

# **THE EFFECT OF COMPANY ENERGY MANAGEMENT POLICIES ON ATTAINING COMPETITIVE ADVANTAGE AMONG MANUFACTURING FIRMS IN KENYA: A CASE OF SELECTED MANUFACTURERS IN NAIROBI COUNTY**

**Yatich Kiptum Henry** 

Department of Management, Mount Kenya University, Kenya

yatich2002@gmail.com

**Ronald K. Chepkilot**

Institute of Postgraduate Studies, Kabarak University

rchepkilot@kabarak.ac.ke

**Aquilars M. Kalio**

Department of Economics, Egerton University, Kenya

kalio67@yahoo.com

**Joel K. Koima**

Department of Bio Informatics, Kabarak University, Kenya

joelkoima@gmail.com

## **Abstract**

*Studies on energy management have focused chiefly on environmental protection, reduction on expenses, and energy wastage. However, gains of energy management practices can be transferred to competitive advantage among manufacturing companies in Kenya in attaining competitiveness. Success in managing competitive advantage arises out of a firm's ability in identifying and implementing actions that can give it an edge over its rivals. Manufacturing firms in Kenya are the highest consumers of both electricity and petroleum. A sizeable number of multinational companies have left the Kenyan market due to high energy costs. In this regard, the study posits that there is need for company driven initiatives in practicing energy*

*management so as to enhance competitiveness. The study objective was: to examine the effect of implementing company energy management policies on attaining competitive advantage among manufacturing firms. The study adopted a survey research design, with a study population of 1,459,870. A sample of 399 respondents was selected. Questionnaires were used to collect primary data while secondary data was obtained from previous studies. Data analysis was done using descriptive statistics and inferential statistics. The study found that company energy management policies are significant predictors of competitive advantage.*

*Keywords: Energy Management, Company Policy, Cost leadership, High profit margins, Product differentiation, Competitive Advantage*

## INTRODUCTION

Energy management practices (EMPs) are, “policies and initiatives that encourage companies to adopt energy management”. It involves monitoring, tracking, analysis and planning of energy use (International Energy Agency, 2012). According to the Kenduiwo and Ng’ang’a (2016) energy efficiency refers to the use of less energy to provide the same level of service or output. A firm’s competitive strategy may be good at one point in time, but may go off course when managers get out of touch with actual realities of business situation (Gregory, 2009). These situations include but not limited to cooperative energy efficiencies. Gregory continues to point out that some of the methods that firms have applied in its competitive process are; low-priced products, high incentives, rebates, discounts, and after-sale services. Competitive advantage is derived primarily from a firm’s ability to build and defend its actions, resources, and capabilities that are more productive than those of its rivals. These tangible and intangible advances are the clearest path to long-term performance gains (Walker, 2004). A company’s strategy on the other hand refers to a set of related actions that managers take to increase their firm’s performance. The challenge with most companies is the desire to achieve superior performance relative to its competitors. In this regard, it can be argued that, if a company’s strategy results in superior performance, then the firm are regarded as having a competitive advantage (Hill and Gareth, 2007).

Electricity, fuel and gas remain as the major energy resource and expense in any manufacturing company today. Practicing energy management of these energy resources can have multiple positive results in addition to attaining gained competitive advantages of such firms. Gregory (2009) further makes a notable recognition that, for firms who blend in the resource-based view for competitive advantage should know that superior performance can be

attained through creation and through bundling resources in unique combinations. His study therefore made observations as to what contributes superior performance. One fundamental strategy that the current study investigated is the ability of energy management benefits being applied in attaining competitive strategies.

In Africa, Bennett (2001) found that the two principal motivations for the implementation of energy efficiency practices are environmental benefits and financial benefits. He further noted that some of the challenges faced in implementing energy efficiency practices are users who believe that they understand their energy problems better than anyone else, resistance to change, perceiving energy as a minor input cost, expensive efficient technologies, and uncertainties in committing resources to long-term projects. He remarked that there is an abundant evidence of energy efficiency practices that make economic sense. In addition, an energy efficient practice is relevant for many African countries that lack the capacity to meet their electricity demand. As an output of the study, energy-efficiency-earnings (The 3-Es strategy), educational programmes and training were identified as the viable mechanisms. In this regard, it should be noted that if energy efficiency practices are adopted by all manufacturing firms, the resultant benefits to the firm, society, environment and society are vast. Mlamo (2004) observed that the South African government had set a target of (12%) energy efficiency target by 2014. He further noted that energy efficiency opportunities in Africa are often disregarded owing to the simple fact that users of such resources are unaware that they exist. He concluded that one of the most cost-effective ways of maximizing a firm's profitability is the adoption of appropriate energy efficiency practices, which in this case, the current study proposes that energy management should be considered universal practices which need to be practiced by all firms. However, the study does not explain how such gains can be transferred to attain a firm's competitiveness. This study therefore addressed the issue of company energy management policies, by ensuring that the manufacturing sector pays a great emphasis on energy management practice so as to enhance attainability of its competitive advantages.

In 2005, the Government of South Africa introduced a voluntary energy efficiency Accord. Since then, numerous companies have continued to sign into the accord. In 2007, 15 of the companies that signed the accord reported significant savings in electricity use, with an overall electricity demand reduction of (12%). In combining the total number of companies enlisted for the program, it was observed that energy savings of up to (38%) was achieved. This therefore translates to lower utility bills for the firms (Government of South Africa, 2008). The South African government recommended energy investments through agreements, and government commitment through incentives. It further highlighted that some of the challenges faced in energy efficiency implementation programs were; finance, organizational commitment,

and lack of training and awareness. The fundamental question that arises out of such studies is the notable benefits that would arise if all firms were to practice energy efficiency on attaining their competitive processes.

The study by Kirai (2007) established that the ever-increasing energy costs, severe lack of energy efficiency practices in Kenya, insecure energy sources and reliance on imported petroleum products as some of the challenges affecting the economy. His study focussed on the entire economy and not to the manufacturing sector only. He also recommended for the energy sector continuous efficiency awareness and information sharing among players. The study also proposed guidelines, short courses, legal frameworks, and government support programmes which can be instituted in all manufacturing firms to boost their efforts on energy efficiency and attaining their competitive strategies. The findings of the study indicated poor energy efficiency adherence with up to 30% energy losses among sector players for which Kenyan manufacturers are the largest consumers of electricity and fuel. The reluctance in the practice of energy efficiency practices renders the salient benefits of energy efficiency elusive. The study however did not address the ability of such practices being practiced by all firms to attain a firm's competitiveness.

United Nations Environmental Programme (2011) observed that for efficient of petroleum products used by motor vehicles; the average consumption of diesel driven vehicles in Kenya was 1 litre per 11 kilometres while consumption of petrol was 1 litre per 13.88 kilometres. Consumption per kilometre in developed economies such as the US, Japan, China and European Union is lower at an average of 16.3 kilometres per litre, showing that the efficiency of their motor vehicles is higher than their Kenya counterparts (UNEP, 2011).

The Kenya Energy Efficiency Accord launched in September 2011 on energy management, saw 19 KAM member companies sign-up voluntarily committing themselves to reduce their energy consumption between (5%) and (15%) by 2016. In November 2012, another ten companies also signed-up. In considering such developments, it can be argued that the Kenyan firms are taking a step forward in realization of the benefits associated with energy efficiency practices (Centre for Cooperation with the Private Sector, 2013). However, by the end of 2016, the cumulative consumption for petroleum products in the manufacturing sector had increased by 8.9% and 2.9% for electricity. In this case, the manufacturing sector consumption showed an increasing trend rather than a reducing trend thus indicating that the sector is yet to reduce its consumption.

Therefore, there is need for the reduction efforts to be enhanced and this can occur through the practice of energy efficiency practice (KNBS, 2017). Energy efficiency is one of the core functional strategies as noted by Hill and Gareth (2007). Increasing energy prices erodes

Kenya's competitiveness in international trade (KAM, 2013). Considering this statement, it is a fact that the manufacturing firms who use much of electrical and petroleum energy for most of their processes bear the burden of such incidences.

The Energy Regulatory Commission (ERC) in Kenya developed the Energy Management Regulations (2012) through the Energy Act 2006. The Act requires users of energy to put in place energy efficiency practices in all sectors. This means that all firms should develop energy performance benchmarks that can be graded upon. In addition, these benchmarks can be used to measure efficiency performance and is instrumental in enforcing compliance of established regulations.

Access to knowledge has also been identified by Rademaeker *et al.* (2011) as a major strategy towards organizational resource management especially for SMEs. In addition, the potential use of technology to raise heat or to create steam is a barrier that faces the whole industry regardless of its size because technology needs to be tested yet and finances for such schemes require substantial amounts of investment.

Despite the benefits that accrue with energy management, a study in United Kingdom (UK) on water management standard in 2009, and cited in Rademaeker *et al.* (2011), shows that companies are reluctant to replace old and inefficient technologies due to pay back time for investment being uncompetitive. The study concludes that; the manufacturing industry's major issues of concerns are energy use in an order of priority. Generally, measures adopted in addressing resource management demonstrated a mix of measures. As such, the report concludes that, "there is substantial room for improvement in this sector to improve resource management performance." Associated with energy management, is a reward system can be introduced for highly efficient firms who perform well in energy management. Investments in resource management at the product level may be difficult, but it should be encouraged in the areas of energy management (Rademaeker *et al.*, 2011). It is worth noting that all firms and stakeholders need to support such strategic initiatives in energy efficient practices. Energy Management leads to a decrease in production costs and increases the competitiveness of a company.

The World Bank studies of Africa in 2013 recommended that policy makers such company management should consider promoting energy management and pursue green energy, which aims to address the energy deficit at no further cost to the environment; and build competitive regional power pools coupled with the requisite legal and regulatory framework (World Economic Forum, 2013).

## Statement of the Problem

There are strong pointers that manufacturing firms end up paying high energy costs occasioned by energy wastage, inadequate supply and continuous instability in prices (ERC, 2012; Kirai, 2004; CCPS, 2013; & KAM, 2015). This erodes their competitiveness in national, regional and international markets, as well as reducing their profit margins. Olingo (2016) contends that high power costs are pushing manufacturers out of Kenya to other countries such as Egypt, South Africa and Ethiopia. The report shows that Sameer Africa, Cadbury, Eveready, Procter and Gamble, Reckitt Benckiser, Johnson and Johnson, Bridgestone, Unilever and Colgate Palmolive have left the Kenyan market for Egypt and South Africa, where electricity costs are lower. In Kenya, the cost of electricity ranges from KES 15-17 per kWh compared with Uganda's KES. 4 per kWh; Tanzania's KES.12 per kWh; Egypt's KES 11 per kWh; Ethiopia's KES 9 per kWh and South Africa's KES 6 per kWh (Wakiaga, 2017; KIPPRA, 2016). The Kenya Association of Manufacturers (2015) indicates that the practice of energy efficiency is yet to be embraced by all firms, yet it yields enormous financial and environmental benefits. Therefore, the study aimed at establishing the effect of adoption of company energy management practices and its relevant benefits in attaining competitive advantages in manufacturing firms.

## Study Objective

To examine the effect of implementation of company energy management policies on attaining competitive advantage among manufacturing firms Kenya.

## Research Hypothesis

$H_{01}$ : Implementation of company energy management policies has no significant effect on attaining competitive advantage among manufacturing firms in Kenya.

## LITERATURE REVIEW

### The Concept of Competitive Advantage

A Firm is able to attain competitive advantage when it is able to achieve a set of actions that allows it to perform better than its rivals.

### The Knowledge-Based view (KBV):

Human knowledge is the fundamental and most treasured resource for any firm (Tiwana, 2002). This is supported by Hamel and Prahalad (1994) who pointed out that the know-how of any firm's employees is the main driver for superior performance. Evans (2003) argued that the use of organizational resource decreases when the know-how of its employees is enhanced.

Beckmann (1999) noted that information is imperative when organizational performance is being sought. In the current study, it is important that information on energy management is appropriate when energy management is required in attaining competitive advantage. Zack (1999) argues that innovative knowledge gives the firm a competitive edge over its competitors and as such knowledge in energy management becomes a fundamental need for every firm that seeks superior performance in the manufacturing sector.

Haas and Hansen (2005) suggested that a firm can apply its competences in performing significant activities so as to gain competitive advantage over its rivals. It is the study's viewpoint that such application of competencies can be considered in the practice of energy management so as to attain competitive advantage. In applying such knowhow to energy management, a firm will be able to boost its efforts for superior performance especially in the rapidly changing global business environment (Teece *et al.*, 1997).

Grant (1996) noted that one of the best competences is the activity-related capabilities which enables a firm to consider such aspects as related to energy management, given that manufacturing companies in Kenya are the largest consumers of electricity and the second largest consumers of petroleum products, hence the need for the firm to continually inform itself of the new methodologies and actions that can promote the attainment of competitive advantage (Sirmon *et al.*, 2003; KNBS, 2012; Zack, 1999). As such, the study posits that company energy management policies can be a significant ingredient in attaining competitive edge among its rivals.

## Empirical Review

Company energy management practices in one cement manufacturing company between 2003-2013 found that through such practices, the company was able to reduce their energy cost as a proportion of total revenue by more than 5%. This highlighted the need for tailor-made company energy management guidelines in today's competitive business environment. Training and sensitization on energy management practices also becomes a key aspect in ensuring that an organization achieves its energy management goals in attaining competitive advantage (Kamath & Sinha, 2014).

International Energy Agency (2012) and United Nations Industrial Development Organization (2008) notes that as part of company energy management initiatives, providing incentives and rewards for drivers, training employees, involving staff during networking events, reviewing case studies and providing energy management guidance materials to employees supports the promotion of better energy management initiatives. The agency further recommends vibrant energy policy, management involvement, continuous energy reviews,



benchmarking, target setting, and audits as some of the practical strategies in enhancing energy management initiatives.

Kenya Association of Manufacturers through the Centre for Energy Management and Conservation provides training and energy audits on energy management to manufacturers in Kenya. It also oversees the yearly Energy Management Awards (EMA), which recognizes major and attainable gains in energy management through company energy management initiatives among participating companies (Laurea, 2015). This therefore enables manufacturers to strive in implementing better energy management practices by developing individual management practices and enhance their efforts in attaining competitive advantage.

International Project Management Office (OGPI) (2013) through a presentation made by Oimeki observed that Kenya is yet to establish an Energy Research Institute, or Energy Research Labs that can carry out energy use and energy management studies. This therefore, hinders firms that have not implemented company driven energy management practices as a strategy in attaining competitive advantage. ERC (2015) notes that the government had planned to set minimum energy management standards for certain machines and to increase awareness of energy management and related technologies so as to improve organizational energy management practices. However, this is yet to be realised fully as a pivotal strategy in enhancing energy management practices among the manufacturing firms in Kenya.

Hill and Gareth (2007) states that for a company to be efficient, management practices have to be adopted. This is because a company being a device for transforming inputs (labour, land, capital, management and technological knowledge) into outputs (the goods and services produced), there is need to engage in practices that yield benefits for its competitive strategies. They further argue that the simplest measure of energy management is the quantity of inputs that it takes to produce a given output. This implies that when a company is efficient in its energy use, it requires fewer inputs such as energy to produce its products and services. This in turn lowers its cost structure. An efficient company therefore reaps the benefit of lowered costs than its rivals. UNIDO (2008) in its studies among member countries proposed a raft of recommendations policies for enhancing energy management in developing nations and transitional economies. The study submitted that target-setting agreements, setting up energy management standards, establishing system optimization training and tools, staff capacity-building to create system optimization experts, documentation, and provision of government tax incentives and recognition as strategies that can be adopted to promote energy management.

Natural Resource of Canada (2002) in its studies of firms in Canada revealed that companies should carry out energy audits as the first step in developing organizational energy management programs. It further established that energy audit varies between organizations



but the ultimate goal is to improve energy management and decrease energy costs. Their study also established that organization engage external consultants carry out energy audits and there were great opportunities to be pursued in utilizing internal resources. In its conclusion, Natural Resource Canada (2002) notes with great importance that energy audits enable organisations to verify effectiveness of its energy management opportunities.

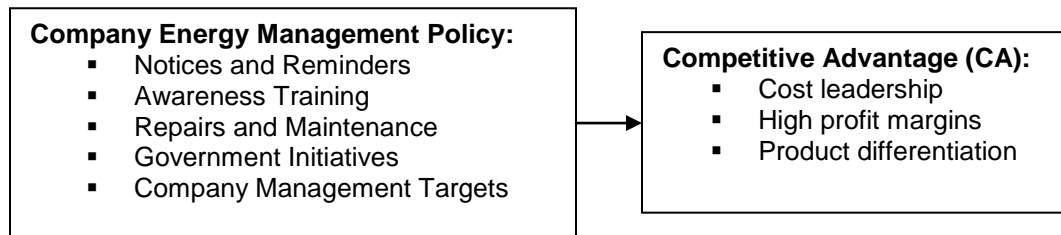
Environmental Protection Agency (2013) established that recommending that successful benchmarking by companies on energy management programs should be specific from firm to firm and that is should conform to the structure and culture of every organization. It further stated that all organizations stand to benefit by implementing benchmarking initiatives and that such approach may not wholly address the requirements of every firm.

The U.S Department of Energy (2014) in its studies in USA, established that organizations aspiring to practice energy management should establish a criteria and documentation that enables companies to refer to when purchasing new motor equipment. As such, organizations are able to identify and determine the energy and cost savings requirement for such machines and equipment. This enables the firm to replace old and inefficient product with premium efficient units.

Energy Saving Trust (2016) in its study in the UK documented that companies should automated its lighting systems for energy efficient lamps; it further stated that companies should install automatic switch-off for daylight use, although manual control of light fittings are allowable. The study further recommended that automatic controls should be installed in lit areas so that it can automatically switch of when the area is unoccupied. Johnson (2012) in his study of UK firms also recommended that automation of lighting sensors is ideal for areas where lighting might be left on when not in use. He noted that with such installations, companies can save up to more than 80% in energy costs. In addition, he noted that the dimming of lights automatically with daylight controls will also extend the lamp life hence saving costs for the organisation.

McCallum (1997) in his study of Canadian firms revealed that with automaton of heating systems, firms experience a higher level of comfort in buildings and in equipment used because heat is automatically controlled around-the-clock. As such, energy savings are realised and energy costs are reduced. Further, Kosir et al. (2010) in its study carried at Siemens company noted that automation of ventilation and cooling systems leads to proper system regulation and automatic control. In addition, they argued that energy savings and cost savings cannot be realized without investing in sufficient automatic control mechanisms.

Figure 1. Conceptual Framework



### Company Energy Management Policy

These include Notices and Reminders, Awareness Training, Repairs and Maintenance, Government Initiatives, and Company Management Targets as required by Energy Regulatory Commission. When firms implement energy management practices, the end result is accrued savings on running and energy costs to the firm. It also leads to energy savings. These savings therefore, can attain its competitiveness in the market by creating a surplus income which can be invested in other strategic areas or can be used to even lower performance of other strategic business units (SBUs). However, in the absence of such policies, energy consumptions and costs are likely to remain high or increase significantly, thus may hurt the firm's strategic management initiatives already implemented.

The Energy Management Regulations, 2012 requires that manufacturing companies in Kenya should be able to prepare and submit to Energy Regulatory Commission an energy management policy for approval and implementation. As such, by the end of 2016, the Energy Regulatory Commission (ERC) had approved 268 company energy policies in Kenya. These company energy policies are specific and suitable to individual company's energy management targets and plans (ERC, 2016). UNIDO (2013) in its practical guide for implementing an energy management system recommended a wide range of strategies that companies could adopt when considering the practice of energy management. The report recommended a day-to-day monitoring and analysis of energy consumption, continuous improvement of energy management practices, calibration of machines and equipment, appointment of energy management officers, and communicating expectations to all staff. In addition, the report also recommended management commitment to energy management, establishing objectives and targets, establishing energy management teams, continuous analysis of energy usage, and benchmarking energy management efforts among industry players. Further, the report recommend the use of competence personnel tasked with energy management, carrying out internal audits, management reviews, computing annual energy trends, and prioritizing

opportunities identified during the implementation of organizational energy management policies.

### **Limitations of the Current Study**

It is in this view that the limitation of this study was the moderating variables which influences competitive advantage of a firm. The study recommends that future studies may focus on the effect of the moderating variable on dependent variable. In addition, the study focused on the manufacturing firms in Nairobi and its environs, hence limiting the inferences of the study to the manufacturing sector alone. Other sectors may also be focused, so as to establish the influence of organizational energy management policies on firm competitiveness.

## **RESEARCH METHODOLOGY**

### **Research Design**

The study adopted a mixed methods approach. The approach enabled collection of facts and relevant information from respondents regarding the effect of energy management on attaining competitive advantage among manufacturing firms (Hussey & Hussey, 1997). The study further utilized survey research design. This enabled the researcher to collect data by sampling respondents selected manufacturing firms in Nairobi Kenya (Hussey & Hussey, 1997).

### **Population of the Study**

KNBS (2014) observed that the manufacturing companies in Nairobi and its environs has approximately 1,459,870. The population was adequate for the study, given that Nairobi region hosts the highest number of manufacturing companies.

### **Sampling**

This study considered a sample of 399 respondents obtained using Yamane (1967) formula selected at 95% confidence level as shown below as adequate. The study adopted a simple random sampling in selecting respondents among 14 purposively selected manufacturing in Nairobi County.

### **Data Collection**

This study utilized a questionnaire which was more practical and ensured that a large amount of data was collected from as many respondents as possible; they are also less time consuming. This method was more suitable for the study since it sought for factual answers and opinions relative to the simple 5-Point Likert scales.

Secondary data was retrieved from past studies and related literature such as studies by the Kenya Association of Manufacturers, Kenya National Bureau of Statistics annual reports, Energy Regulatory Commission reports, International Energy Agency, Institute of Economic Affairs, United Nations Development Organization, Online Journals, and Unpublished student theses.

### **Data Analysis and Presentation**

The data collected was analysed using both descriptive statistics and inferential statistics. The empirical findings were then presented using Tables and Figures.

## **FINDINGS**

### **Response Rate**

According to American Association for Public Opinion Research (AAPOR, 2010), response rate is the end results or outcome for surveys. A high response rate helps to ensure that the survey results are representative of the survey population (Data Analysis Australia, 2013; Wyse, 2012). The study targeted a sample of 399 respondents. The researcher managed to successfully collect data from 314 of them. This represented a response rate of 78% of the sample size. The researcher considered the response rate to be good enough, since it was above appropriate threshold of 55.6% (Baruch, 1999).

### **Assessment of Reliability of Study Measures**

Table 1: Assessment of Reliability

<b>Variable</b>	<b>Cronbach Alpha coefficients</b>
Company energy management policies	0.837

Assessment of Reliability of Study Measures was done using Cronbach Alpha. The study measures were found to be highly reliable in that they all had an alpha coefficient greater than the minimum accepted Cronbach's alpha coefficient of 0.70 which was the predetermined cut off point.

## Intensity of Company Energy Management Policy (Chi-Square Goodness-of-Fit Test)

Table 2: Company Energy Management Guidelines(Chi-Square Goodness-of-Fit Test)

<b>Test Statistics</b>									
S/No.	Variable	SD	D	NS	A	SA	Chi-Square	df	Asymp. Sig.
1.	Notices & Reminders on Energy Conservations Actions			56 17.8%	172 54.8%	86 27.4%	69.274 <sup>a</sup>	2	0.000
2.	Employees are Trained on Energy Efficiency Measures	1 0.3%	2 0.6%	53 16.9%	170 54.1%	88 28%	314.312 <sup>b</sup>	4	0.000
3.	Company Benchmarks With Other Firms		22 7%	13 4.1%	165 52.5%	114 36.3%	206.688 <sup>c</sup>	3	0.000
4.	Firm Reviews and Analyses Data on Energy Use		57 18.2%	72 22.9%	151 48.1%	34 10.8%	98.611 <sup>c</sup>	3	0.000
5.	Frequent Check-ups on Motor-Powered Equipment and Machines		66 21%	39 12.4%	181 57.6%	28 8.9%	188.191 <sup>c</sup>	3	0.000
6.	Investment in Insulation & Mouldings	12 3.8%	80 25.5%	95 30.3%	115 36.6%	12 3.8%	146.796 <sup>b</sup>	4	0.000
7.	Company Gets Tax Relief for EE Practices	2 0.6%	68 21.7%	116 36.9%	116 36.9%	12 3.8%	190.522 <sup>b</sup>	4	0.000
8.	Received Energy Auditors	1 0.3%	56 17.8%	73 23.2%	150 47.8%	34 10.8%	197.497 <sup>b</sup>	4	0.000
9.	There are Energy Reduction Targets	24 7.6%	56 17.8%	60 19.1%	139 44.3%	35 11.1%	129.599 <sup>b</sup>	4	0.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 104.7.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 62.8.

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 78.5

The study objective had 9 item questions that the study sought to gather responses to. In order for the study to obtain adequate feedback from respondents, the 5 Likert scale items were presented to the respondents and their responses analysed and presented in Table 2.

From Table 2, the variable item number 1 was statistically significant Chi-Square ( $\chi^2 = 69.274^a$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether notices and reminders on energy conservations actions led to attaining competitive advantage among manufacturing firms, with

respondents showing a preference for such practice, hence facilitating further analysis. This indicated that notices and reminders on energy conservations actions contributed to improvement in attaining competitive advantage among manufacturing firms. The findings and recommendations by (UNIDO, 2013) supports the study findings, by establishing that; the successful implementation of an energy management practices requires the commitment and determination of staff at every level of the firm. It further recommends that during the planning phase for energy management, firms should identify staffs that have both a direct and indirect influence on energy usage within the firm and in addition, the training needs for those people so as to achieve the desired objectives .

From Table 2, the variable item number 2 was statistically significant Chi-Square ( $\chi^2 = 314.312^b$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether training of employees on energy efficiency measures led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that training of employees on energy management practices led to significant improvement in attaining competitive advantage among manufacturing firms. Studies by UNIDO supports the current finding by stating that capacity-building is one of the key avenues to create system optimization experts, now and in the near future, who can advance the practice of energy management practices (UNIDO, 2008).

From Table 2, the variable item number 3 was statistically significant Chi-Square ( $\chi^2 = 206.688^c$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether company benchmarks with other firms led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that benchmarks on energy management practices leads to significant improvement in attaining competitive advantage among manufacturing firms. UNIDO (2013) agrees with the current study findings that in addition to securing top management commitment when implementing energy management practices, there is need for benchmarking or comparing the company's efforts on energy management practices from the entire manufacturing sector or part of the sector. In doing so, the availability of relevant benchmarks can provide evidence for improvement where possible. The same report recommends that companies that endeavour to practice energy management should measure and monitor their energy performance while comparing achievements with previous years. U.S. Environmental Protection Agency (2013) agrees with the study findings by recommending that successful benchmarking programs should be tailored

to conform to the structure and culture of each organization. It further stated that, although a distinct approach may not address the requirements of every firm, all organizations stand to benefit by implementing a benchmarking initiatives. Wajer and Helgerud (2007) in their study in Europe is consistent with the study finding that benchmarking exercises enables a firm to eliminate identified inefficiencies in energy usage.

From Table 2, the variable item number 4 was statistically significant Chi-Square ( $\chi^2 = 98.611^\circ$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether energy management reviews and analyses of data on energy use led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that if manufacturing company frequently reviewed and analysed data on energy use, the resultant effect is a significant improvement in attaining competitive advantage among manufacturing firms. The findings by (UNIDO, 2013), agrees with the current findings in stating that energy auditors and managers appointed by respective companies have a role in providing guidance and advice to the company management on energy management efforts. In addition, they should also provide assistance in reviewing energy management activities to ensure organization objectives are attained with regard to energy management initiatives and action plans.

From Table 2, the variable item number 5 was statistically significant Chi-Square ( $\chi^2 = 188.191^\circ$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether frequent check-ups on motor-powered equipment and machines led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that frequent check-ups on motor-powered equipment and machines contribute a significant improvement in attaining competitive advantage among manufacturing firms. UNIDO (2013) agrees with the study findings by recommending that organizations need to check back on what has happened previously by frequently checking records such as training plans, operator logs, action plans and the various other spread sheet tools associated with energy management practices to ensure conformity. The report further notes that once the company has a breakdown of the different energy uses, it is imperative to check energy usage by different systems against the energy bills incurred by the firm, so as to address inefficiencies that might arise out of the monitoring.



From Table 2, the variable item number 6 was statistically significant Chi-Square ( $\chi^2 = 146.796^b$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether investment in insulation & mouldings led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. It therefore, indicated that investment in insulations of heaters, and moulding machines contributes a significant improvement in attaining competitive advantage among manufacturing firms. The findings are supported by the recommendations from (UNIDO, 2013) which noted that insulation of piping is suitable in manufacturing systems to reduce the risk of leakage in welded joints and minimize heat loss for heat related systems.

From Table 2, the variable item number 7 was statistically significant Chi-Square ( $\chi^2 = 190.522^b$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on whether provision of tax relief to manufacturing companies due to energy management practices led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that provision of tax relief for energy management practices or initiatives by government agencies contribute to improvement in attaining competitive advantage among manufacturing firms. The findings agree with the recommendations by UNIDO that tax incentives and recognition is a major boost to the industrial sector in advancing the cause for energy management practices (UNIDO, 2008)

From Table 2, the variable item number 8 was statistically significant Chi-Square ( $\chi^2 = 197.497^b$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of agreement among manufacturing firms on the visits by energy management auditors led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. This indicated that when the government sends energy management auditors to conduct energy management audits in manufacturing firms, it contributes to improvement in attaining competitive advantage among manufacturing firms. The findings agrees with (UNIDO, 2013) which recommended in its study that energy management auditors when conducting internal audit needs to have adequate experience or training in systems audits and to understand the Energy Management System requirements.

From Table 2, the variable item number 9 was statistically significant Chi-Square ( $\chi^2 = 129.599^b$  at  $p < 0.05$ ). This indicated that there was a statistically significant difference of

agreement among manufacturing firms on whether the presence of energy reduction targets led to attaining competitive advantage among manufacturing firms, with respondents showing a preference for such practice, hence facilitating further analysis. The finding is supported by UNIDO which noted that target-setting agreement with relevant energy related organization is a significant effort towards enhancing firm competitiveness (UNIDO, 2008).

The overall results from Table 2 reveal a positive preference for company energy management policies towards the management of electricity and petroleum resources by manufacturing companies. The study finding illustrates that company initiated energy management practices can yield benefits that can be harnessed by manufacturing firms so as to improve its competitive advantages and also reduces expenses on electricity and petroleum costs, which stood at an average annual expense of 10.5% of the total firm revenues.

The positive preference by manufacturing companies on the implementation of company energy management policy is consistent with the findings of Abed *et al.* (2015) which revealed that if companies consider energy management stickers and notes when purchasing equipment and machines, this can enable manufacturers to be informed by the informative labels affixed to manufactured products indicating products' energy performance and management in a way that allows for comparison between similar products or endorses the products' use. However, the ability by manufacturing companies in implementing company energy management practices is hampered by finance as indicated by ERC (2013) which showed that the largest barrier to implementation of energy efficient practices is finance and lack of sufficient incentive from government such as tax rebates and exemptions for importation and purchase of well labelled energy efficient technologies, equipment or machinery. UNIDO (2013) agrees to the current findings by recommending that care must be taken so that organizational policy is not just considered as a symbol of management commitment without actual commitment place to support it. Organizational energy management policy required continual improvement of energy performance, commitment to provide the necessary resources, commitment to provide the necessary resources, commitment to comply with all legal and other requirements, and support for the purchase of energy efficient products and services where economically feasible so as to promote the practice of energy management and enhance competitiveness of the firm.

The findings agree with Jasinowski (2002) who showed that nearly (60%) of manufacturers in USA foresaw the practice of electricity management providing a saving of up to 20% on their energy Expenses (Jasinowski, 2002). The report further showed that majority of the manufacturers in USA would consider taking additional voluntary steps, such as developing an energy management information campaign for employees. The findings further revealed that

approximately 85% of the companies answered “yes” when asked, “Has your company undertaken energy management actions in the past five years?”

The result further agrees with the findings in the U.S. studies, which showed that nearly 4 out of 10 company managers had been trained in energy efficient practices; and approximately 1 in 3 managers benchmarked against baseline energy use (Jasinowski, 2002). It is also important to note that the findings from the U.S. study shows that more than 90% of the companies had not developed company energy management policy; although 40% of them said they would consider developing energy efficiency information campaign for employees.

### Correlation Analysis

Table 3: Pearson Correlation Analysis

		Dependent Variable- Competitive Advantage	Objective: Company Energy Management Policy
Dependent Variable- Competitive Advantage	Pearson Correlation	1	.192**
	Sig. (2-tailed)		.001
	N	314	314
Objective : Company Energy Management Policy	Pearson Correlation	.192**	1
	Sig. (2-tailed)	.001	
	N	314	314

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

As shown in Table 3, Pearson’s correlation coefficient is  $r = 0.192$  at  $p = 0.05$ ) between energy management regulations and competitive advantage. This implied that there was a weak positive and significant correlation between energy management policy in attaining competitive advantage. It also implied that, implementation of energy management policies improved the competitiveness of a firm at local, national and international markets. The finding is consistent with the findings of (Rademaeker, Asaad, and Berg, 2011) which showed that investment and upgrading of organizational facilities led to reduction of energy used. It also agreed with the findings of International Energy Agency (2012) and United Nations Industrial Development Organization (2008) which noted that as part of company energy management initiatives, providing incentives and rewards for drivers, training employees, involving staff during networking events, reviewing case studies and providing energy management guidance materials to employees led to better practice of the better energy management initiatives. Kenya Association of Manufacturers (2015) also recognizes that major and attainable gains in energy

management can be achieved through company energy management initiatives among participating companies. Hill and Gareth (2007) states that for a company to be efficient, management practices have to be adopted by the firm so as to attain a competitive edge.

## Regression Analysis

Table 4: Regression Analysis

<b>Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.192 <sup>a</sup>	.037	.034	.08448	.037	11.909	1	312	.001

a. Predictors: (Constant), Objective 2: CEMP-Weighted Means for 9 Sub Variables

## ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.085	1	.085	11.909	.001 <sup>b</sup>
	Residual	2.227	312	.007		
	Total	2.312	313			

a. Dependent Variable: Competitive Advantage-

b. Predictors: (Constant), Objective : Company Energy Management Policies

## Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.935	.046		85.945	.000		
	Objective 2: Company Energy Management Policies	.043	.013	.192	3.451	.001	1.000	1.000

a. Dependent Variable: Competitive Advantage

The objective of the study sought to examine the level of implementation of company energy management policy on attaining competitive advantage among manufacturing firms. The aggregate mean score of competitive advantage among manufacturing firms (dependent variable) were regressed on the aggregate mean score of implementing company energy management policy (independent variable) and the relevant research findings are presented in

Table 4. The regression results revealed a statistically significant relationship between company energy management policy and competitive advantage at ( $p$ -value = 0.05). The null hypothesis that ( $H_{01}$ : Implementation of company energy management policy has no significant effect on attaining competitive advantage among manufacturing firms) was therefore rejected at  $p = 0.05$ . The regression results showed that a one percentage increase in energy management practices led to an increase of competitive advantage by 3.7%. This change is significantly beneficial to the firm. From the regression results, the study therefore rejected the null hypothesis.

Previous studies support training and sensitization on energy management practices as a key aspect in ensuring an organization achieves its energy management goals (Kamath & Sinha, 2014). In addition, Kiema (2014) notes that one unit of energy saved, corresponds to a saving of three units generated. Backlund et al. (2012) also argues that a gradual practice of energy management leads to a reduction of operating costs and increases competitiveness and productivity of the company. As such, Kenyan firms need to fully establish and implement company energy management practices as part of its strategic plans and decisions (Hartmann & Huhn, 2009). Training employees, information sharing, incentives and benchmarking are some of the company measures which if implemented improve firm competitiveness through enhancing energy management practices (Bennett, 2001).

## CONCLUSION

The objective of the study sought to determine the effect of implementation of company energy management policy on attaining competitive advantage among manufacturing firms. The regression results from Table 4 reveal statistically significant relationship at 5% significance level between company energy management policy and competitive advantage  $p$ -value = 0.05. It is important to note that training and sensitization on energy management practices is a key aspect in ensuring an organization achieves its energy management goals (Kamath & Sinha, 2014). However, majority of organizations in Kenya are yet to fully sensitize its staff on the significant benefits of energy management initiatives, especially in the small manufacturing firms (Henri *et al.*, 1999). This is also supported by International Energy Agency (2012) and United Nations Industrial Development Organization (UNIDO) (2008) who revealed that providing incentives and rewards for drivers, training employees, involving staff during networking events, reviewing case studies and providing energy management guidance materials to employees supports the promotion of better energy management initiatives.

Kenyan manufacturing firms should provide incentives and rewards for drivers, training employees, involving staff during networking events, reviewing case studies and providing energy management guidance materials to employees supports the promotion of better energy

management initiatives. In additions, a vibrant energy policy, management involvement, continuous energy reviews, benchmarking, target setting, and audits should be enhanced as some of the practical strategies in enhancing energy management initiatives (IEA, 2012) and (UNIDO, 2008).

Based on the study findings therefore, the study concluded that energy management regulations, company energy policies, energy efficient technology and energy expenses contribute significantly to the attainment of competitive advantage among manufacturing firms in Kenya with an explanatory power of 44.8% explained by energy management practices in the attainment of competitive advantage. KAM (2017) during its annual energy management awards is consistent with the study findings by noting that organizations with policies for energy management saved on energy costs and, more importantly, improved its industry competitiveness. UNIDO (2008) in its studies in Brazil and United States of America made a definite revelation that companies in countries with an emerging and rapidly expanding industrial sector have a particular opportunity to increase their competitive advantages by practicing best energy management practices from firm inception rather than retrofitting the practices during the growth stages of a business life cycle.

Manufacturing firms in Kenya should therefore strive to improve on the implementation of energy management regulations so as to reduce its overall energy Expenses and consequently improve its competitiveness at the local, national and the international business environment.

## REFERENCES

- AAPOR. (2015). Response rate: an overview. Retrieved November August 13, 2015 from <http://www.aapor.org/AAPORKentico/Education-Resources/For-Researchers/Poll-SurveyFAQ/Response-Rates-An-Overview.aspx>
- Abed, K. A. et al., (2015). Cost Analysis of Energy Efficient Domestic Refrigerator. International Research Journal of Electronics & communication Engineering Volume1, Issue 4 of May 2015. National Research Centre, Cairo, Egypt
- Backlund et al., (2012). Energy efficiency potentials and energy management practices in Swedish firms. Summer study on energy efficiency in industry. Linköping. Sweden
- Baruch, Y. (1999). Response rate in academic studies-a comparative analysis, Vol. 52 No. 4. Human Relations. Sage Publications. Retrieved from [hum.sagepub.com](http://hum.sagepub.com) on November 17, 2016
- Beckmann, T.J. (1999). The current state of knowledge management in J, Liebowitz, (ed.), Knowledge Management Handbook, Boca Raton: CRC Press
- Bennett. K. (2001). Energy efficiency in Africa for sustainable development: A South African perspective. Energy Research Institute: University of Cape Town
- Center for Cooperation with the Private Sector, (2013). Kenyan manufacturers save costs by improving energy efficiency, A business case in corporate social responsibility. Journal
- Data Analysis Australia. (2013). Response Rates. Data analysis Australia: Retrieved November 13/11/2013, 2013, from <http://www.daa.com.au/analytical-ideas/response-rates/> Delhi: Pearson

Energy Regulatory Commission, (2012). Legal Notice No. 102. Energy Act (No. 12 of 2006). Government of Kenya. Nairobi. Kenya

Energy Saving Trust, (2016). The right light, introduction for designers and house builders-Selecting low energy lighting. Retrieved from: [energysavingtrust.org.uk](http://energysavingtrust.org.uk)

ERC, (2013). Energy Performance Baselines and Benchmarks & The Designation of Industrial, Commercial and Institutional Energy Users in Kenya. Retrieved from: <http://www.ecocareea.com/>

ERC, (2016). Development of A Fuel Economy Labeling and Feebate Programme for Motor Vehicles in Kenya. Final Draft Report. University of Nairobi Enterprises and Services Limited, Energy Regulations Commission. Nairobi, Kenya.

Government of South Africa, (2008). Assessment study of the energy efficiency accord. Publication of the Department of Minerals and Energy. South Africa

Grant, R. (1996). Prospering in dynamically-competitive environments: organisational capability as knowledge integration. *Organisation Science*, vol. 7.

Gregory, D. (2009). *Strategic Management: Texts and Cases* (4th ed.). McGraw-Hill/Irwin: New York

Haas, M. R. & Hansen, M. T. (2005). When using knowledge can hurt performance: The value of organizational capabilities

Hamel, G. & Prahalad, C. (1994). *Competing for the Future*. Boston: Harvard University Press.

Hartmann, A. & Huhn, W. (2009). *Energy: A key to competitive advantage-New sources for growth and productivity*. McKinsey & Company, Inc.

Henri, L.F., Erik T. V., & Peter N. (1999). *Energy saving by firms: decision-making, barriers and policies*. Amsterdam. Department of Spatial Economics, Vrije Universiteit. Retrieved from [https://www.researchgate.net/profile/Henri\\_LF\\_De\\_Groot/publication](https://www.researchgate.net/profile/Henri_LF_De_Groot/publication)

Hill, J., & Gareth, C. (2007). *Strategic management theory* (7th ed.). Boston, USA: Houghton Mifflin Company. p.3,6,77, 110-126.

Hussey, J., & Hussey, R. (1997). *Business Research: A practical guide for undergraduate and postgraduate students*. New York: Palgrave

IEA (2012). *Energy Management Programmes for Industry: Gaining Through Savings*. Institute for Industrial Productivity. International Energy Agency.

Institute of Economic Affairs IEA (2012). *Energy Management Programmes for Industry: Gaining Through Savings*. Institute for Industrial Productivity. International Energy Agency.

Jasinowski J. J. (2000). *Energy efficiency toolkit for manufacturers: eight proven ways to reduce your costs*. National Association of Manufacturers. USA. Retrieved from <http://www.energy.ca.gov/process/pubs/toolkit.pdf>. John Wiley and Sons Inc., Singapore.

Johnson, R. (2012). *Industrial Lighting Best Practices*. US Lamp, Inc. Retrieved from: [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)

KAM, (2017). KAM's holds the 13th Energy Management Award. Retrieved 7th June, 2017, from: <http://www.kam.co.ke/kams-holds-13th-energy-management-awards/>

Kamath, S. & Sinha, P. (2014). *Energy management for competitive advantage*. Confederation of Indian Industry. India. KPMG.

Kenya Association of Manufacturers, (2013, March 8). High Energy Prices, erodes Competitiveness in trade. *The Standard Newspaper* , p. 33.

Kenya Association of Manufacturers, (2015). KAM Sectors. Retrieved 30th June, 2015 from <http://manufacturersandexportersdirectory.co.ke/KAM-Focus/KAM-Sectors>

Kenya Association of Manufacturers, (2015). KAM Sectors. Retrieved 30th June, 2015 from <http://manufacturersandexportersdirectory.co.ke/KAM-Focus/KAM-Sectors>



Kiema, M. (2014). 10thEnergy Awards celebrate over Sh10bn in energy savings. Retrieved 29/06/2015.<http://www.capitalfm.co.ke/eblog/2014/04/08/10th-energy-awards-celebrate-over-sh10bn-in-energy-savings/>

KIPPRA, (2016). Kenya Economic Report 2016. Kenya Institute for Public Policy Research and Analysis (KIPPRA). Nairobi, Kenya.

Kirai. P. (2004) Removal of barriers to energy efficiency and conservation in small and medium scale enterprises (SME) in Kenya. Industrial energy efficiency project Kenya. Presentation at UNFCCC mitigation in Buenos Aires

Kirai. P. (2007). Promotion of energy efficiency in industries: experiences from Kenya. Kenya Association of Manufacturers. Paper presented at the UN Forum on Energy Efficiency and energy security in Seoul, Korea 17-18 December 2007.. Nairobi: Kenya

KNBS. (2012). Kenya Facts and Figures. Kenya National Bureau of Statistics Nairobi. Kenya

KNBS. (2014). Kenya Facts and Figures. Kenya National Bureau of Statistics. Nairobi. Kenya

KNBS. (2017). Economic Survey 2017. Kenya National Bureau of Statistics. Nairobi. Kenya

Kosir, M., Krainer, A., Dovjak, M., Perdan, R., Kristl Z. (2010). Alternative to the Conventional Heating and Cooling Systems in Public Buildings. *Strojniški vestnik - Journal of Mechanical Engineering* 56(2010)9, 575-583. Retrieved from: <http://citeseerx.ist.psu.edu>

Laurea, (2015). Kenya Country Report. Retrieved from: <https://www.laurea.fi/en/document/Documents/Kenya%20Country%20Report.pdf>.

McCallum, B. (1997). Small-Scale Automated Biomass Energy Heating Systems: A Viable Option for Remote Canadian Communities? Canadian Forest Service. Ontario, Canada

Mlamo P.N. (2004).Draft energy efficiency strategy of the republic of South Africa Department of Minerals and Energy. Pretoria, SA.

OGPI, (2013). National Round Table Forum on “Energy Accessibility & Efficiency in Kenya” Report. University of Alicante. ENRICH Project, retrieved from: [www.enrich-project.eu](http://www.enrich-project.eu)

Olingo, A. (2016). Fakes, high energy costs push manufacturers out of Kenya. The East African. Retrieved on March 2017. <http://www.theeastafrican.co.ke/business/>

Rademaeker, K., Asaad, S., & Berg, J. (2011). Study on the competitiveness of the European companies and resource efficiency. [http://ec.europa.eu/enterprise/policies/sustainable-business/sustainableindustry/forums/pastforums/files/resource-efficiency-and-competitiveness-draft-final-report\\_en.doc](http://ec.europa.eu/enterprise/policies/sustainable-business/sustainableindustry/forums/pastforums/files/resource-efficiency-and-competitiveness-draft-final-report_en.doc)

Sirmon, D.G., Hitt, M.A., & Ireland, R.D. (2003). Managing the firm’s resources in order to achieve and maintain a competitive advantage. A paper presented at the annual Academy of Management meeting, Seattle.

Teece, D.J, Pisano, G.& Shuen, A. (1997). ‘Dynamic capabilities and strategic management’, *Strategic Management Journal*, vol. 18.

Tiwana, A. (2002). *The Knowledge Management Toolkit: Orchestrating IT, Strategy, and Knowledge Platforms*. Prentice-Hall.

U.S. Department of Energy (2014). Premium Efficiency Motor Selection and Application Guide. A handbook for industry. Washington.

U.S. Environmental Protection Agency (2013). Benchmarking to Save Energy Protect Our Environment through Energy Efficiency. Energy Star. Retrieved from [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark)

UNIDO (2008). Policies for promoting industrial energy efficiency in developing countries and transition economies. Retrieved from <http://www.unido.org/index.php?id=o71852>. Vienna.

UNIDO (2013). Independent UNIDO Country Evaluation-Republic of Kenya. Vienna: United Nations Industrial Development Organization.

United Nations Environment Programme (2011). Developing a National Vehicle Fuel: Economy Database & Baseline: UNEP. Kenya

United States Department of Energy (2003). Improving energy efficiency at U.S. plastics manufacturing plants. U.S. Department of Energy. U.S.A. <http://www.energy.ca.gov/process/pubs/toolkit.pdf>

Wajer, B.H, & Helgerud, H.E. (2007). Energy Management and Benchmarking in Small and Medium Enterprises. New Energy Performance. ACEEE.

Wakiaga, F. (2017). Manufacturing Priority Agenda 2017. Driving Industrial Transformation for Job Creation and Inclusive Economic Growth- Kenya Association of Manufacturers. Nairobi, Kenya.

Walker, G. (2004). Modern competitive strategy. New York: McGraw-Hill Company.

World Economic Forum. (2013). The Africa Competitiveness Report-The World Bank.

Wyse, S. E. (2012). Snap Surveys. What is a Good Response Rate for a Random Survey Sample? Retrieved November 13, 2013, from <http://www.snapsurveys.com/blog/good-response-rate-random-survey-sample/>

Yamane, T. (1967). Statistics: An Introductory Analysis, 2nd Ed., New York: Harper and Row

Zack, M. (1999). Developing a knowledge strategy, California Management Review, vol. 41, no. 3.