya Sugar Board (KSB), Sugar Development Authority (SDA) and consulting agencies also supported sugar industry established through Parastatal Act of parliament of 1965 with financial and technical services to enhance their performance and achieve sustainable growth.

In 2003, the government also set up a task force on sugar industry Crisis 1 whose recommendations led to further financial support for upgrading of industries. With the implementation of the structural reform of the taskforce and involvement of other key players in the industry such as KSB, SDA the government envisaged a rapid take-off of the companies to mark the beginning of growth of subsidiary industries in Kenya, increase job creation, sustain the local demand for sugar and meet the country’s quota allocation of export. However, the sugar companies continue to perform below public expectation, the reason they have often been brought under sharp focus of discussion in Kenya Parliament (Wanyande, 2010). The country’s situation worsened as local demands continue to outstrip production causing sugar import figures to rise from 4000 tonnes in 1984 to 249,336 tonnes in 2001, from COMESA region and other sugar producing countries such as Brazil, UK and Mexico (KSB, 2007). The above challenges led to decline in company’s growth and shuttered the Kenya’s dream of achieving sustainability in the sugar industry as some firms such as Miwani and Muhoroni went into receivership.

1.2: Statement of the Problem

Knowledge is considered the heart of global economy (Carbaugh, 2007) and efficient Knowledge Management Practices (KMP) by firms’ are significant for their sustainability in the world (Acier, 2006). For over six decades since its introduction in management in 1959 (Drucker, 1959; Kellogg,1986) Sugar companies have applied knowledge resources in individuals and group to enhance their performance and sustainability, but have realized dismaying results. The companies continue to perform poorly with Muhoroni being put under partial receivership in 2010 and Miwani in full receivership. The rest of the companies Nzoia, Chemelil and Sony continues to perform poorly, often brought under sharp focus of discussion in Kenya Parliament (Wanyande, 2010) and were shortlisted for privatisation.

The country’s situation worsens with 200,000 metric tonnes deficit persisting as local demands continue to outstrip production causing sugar import figures to rise from 4000 tonnes in 1984 to 249,336 tonnes in 2001 from COMESA region and non-COMESA sugar producing countries such as Brazil, UK, Mauritius and Mexico (Odek, 2003; KSB, 2007). To date, the companies have neither generated adequate buffer for both its home consumption and export nor embarked on continued growth strategies but instead are downsizing on their workforce in the industry, sagged in debt burdens.
and ailed by financial constraints (KSB, 2005; KSB, 2010).

The country continues to witness underperformance in sugar production with a remarkable loss of foreign exchange on increased sugar imports, loss of employment to workers and reduction of industrialization initiatives that may leverage growth and sustainability of sugar industry. A country’s hopes hang in disequilibrium as its sugar companies’ poor performance diminishes its dreams for possible growth and sustainability.

While studies conducted in Italy, Pakistan and Malaysia amongst multinational and pharmaceutical companies indicate that KMPs’ had relationship with improved performance (Rizwan & Mohamud, 2012), others done in Norway by Dingsoryr (2002) also reveal that KMPs’ is capable of influencing performance and growth. The question of sustainability thus remains unanswered as these studies did not however reveal that application could also lead to organizational sustainability.

In particular, these studies were on multinational and pharmaceutical corporations and little research seem to have been done in sugar companies in Kenya focussing on the relationship between Knowledge application and organizational sustainability. It is on the basis of the forgoing claims that this study is purposed to explore the influence of Knowledge Application on Sustainability of Sugar companies in Kenya using Census.

1.3: Specific Objective of the study
To establish influence of Knowledge application on sustainability of sugar companies in Kenya.

1.4: Research Hypothesis
H03 : Knowledge application has negative influence on sustainability of sugar companies in Kenya.

1.5: Significance of the Study.

The County governments may embrace suggestions by the study and allocate funds to develop human capital resources in the sugar companies to achieve the goals that led to their initiation in 1966 and the economy’s sustained growth in sugar production.

The report of this study is expected to increase stock of invaluable literature for reference by scholars who will endeavour to research in related area. Finally, it is also envisaged that study will equip Management of sugar companies with supportive knowledge management based practices and learning cultures that may be adopted besides tangible capital resources to foster partnership for enhanced performance, growth and sustainability.

2.0: LITERATURE REVIEW
2.1: Theoretical Review
Two theories that are associated to this study include Human capital theory and intellectual capital theory.

2.1.1: Human Capital Theory

Human capital means knowledge, skills and capability of individual employees that permits their provisions of solution to customers (Tapsell, 1998). The theory was coined by an American economist, Theodore W. Schultz in 1960. It states that an institutional growth is dependent on an aggregate knowledge and skills in its workforce.

It implies that for an institution to grow and sustain its structures, wealth and people both for now and in future, it must invest heavily in knowledge acquisition (education and training) of its human capital.

Grant (1991) also argues from resource based point of view that the source of a firm’s competitive advantage lies in its human capital and their knowledge and not how it positions itself in the market. Schultz and Grant’s perspectives are unrealistic because the firms’ aggregate knowledge assets and its position in the market are complementary and vital to its performance, economic, ecological and social sustainability. This theory argues that knowledge is a crucial source of innovation and strategic re-newal whether it is from brainstorming or research laboratories or day dreaming at office, re-engineering new processes, improving personal skills or developing new sales lead (Bontis, 1996).

The theory of Human Capital was reviewed in the study of intellectual capital by the Economics Institute of Washington DC, that broadens its worth beyond an institution or a firm to the nations that .. “the economic value of the nations depends more on employees skills, knowledge and business problem aptitude than it does upon the market value of the firms commercial output” (Di Steffano and Kalbaugh, 1999). This theory also justifies KMP as one of the main contributors to organizations’ competitive advantage which is fine but fails to authenticate its effect on firm’s sustained growth.
It did not also focus on effects of diminishing marginal utility, quality of firm’s tangible assets and the role of government policy and politics on corporate performance and organizational sustainability.

2.1.2: Intellectual Capital theory (ICT)

According to Dzinkowski, (2000) “Intellectual Capital is the stock of capital knowledge based equity which a company possesses that may be end result of Knowledge transformation process or knowledge itself that is capable of transforming into intellectual property of the firm.” Intellectual capital thus may be broken down into three areas, human capital, structural capital and customer capital.

Human capital is comprised of knowhow, competence, skills and capability of human members of the firm. Structural capital is comprised of the capability that is developed to meet market requirements such as patents and trademarks, process improvements methodologies to improve effectiveness and profitability of the firm while Customer capital on the other hand includes communication between external and internal entities of the organization such as customer loyalty, good will and stakeholder’s relationships.

According to Edvison & Malome (1997), the above three variables capital components correlate to deliver value to customers making organizations to cut competitive edge and build value platform that makes it sustainable.

The value platform may be illustrated as follows:

![Value Platform Model](image)

Figure 1.2: Value Platform Model
Edvison L. and Malome M. (1997)

Value platform articulates that the intersection of the three capitals creates value that is fundamental to corporate sustainability. From the foregoing theory, it’s worth noting that the benefits of investing in KM practices are intuitive and should be authentic to proactive managers that are attempting to compete in the 21st century and beyond since it brings benefits to individuals, organizations and Community of practice as follows:-

For individual Employees, KMP helps workers in enhancing their job performance, saving of time through better decision making and problem solving, enable individual workers build a sense of community bond within the organization. Ovaska et al., (2009) asserts that for Community of Practice, the sharing of companies’ knowledge assets serves as a foundation for collaboration which is significant in developing professional skills, promoting peer to peer mentoring through knowledge strategy, facilitates effective networking, collaboration and development of a corporate culture.

According to KPMG, (2000) for Organizations, embracing appropriate KMPs’ helps to drive strategies that enhance problem solving, diffuses desirable corporate culture, best practices and improves knowledge that is embedded in product or services. KMPs thus helps organizations in improving customer service, and organizations ability to innovate, improve coordination of efforts and commercialisation of new products by facilitating cross fertilization of ideas and increasing opportunities for innovation. Consequently, KMP also improves organizations’ responses to market challenges (KPMG, 2000; Taminian, Smit & Delanse, 2009) and enables them to remain competitive by building their memory.

In addition, Lu, Wang, Tung & Lin, (2010) asserted that firms facing stiff competition within their remote environments should increase their value creation processes through intellectual capital because it is an important factor for sustaining competitive advantage in the market. The theory contends with the fact that in a knowledge based
economy, continuous knowledge creation is prerequisite to firms’ competitiveness.

The relevance of the Intellectual Capital Theory (ICT) lies in its recognition to sum of firms’ knowledge which is a key factor in production. However this resource must be kept nurtured through prudent practices such as acquisition and sharing like training, seminars and workshops so that they are kept relevant and oriented to firm’s culture and goals that deliver sustainable growth. In the same way, their employees’ social mobility must be controlled by firms’ offer of job security and good compensation practices. The theory also considers Customer capital which is an important element of performance and sustainability. Capturing Customer capital also involves reaching the community through corporate social responsibility which also contributes to social sustainability. According to Edvison and Malome (1997), if a firm doesn’t position itself to the market it will lack competitiveness, compromise its survivability and risk obsolescence.

The theory therefore recommends the development of firms’ skills, provision of incentives and retention for mutual sustainable benefit rather than hiring of workforce for fear that they would exit to other rivals with firms’ knowledge for competitive rewards. Its’ also said that a firm must plough back its profits to diversify its programs and retain its workforce by providing competitive compensations and as well address the needs of its social environment through corporate social responsibility and through ecosystem integrity practices in order to achieve universal sustainability.

2.1.3: Conceptual framework

Fig.2.2 is an illustration of a conceptual framework that shows the relationship between Knowledge application as independent variable and Organization Sustainability on the other hand as dependent variable.
The framework outlines that effective KMPs’ (application) results in Economic, Social and Ecological sustainability.

2.2: Knowledge Application and Organizational sustainability

Knowledge application influences organizational sustainability through product diversification, product innovation and ecosystem management.

2.2.1: Product diversification

Knowledge application is a process by which firms transform knowledge into new products and services (Wilson, 2007). It is the practical use of knowledge into new products, context or situations that centre on organizations’ products, processes and services (Bhatt, 2001; Tiwana, 2003). Knowledge application thus provides the firm with product benefits in which it direct costs and savings, reduce wastages and increase sales. Tussler, (1998) and Ulrich, (1998) also confirm that a firm’s competitive advantage directly depends on their capability to gather and use knowledge resources effectively. These scholars concur on the arguments that it’s a firm’s knowledge other than its physical assets and financial resources that is key to its competitiveness from which sustainability is scaffold.

Markus (2001) also suggests that sources of competitive advantage reside not in knowledge itself but in the application of knowledge. Application of knowledge may therefore give an organization strategic benefits and necessitate customer repeat buying behaviour, attraction of new customers and as well increasing its market share (Robinson et al., 2004). Since trade liberalization emerged as an important issue, markets have been opened equally to small and large scale sectors and non-responsive firms to changes in knowledge risk being faced out of production. Wajaktrakal, (2005) also argued that firms can achieve monopolistic and oligopolistic advantages to make them competitive and sustainable by developing and applying their knowledge capabilities effectively.

2.2.2: Innovation

According to Tan et al., (2003) Knowledge Application should help a firm to innovate new products and services which (Lew & Sinkorics, 2012) further argued would give such firms competitive advantage. This is what Blake (1998) had reasoned that knowledge management through efficient application mechanisms would enable an organization to capture its collective expertise and disseminate it to whenever it could achieve the biggest payoffs.

Li & Tsai, (2009) on the other hand assert that efficient use of knowledge should help a firm to innovate products of unique characteristics that are difficult to imitate by other firms in order to achieve competitive advantage.

Other scholars such as Rios-Morales & Brenman, (2009) also believed that innovation is an indirect outcome of knowledge application that can support competitive advantage. According to Plessis, (2007); Huang & Li, (2009) innovation has profound effect on organizations’ performance, survival and competitiveness. Yet innovativeness is not possible without efficient knowledge application. The research conducted in a manufacturing industry in Croatia suggests that knowledge management positively affect organizational outcomes of a company’s innovation, product improvement and employees’ improvement (Kiessling et al., 2009). Erickson & Rothberg, (2009) also pointed out that when firms apply their knowledge efficiently in their production processes, they will emerge superior and achieve competitive advantage. This implies that organizational sustainability may be difficult to achieve without efficient knowledge application.

While Zack et al., (2009) confirms that the study of KM influences various aspects of organizations financial performance, Westerberg (2008) adds that organizations engaged in innovation and exploration as a result of efficient management of its’ Knowledge resources perform better. Henderson, (2011) on the other hand further posits that firms can adopt KM practices of their physical and intangible assets to achieve sustainable development within the context of their competitive advantage. On the other hand Ming Yu, 2000; Syed-Ikhsan & Ranland, 2004, suggested that adoption and implementation of KM practices in capturing, sharing best practices, delivering competitive intelligence and managing customer relationship are fundamental in building an organizations competitive advantage.

2.2.3: Ecosystem management

DETR (2000) posits that organizational sustainability is also dependent on efficient use of knowledge assets to protect the environment, prudent use of available natural resources and maintaining high and stable level of economic growth and employment.
Kim (2011) in his study of effect of KM on performance of public organizations in Virginia’s 23 local CPS Departments in an online survey failed to acknowledge that Knowledge sharing had any crucial role in influencing performance of CPS programs. His argument was contradicted by Radwan et al., (2012) in their study of knowledge adoption and performance amongst 13 pharmaceutical firms in Jordan using survey which found that there was positive relationship between (communication) knowledge sharing and performance in influencing product innovation and profitability.

2.2.3: Sustainability
According to Bruntland Commission of 1987, WCED,(1987) World Bank, (2005), Kuckartz &Wagner,(2010) Sustainability means “meeting the demands of the present society without compromising ability of future generations to satisfy their own needs by responding to current economic and social environmental challenges”.

The purpose of sustainability is to improve economic environment and social performance of companies (Bos Brouwers, 2010) to enhance their survivability and make them self-supporting. A sustainable company is one that offers product and services that fulfil the societal needs while considering its ecological, social and economic impacts on earth’s inhabitants and without compromising the needs of its future generations,(Azapagic & Perdan,2000; Welford, 2000). DELTA, (2000) further argued that sustainability is all about ensuring better quality life for every one now and for generations to come through social progress while meeting people’s needs, protecting environment, ensuring prudent use of natural resources and maintaining stable economic growth and empowerment.

Roy, (2003) argued that the essence of sustainable development is determined by the people and is attributed to changes of people’s attitudes and habits. According to Hennicke, (2000) organisational sustainability could be measured using economic, social and ecological parameters the achievement which anchors on firms prudent KMP and a country’s political good will.

The bottom line of sustainable development is to develop capacity to help the poor to maintain and improve their natural capital (natural resources) while developing their human capital (human resources) and manmade capital (investment infrastructure, social capital, cultural bases and political systems) that makes society function, (Cellisr & Jean- Louis,2004). Precisely sustainability issues are focussed on making organizations self-reliant in their social, economic and ecological growth and developments.

3.0: METHODOLOGY

3.1: Research Design
Design is a scheme or plan that is used to conduct the study to generate answers to research questions, (Noum, 2007; Orodo 2003). It is a blue print of collecting, measuring and analyzing data. It is an actual configuration the research process is based on that links all aspects of research process to provide meaning (Kothari, 2008 and Laurel, 2011). The relevance of research design is to provide direction of what methodology is to be used to collect and analyze data to answer research questions.

This study adopted Census design to collect data from all the state owned Sugar companies in Kenya. Census is a principal means of collecting basic population and housing statistics required for social and economic development, policy interventions, program implementations and evaluation (United Nations,2010; United Nations, 2007; ABS, 2006). Its use made the study exempt of coverage errors resulting from omissions or duplication and content errors that may also result from incorrectly structured questionnaires or poor sequencing of the same.

According to Machenzie and Knippe (2006 ) census design is rooted within positivism philosophy that allows for application of qualitative methods, empirical rational technique and is associated with the testing of hypotheses. However, purposive sampling was also applied to identify targeted respondent managers at the company’s departmental levels.

3.2: Target Population & Sample of the study
This study focused on population of 1200 managerial employees from all the state owned sugar companies in Kenya. Target population for the study is what Sekaran & Bougie, (2010) defined as the entire group of people, events or things with common observable characteristic that researcher is interested in and wishes to investigate, through a sample of 300 respondents. The sample was arrived at based on Yamane (1967) formulae at 95 % level of confidence with 5.0 margin of error as given by;
This Sample translated to 25% of the population, which was considered representative and adequate to minimize the likely error in generalising findings of the study since it is over 10% (Saunders et al., 2005).

3.3: Sampling Technique
The study adopted random sampling approach and in particular employed purposive random sampling technique which made it focus on respondents with reliable experience especially at the company’s departmental level. According to Mugenda and Mugenda, (2003) and Kumar, (2011) sampling is a process of selecting a few respondents (sample) from a bigger group (sampling population) to become the basis of estimating or predicting the prevalence of unknown piece of information situation or outcome regarding a larger population in the study.

Purposive sampling helps to focus the researcher’s attention on the intended respondents and enables him/her appreciate the economy of time and often leads to collection of accurate information, (Onen and Osoo, 2005).

3.3: Data Collection Instruments.
This study developed and used structured (Open-ended) and semi-structured questionnaire (Closed-ended) as well as Interview Schedule which were self-administered to help in data gathering. Significantly, the structured questionnaires restricted respondents to hypothetical views of the researcher and were styled using a 5-likert scale. The study used both primary and secondary techniques to collect data. Beside open ended questionnaires, the researcher used Semi structured (closed ended) questionnaires because of their suitability in encouraging clientele responses (Pettit and Frances, 2000). Open and closed ended questionnaires were constructed and administered with the assistance of “collectors” to a sample of respondents who aided in soliciting of primary data, (Orodho, 2003).

Significantly the choice of questionnaires was based on the fact that they required little time, low cost of training for research assistants to administer and less cost of administration generally (Vinten, 1995). They also facilitated data analysis, probed interviewee’s independent views, gave respondents freedom, spontaneity of answers and eased the testing of hypotheses (Vinten, 1995).

Interview schedule comprising of semi structured interview questions was also used. According to Robison (2002) such interview questions are predetermined but whose wording could be changed, explanation given for and additional question added or omitted as long as satisfactory responses are achieved. Easterby-smith et al., (2002) on the other hand posited that interview schedule / guide makes it easy to comprehend constructs used by interviewees as a basis for their opinion and beliefs on issues and at the same time helped the researcher to check against ambiguity and inadequacy in the main instrument (Igwe, 2005)

3.3.1: Reliability
Reliability has been defined as the degree of consistency that the instrument or procedure demonstrates (Best And Kahn, 1993). According to Kerlinger (1986), reliability is the absence of errors of measurement or the accuracy of measuring instrument. It is also said to be the consistency of a research instrument in producing the expected results when applied repeatedly under the same circumstances. To ensure reliability, the instruments were pilot tested during pre-visits and this permitted necessary modifications on the instruments.
For this study, the developed instrument (questionnaire) were given to two respondents, pre-tested and re-tested on two managerial staff in each of the companies (not the ones that were to be finally included in the main study). The test-retest which was computed gave Cronbach alpha coefficient value of 0.78 which according to Orodo (2008) and Field, (2009), that was high enough to establish the extent to which the contents of the questionnaire were reliable in eliciting the same responses every time the instrument was administered. Since for Orodo & Field, the alpha coefficient value of between 0.70 - 0.80 should be considered high enough to authenticate the instruments’ reliability and suitability for the study.

3.3.2: Validity
This is the extent to which the instruments are expected to measure the content, probe issues and produce results they are expected to generate. To justify validity of the instruments the researcher re-examined the questionnaires and removed ambiguities so that questions were realigned to the objectives of the study. This study also applied Content Validity Index (CVI) formula to measure and determine validity of the instruments. In this, the number of questions rated as relevant was divided by the total number of items in the questionnaire and this gave a CVI of 0.78.

Using the above formula since the CVI was 0.78 lies between 0.7 - 0.8 which are the acceptable limits, then the instruments were then considered valid.

3.4: Data Collection Procedure
This was the outline or plan in which the intended data were to be collected. The researcher ensured that administration of research instruments complied with ethical principles requiring keeping the identity of respondents in anonymity and putting to use gathered data to its predetermined academic purpose (Gatara, 2010; Hoyle et al., 2002).

Guided by the same principles, the researcher ensured that he received informed consent of the respondents after providing them with the pertinent information about the study and in particular, its purpose. And that, respondents participated freely in the study without coercion and were made free from any physical and mental injuries as their rights and dignities were respected (Hennik et al., 2001).

3.5: Data Presentation and Analysis
Data was presented using basic cartographic techniques such as tables and bar graphs. Descriptive statistics such as percentages, mean and standard deviation were also adopted in the presentation to display the results of theoretical dimensions as measured in the questionnaires and these simplified presentation and eased the analysis.

This study used both quantitative and qualitative approaches especially inferential and descriptive statistics in analysing data. It embraced philosophical orientation that involved the identification of linkages between independent and the dependent variables which accordingly entailed interpretation of data and formulation of explanations of facts using inductive reasoning (Cooper and Schindler,2003: Kothari, 2008).

This thesis partly therefore followed a coherence theory that advocates for the use of correlation analysis to bring out justifications of findings in a more pragmatic sense, validating the virtue that truth is relative and contextual and that the best truth is the one that predominates understandings of existence of a situation in the long run or has withstood test of times. Pearson’s Coefficient correlation technique was used in the analysis due to its ability to test the hypotheses on the nature of influence of independent variable on dependent variable (Cooper and Schindler,2003: Kothari,2008).
4.0: RESULTS AND DISCUSSION
4.1: Background Information

Questionnaire return rate (QRR) was 83% was registered. This was considered high enough to guarantee reliability since it was well above 50% (Baibbe, 2002), with only 17% non questionnaire return rate (NQRR).

4.1.1: Demographic information

Table 4.1: Respondents’ demographic information

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Males</td>
<td>230</td>
<td>92%</td>
</tr>
<tr>
<td>Females</td>
<td>20</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table indicate that 250 respondents involved in the study comprised of 230 (62%) males and 15 (38%) females. The data indicates poor gender representation in the appointments since it doesn’t reflect affirmative action rule which require 30% female representation. It implies that the companies may not enjoy any favour based on affirmative action.

Table 4.2: Age of respondents and work experience in the company

<table>
<thead>
<tr>
<th>Age</th>
<th>Range</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Range</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>23-34</td>
<td>75</td>
<td>30</td>
<td>0-5 yrs</td>
<td>63</td>
<td>25</td>
</tr>
<tr>
<td>Between</td>
<td>35-45</td>
<td>113</td>
<td>45</td>
<td>6-11 yrs</td>
<td>75</td>
<td>30</td>
</tr>
<tr>
<td>Between</td>
<td>46-56</td>
<td>57</td>
<td>36</td>
<td>12-17 yrs</td>
<td>105</td>
<td>42</td>
</tr>
<tr>
<td>Above</td>
<td>65 yrs</td>
<td>5</td>
<td>2</td>
<td>17 yrs</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>250</td>
<td>100%</td>
<td></td>
<td>250</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field data, (2016)

Work Experience
The above table indicates that the companies is comprised of 105 (42%) experienced managerial staff capable of effectively implementing improvements and quality strategies for its sustainability. It also indicate that only 5 (3%) of its workforce have served for over 17 years and may have been retained due to their knowledge that enable them to provide the perquisite technical orientation and induction to newly recruited staff constituting 63(31%) of the managerial staff.

Age
The table shows that the companies have well balanced managerial staff with 113(45%) of the managerial staff falling between 35-45 % of the age who are dynamic workforce in their active working life while 90(36%) of the managers falls between the ages of 46-56 years considered to be more experienced with only 5(2%) of the managers above 65 years set to retire in the five companies. These scenarios reflect effective human resource planning.

4.1.2: The influence of Knowledge application on sustainability of sugar companies in Kenya.

To establish the influence of knowledge application on sustainability of sugar companies in Kenya. Various knowledge application indicators were correlated against sustainability parameters to establish its influence on sustainability of sugar companies in Kenya. The computation of responses according to correlation analysis table 4.7 below gave the following results;
The study reveals that efficient knowledge utilisation indicators such as developing new product, innovation and design r=0.773 with p-values of p=0.009 which is a stronger positive correlation. With new products and innovations the firms enjoys direct benefits of direct cost savings, reduction of wastage and increase in sales.

This findings justifies Trussler,(1998) and Ulrich,(1998) who purports that firms competitive advantage directly depends on their capability to gather and use resources effectively. The finding also supports Markus (2001) who indicated that the sources of a firms competitive advantage resides not in knowledge persee but in the application of knowledge itself.

The study reveals that for the companies to fetch a wider market, they have to use their knowledge to design, re-design and innovate new products which are reflected as being positively correlated. This finding concurs with Robinson et al.,(2004) who indicated that efficient application of knowledge gives an organization its strategic benefits that necessitates its increased market share.

The findings also supports Li & Tsai, (2009),Tan et al.,(2003) that knowledge application should help affirm to innovate new products which Lew & Sinkorics, (2012) further argued give a firm its competitive advantage.

The findings also reveal that knowledge application is capable of influencing the company’s profitability and growth since it generates a correlation value r=0.668 which is statistically significant at 95% level of confidence with a p-value of p=0.031. Profitability and institutional growth are prerequisite parameters of sustainability. This finding concurs with Zack et al.,(2009) who indicates that efficient knowledge management(application) is capable of influencing various aspects of organizations financial performance.

This implies that for affirm to perform better it has to engage its knowledge resources in creating products and ideas that are able to give it a competitive edge in the market, generate financial benefits with which it can address social responsibility initiatives such as ecosystem integrity due to its efficient utilisation of knowledge itself.

### Table 4.7: Knowledge application and sustainability of sugar companies in Kenya

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Developing new products</th>
<th>Product innovation in compensation</th>
<th>Wider market</th>
<th>Infrastructure development</th>
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**Correlation is significant at the 0.05 level (2-tailed).**

**Correlation is significant at the 0.01 level (2-tailed).**

<table>
<thead>
<tr>
<th><strong>Developing new products</strong></th>
<th><strong>Product innovation in compensation</strong></th>
<th><strong>Wider market</strong></th>
<th><strong>Infrastructure development</strong></th>
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<th><strong>Withstanding competition from liberalised market.</strong></th>
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<tbody>
<tr>
<td>Pearson Correlation</td>
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<td>.668**</td>
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<tr>
<th><strong>The company recognizes employees’ level of knowledge application in product innovation in compensation</strong></th>
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<th><strong>Infrastructure development</strong></th>
<th><strong>Employees' retention</strong></th>
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<thead>
<tr>
<th><strong>We have applied knowledge in product designs and this has resulted to wider market</strong></th>
<th><strong>Correlations</strong></th>
<th><strong>Wider market</strong></th>
<th><strong>Infrastructure development</strong></th>
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<th><strong>Infrastructure development</strong></th>
<th><strong>Employees' retention</strong></th>
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<th><strong>Employees’ retention results from their right deployment for appropriate application of knowledge in the company</strong></th>
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<th><strong>Infrastructure development</strong></th>
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<tr>
<th><strong>The company has achieved its ecosystem integrity due to its efficient Knowledge application</strong></th>
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<th><strong>Wider market</strong></th>
<th><strong>Infrastructure development</strong></th>
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<th><strong>Knowledge application has made the company to withstand competition resulting from liberalised market.</strong></th>
<th><strong>Correlations</strong></th>
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Improving staff efficiency and the firm’s productivity. Workshops and seminars have been organized to help employees bridge the skill gaps making them efficient and productive.

The findings also confirm that effective knowledge application leads to product design, innovation, profitability, and growth. Good ecosystem management that is acceptable to the environment is vital for achievement of the company’s stable economic growth, employment, and sustainability. Nevertheless, the study reveals that Knowledge application has moderate correlation (r=0.643) and there is no statistical significance in making the company withstand competition since it has a p-value =0.055 which is >0.05 set standard value.

In this circumstance the study is in disagreement with the findings of Wajaktrakul, (2005) that firms can gain monopolistic advantages and withstand competition emerging from liberalization through effective application of knowledge capabilities. On the same breath, 130(52%) of the respondents (managerial staff) of the state owned sugar companies that were interviewed indicated that, the relevance of knowledge they acquire is due to the fact that trainings’ are tailor made to suit the interest of given departmental needs hence workshops and seminars are organized to help them bridge the skill gaps making them efficient and productive.

A reflection of the relevance of knowledge is seen in the company’s new product innovations and implementations of cost cutting programs such as initiating ethanol, spirit and wines production, establishing water bottling plant and Bricket (charcoal making) plant. They indicated that they have embarked on serious diversification due to their stock of relevant knowledge in order to improve financial economies and become sustainable. They initiated lately with the help of private investors to whom they sold the idea, the Brichts making plant with the view to improving environmental control by reducing the public’s overdependence on wood fuel.

The interviewees indicated that;

- ‘we acquire relevant trainings from tailor made workshops and seminars and such have improved staff efficiency and the firm’s productivity.

That such training have yielded knowledge that have led to increase in creativity and innovation of cost cutting strategies.’ While 12(5%) said the ‘relevance of acquired knowledge has facilitated knowledge transfer amongst managers, made work groups achieve production targets and enable organizations to sustain growth and total quality.’

But responding to question on activities the companies have initiated to explain their intellectual actions towards ecosystem integrity, 128(51%) of the interviewees responded as follows;

‘That the companies have proposed forward linkage-Bricket making plant (makes Charcoal from bushes) to reduce communal overdependence on charcoal from trees, have enhanced environmental management systems (EMS) by distributing free seedlings and encouraging tree planting and that in complying to ISO 9001 the companies have built incinerators to improve environmental hygiene’.

On the same breath 75(30%) of the respondents revealed that the companies have established waste treatment plant to ensure that waste waters and chemicals from the companies are treated before being released into the rivers to reduce water and environmental pollution.

*Hypothesis testing: Knowledge application has negative correlation to sustainability of sugar companies in Kenya

Based on the findings of the study, we fail to accept the null hypothesis that knowledge application has a negative influence on sustainability of sugar companies in Kenya. This is because the parameters of sustainability on which knowledge is applied registers statistically significant correlations. However the study reveals that Knowledge application has moderate correlation of r=0.643, which is not statistically significant in making the company withstand competition from other sugar producers since it has a p-value =0.055 which is >0.05 set standard value.

5.0: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1: Summary

This study involved 250 managerial staff from all the state owned sugar companies on the influence of Knowledge management practices on sustainability of sugar companies in Kenya. Knowledge management practices (KMP) whose effects in sustainability were examined included Knowledge acquisition, Knowledge sharing and Knowledge application. This study found out that managerial staff in all the sugar companies in Kenya have good academic and experiential
qualifications despite poor gender representations. The study adopted both descriptive and inferential statistics in analysing quantitative and qualitative data. In particular the study used Pearson Correlation Coefficient and percentages in analysing varied data.

The study explored KMP and in particular looked at Knowledge application and critically examined their individual influence on sustainability of sugar companies in Kenya. The study used null hypotheses to test the influence of KMPs’ and in the analysis, 2-tailed test employed gave sig. ≤ 0.01 to ≤ 0.05 which were used to accept or reject (failing to accept) null hypotheses. In the above objective Knowledge application measurements computed against sustainability parameters also showed appositive correlation(r) index. This implied that Knowledge application in product development and innovation is capable of improving the firms’ performance, growth and sustainability. This means that it is what the companies does with their knowledge resources that matters as far as their performance, growth and sustainability are concerned. The study also found out that due to efficient knowledge utilization the companies have diversified their activities into Brisket (Charcoal made of Burgess) making plant currently with the help of private investors), Ethanol plant, Wine and spirit and water bottling plant through which they intend to improve their profitability, manage ecosystem challenges to ultimately make them sustainable. However the study registered findings that the role of KMPs’(application) in influencing growth and sustainability of sugar companies in Kenya has been down played by financial constraints.

5.2: Conclusion

Based on the findings of the study it can be concluded that effective knowledge application particularly in diversifications of industrial products is capable of influencing the performance, growth and sustainability of sugar companies in Kenya. The governments must intervene in subsidizing the operations and reviewing the policies that manages the sugar sub sector in Kenya and ease the financial constraints suffocating the companies to permit effective KMPs particularly knowledge application by the companies to ensure sustainability.

5.3: Recommendations

5.3.1: To the Government of Kenya

This study recommends that the government removes bureaucratic bottlenecks in approving the companies’ diversification programs since such are institutional art of creativity and innovation through which they utilize their knowledge assets effectively and facilitate the country towards the realization of industrial goal according to vision 2030.

5.3.2: To the Managements of Sugar Companies in Kenya.

The companies to implement strategic KMPs’ that permit knowledge application by encouraging group discovery and innovation by building of collaborative culture. The companies to ensure effective KMPs that leads to innovation and creativity by implementing group based reward system.

5.3.3: For further research.

Since the findings of this study have revealed there has not been effective KMPs due to intervening effects of government policies and implementation challenges, this study finds it prudent to recommend further studies on, ‘Effects of KMPs implementation challenges for sustainability of sugar companies in Kenya’. And because the scope of this study could not have permitted its exhaustiveness as was expected the Strategic KMP measures that can influence sustainability of sugar companies in Kenya is also hereby recommended for further research. These are summarised as under:-

- Repositioning Sugar companies towards vision 2030 by establishing challenges facing them in Knowledge Management Practices for Sustainability in Kenya.

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