

## IMPACT OF COST REDUCTION STRATEGIES ON PERFORMANCE OF TEA FACTORIES IN EMBU COUNTY, KENYA.

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### ABSTRACT

**K**enya's overall economic and social development is highly dependent on the growth and development of the agriculture sector. Tea as a leading cash crop has made significant contribution to the economy. Tea exports increased by nearly 30 percent in 2010 reaching 441 tonnes valued at USD 1.3 billion. However the tea industry is faced with myriad challenges that threaten its survival if immediate intervention measures are not put in place. The tea industry is challenged by high cost of labour, farm inputs, energy/fuel, numerous taxes and levies. This study aimed at determining the impact of the cost reduction strategies initiated by various tea factories in Embu County. A total of 18 managers, 40 employees and 225 tea growers were sampled from the targeted population. Data from the respondents was collected through structured questionnaires. Data collected was analyzed descriptively using frequencies and percentages. The study found that the factories employed cost reduction measures. Some of measures were acknowledged to be applicable at 100%. These were strategies like staffing, technology and energy sources. The results further indicated that considering equal period of time before and after 2006 (when cost reduction strategies were introduced), the results obtained statistically showed that the amount of tea processed was not correlated with cost reduction strategies. This is because the quantity of tea decreased from 191,258,695 kilograms to 189,880,652 kilograms. The rate of annual returns for the farmers increased from a mean of 67.47% to 72.6% which implied that cost reduction measures had a correlation with the annual returns.

**Key Words:** Cost reduction strategy, Farmers' annual return, Tea factory, Real Time, Efficiency

## 1.0 INTRODUCTION

The impact of Kenya Tea Development Agency (KTDA) on the livelihood of over 560,000 tea farmers in Kenya who deliver green leaf to the 65 tea factories managed by the agency is of great economic value. Across the value supply chain, more than 10,000 people are directly employed in the small holder sector, indirectly benefitting over four million people. KTDA engages hundreds of transporters and scores of small and large scale business partners who supply plant and machinery, vehicle spare parts, fuel and other operational and maintenance services. It is also notable that among the many of Kenya's export crops, tea is one of those crops that have maintained an upward trend in production and export earnings (Nguyen, 2009).

However the tea industry has had to contend with high costs of production and mismanagement that threatens its survival. There is need for immediate interventions to manage the vices. The tea industry in Kenya has to contend with the rising cost of production and in particular the high cost of labour as one of their key challenges. Kenya Human Rights Commission (2008) shows that an analysis carried out by the Unilever management indicated that labour costs constituted about 43 per cent of total costs in 1999. This figure had rose to about 55% of total costs by 2006. Another report by Sanne (2008) on Sustainability issues in the Tea Sector revealed the factors contributing to the high cost of production are the high costs of farm inputs particularly fertilizers, the high costs of energy/fuel at the factories, numerous taxes and levies, mismanagement, high overhead costs, bad agricultural practices, low labour productivity and dilapidated infrastructure leading higher transportation costs while deforestation had caused soil erosion and aggravated drought thereby reducing the overall output (<http://www.peoples-parliament.org>).

Similar costs of production were associated with demands for traceability systems such as Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP) and Hazard Analysis and Critical Control Point (HACCP) certification. Food safety requirements are both formal (such as the EC General. Food Law EC regulation 178/2002 effectively requiring food products entering the European Union to be HACCP certified), and informal (such as company-specific codes of conduct and collective industry standards). Kimathi and Muriuki (2012), in their report on the Case of small holder Tea Sector in Kenya observes that the tea industry is subject to more than 30 taxes, fees, levies, charges and payments that increase the cost of doing business and adds the administrative burden on organizations seeking to comply. Face with such high costs of production, Dess, Lumpkin & Taylor (2008) argued that there is need for major and minor changes in a business firm's strategic direction. Kaplan and Norton (2006) on their part observe that most organizations have their management strategies focused on the financial themes of increasing revenues, minimizing cost and increasing productivity, enhancing asset utilization and reducing risk as a way of attaining and sustaining competitive advantages in the market. Davis (2010) points out that the dual challenge facing many companies today is to improve the quality of goods and services while cutting corporate overhead costs. As global demand for tea increased, pushing up tea prices and the exchange rate largely remained favorable between 2008 and 2013 KTDA seized the opportunity to implement cost-reduction and efficiency-boosting measures to maximize on earnings for farmers and encourage Factory Companies to retain funds for expansion and modernization of their tea processing plants.

One of the areas targeted for cost reduction in the value chain was management of human resource. It involves recruitment of suitable staff to meet organizational needs in the most cost effective way. It also involves training of staff to enhance their capacity and improve efficiency. On their part on Thompson, Strickland and Gamble (2005), observes that training is an important strategy in an organization especially where technical know-how is changing so rapidly that a company loses its ability to compete unless its'

skilled people have cutting- edge knowledge and expertise. Tyson (2006) cites the objective of staff training as the development in the organizations' employees the knowledge, skills and attitudes that have been established to be necessary for the effective performance of their work and hence for the achievement of the organization's aims and objectives by the most cost effective means available. The benefits of learning curve effects are realized due to the experience gained by the company personnel. The cost of performing an activity can decline over time as the experience of company personnel builds while reduced management levels reduce corporate overhead costs (John, & Richard, 2003).

Use of modern technology is also a strategy of reducing costs of production. One of the most revolutionary changes made was the introduction of Continuous Fermentation Units (CFUs) at all factories. These are computerised "intelligent machines" that literary transformed the way tea was manufactured by eliminating human intervention in the process of fermentation. The result was greater consistency in the quality of made tea, more efficient production and a lowering of labour costs since a single CFU replaced almost 40 workers (Kimathi & Muriuki, 2012). Computerisation of factories involved speed based competition and hyper-competition involving speed of innovation, branding, ease of use and operational effectiveness which result in a real time competitive responsiveness. The other area of target in cost reduction was procurement. Electronic/online procurement is a system that can be used to cut down procurement related expenses. As observed by Rayport and Bernard (2001), switching costs for consumers who shop on the internet are significantly lower. Kimathi and Muriuki (2012) observed that KTDA has made use of the economies of scale to run a successful fertilizer credit scheme that has provided tea farmers with competitively priced imported fertilizer every year on slow repayment terms.

The rising cost of electricity, furnace oil, wood-fuel and diesel impacts negatively on the performance of the tea sector and the overall earnings of the smallholder farmer. To mitigate this challenge, KTDA has ventured into the process of generating own small hydro plants. This is evidenced by KTDA's first small hydro pilot project at Imenti Tea Factory in Meru County that was commissioned in 2009. The power project has been able to reduce the factory's electricity bill by almost 60%. Tea factories of Embu County plans to generate their own electricity from river Thuci to cut down processing costs (Muchiri, 2012). The overall objective of the study was to; evaluate the impact of cost reduction strategies on the performance of tea factories in Embu County Kenya. The specific objectives of the study were;

- i. To identify the cost reduction strategies employed by tea factories in Embu County, Kenya.
- ii. To establish the impact of cost reduction strategies on the quantity of tea processed by the factories in Embu County, Kenya.
- iii. To determine the impact of cost reduction strategies on the tea growers annual returns in Embu County, Kenya.

## 2.0 LITERATURE REVIEW

### 2.1 Theoretical Framework

Among the common strategic management theories noted and applicable are the profit maximizing and Competition-based theory, the resource-based theory, the survival-based theory, the human resource based theory, the agency theory, transaction costs theory, motivation theory, AMO (Ability + Motivation + Opportunities) to participate and the contingency theory. A number of the above management theories were relevant to this study. These were Competition-based theory, Motivation theory, human capital theory and Transaction costs theory. Motivation theory explains the factors that affect goal directed behavior and therefore influences the approaches used in HRM to enhance engagement (Armstrong, 2012). Armstrong further explains human capital theory as the way people in an organization contribute their knowledge, skills and abilities to enhancing organizational capability. This study's focus on evaluating the impact of cost reduction strategies borrows heavily on the generic strategy of overall cost leadership as presented by Dess *et al.* (2005). This is because cost leadership strategy work well particularly when the products of rival sellers are virtually identical or very weakly differentiated and supplies are readily available from eager sellers. The factories are located next to the suppliers of raw materials (green leaf) supplied by small scale farmers to the manufacturing factories.

### 2.2 Cost Reduction Strategies

According to Colley (2005), the approach of specifying quantifiable goals that are within management's control and linking rewards to their achievement is an extremely effective method of focusing on desired results. If a company's returns as evidenced by peer-company performance, do not compare favorably with broader market returns then there is need to adjust the firm's strategy accordingly. This can be done by focusing on a variety of measures aimed at improving and motivating change in returns on investment. As earlier stated, this study borrows heavily on the generic strategy of overall cost leadership as presented by Dess *et al.* (2008). This strategy aims at creating low costs in all the value-chain activities of a firm namely firm infrastructure, human resource management, technology development and procurement. To ventilate this better, the various cost reduction strategies are discussed in detail in the subsequent sections.

#### 2.2.1 Staff Recruitment, Selection, Training and Retention

Actual performance is a function of employee effort, employee skill, and random effects. The random effects include performance measurement error, problems or inefficiencies created by coworkers or adjacent work stations, illness, and weather related production problems (Raiborn, Michael & Janice, 2006). Recruitment is arguably the most important of human resource functions. As argued by Tyson (2006), efficient recruitment of staff may be described as knowing what resources you want, what resources are available, and where and how they may be found cost effectively. Vacancies arising in organizations are filled internally creating 'internal labour markets', while others prefer advertisement of all vacancies publicly and consider internal candidates along with anyone from outside the organization who applies.

Aggressively managed low cost providers pay diligent attention to capturing the benefits of learning and experience effects. The learning curve effects are realized due to the experience gained by the company personnel. The cost of performing an activity can decline over time as the experience of company personnel builds while reduced management levels reduce corporate overhead costs (John & Richard, 2007). The learning curve in general results from factors like reduced supervision as experience with production of a particular product grows, increased profits from improved efficiency through streamlining the production

process, reduced defects and line reject rates during the production process, increased batch size meaning less time is spent on resetting machines resulting to reduced production downtime. Staff retention is trying to ensure that people do not choose to leave an organization voluntarily. Some organizations choose to retain people generally while others choose to retain their best performers. Staff turnover tends to decrease in recessions and increase during economic booms. A certain amount of staff turnover is arguably necessary to rejuvenate the organizations with fresh blood from time to time if they have to avoid becoming stale and stunted. New faces bring in with them new ideas and experiences which help organization become more dynamic. Some amounts of turnover will also help the managers to keep firmer control over labor costs than would otherwise be the case. Some employee turnover is 'functional' rather than 'dysfunctional' because it results in the loss of poor performers and their replacement with more effective employees.

The tea factories also have a geographical location advantage. This geographical advantage applies both to the factories and the farmers. Weele (2010), explains of geographical discount as one that is given to customers who are located close to the supplier's factory or distribution centre, making the transportation costs much lower than average; part of the cost benefit is passed on to the buyer. In this way a local supplier can keep more distant suppliers away. A simple form of organization structure and a lean staff have an effect on the organization expenditure. In a study made famous by their best-selling book *in search of excellence*, Thomas and Robert Waterman found that many of the performing companies had maintained a simple structure with a small staff (Rue & Byars 2003). They further assert that one reason is that a simple form of organization structure with a lean staff allows an organization to adjust more rapidly to a fast changing environment and also conducive to innovation. A simple form requires fewer staff, and a lean staff results in a simple form (Rue Byars, 2003). The authors also point out that it may be necessary to initiate employee layoffs when there is not enough work for all employees. Laid-off employees are called back if and when the workload increases.

### **2.2.2 Adoption of Modern Technology**

As argued by Rayport and Benard (2001), revolution in business is in fact, larger than any one particular technology, including the internet, and that it is more profound than any one innovation, including the World Wide Web. Information technology is radically changing how people live, learn, work, play and consume.

#### **Making Greater Use of Information Technologies**

Information technology (IT) today can make or break a company, whether large or small (Rue & Byars, 2003). Using software packages, company procurement personnel can with a few mouse clicks check materials inventories against incoming customer orders, check suppliers stocks, check the latest prices for parts and components.

Kimathi and Muriuki (2012), observes that to increase production efficiency in the sector the company launched a modernization programme at all factories that involved the computerization of key factory production processes. One of the most revolutionary changes made was the introduction of Continuous Fermentation Units (CFUs) at all factories. These are computerised "intelligent machines" that literary transformed the way tea was manufactured by eliminating human intervention in the process of fermentation. The result was greater consistency in the quality of made tea, more efficient production and a lowering of labour costs since a single CFU replaced almost 40 workers. The e-procurement software packages streamline the purchasing process by eliminating much of the manual handling of data and by substituting electronic communication for paper documents such as request for quotations, purchase orders, order acceptances and shipping notices. According to Thompson *et al*, (2005), the instant communication

features of the internet combined with all the real time data sharing and information availability have the further effect of breaking down corporate bureaucracies and reducing overhead costs. This means management process like order processing, invoicing, customer accounting, and other kind of transaction costs can be handled fast, accurately, and with less paper work and fewer personnel. The time savings and transaction cost reductions associated with doing business online can be quite significant across both company and industry value chains.

The Management Information System (MIS) provides information that managers have specified in advance as adequately meeting their information needs (Byars & Rue, 2003). It is important to observe that communication is made easier by the use of modern technology in several ways. A notable technology in the tea factory is the use of electronic weighing systems where tea is weighed to accurate measures minimizing the leaf loss for the customers. Computerization of operations in firms has significantly taken manual work space reducing labor related costs.

### **Machinery Technology, Maintenance and Replacement**

Most technologies foster improved performance. What all sustaining technologies have in common is that they improve the performance of established products, along dimensions of performance that mainstream customers in major markets have historically valued (Rayport and Benard, 2001). Machinery technology involves therefore the adoption of using the modern machinery to improve performance of manufacturing firms at relatively lower costs due to their performance efficiencies. Machinery technology has also been hailed by Saunders (1997), arguing that advances in technology have opened up new opportunities in the field of storage, transport and distribution; and exploitation of these innovations has contributed to improved performance and supply operations. For this matter shipping, road and air transport have all adopted the use of containers as a way of speeding up and reducing the costs of material handling. For example the newly deployed tea leaf collection trucks have a higher rate of motor vehicle turn around resulting in collection of bigger volumes of green tea leaves due to their efficiency and minimal breakdowns. Modern machinery which can handle big volumes of input can be cost effective. An example in the tea processing activity is an electronic weigh feeder which can weigh up to 6000Kgs of green leaf per hour. Another in the tea processing factories is installation of Cutting, Tearing and Curling (CTC) machines 36" Vikram Jumbo which can handle a capacity of 2500Kg. per hour. The efficiency of this machinery has led into improved rate of the quantity of the tea processed per cycle while reducing the time taken to process that tea.

### **2.2.3 Procurement Related Cost Reduction Strategies**

The major expense for any manufacturing unit is buying raw material. In this regard, the procurement department has a prime role in contributing to savings in a company. Savings for that matter can be achieved through a number of cost reduction measures during procurement activities. By buying products in large quantities and then selling them in smaller units, the trade companies reduce costs for the producer and improve the accessibility of his products for the public (Weele, 2010). Another suitable measure is opportunity buying which is applicable to raw materials and commodities that have seasonal cycle of prices as they peak and fall in intervals. In this case booking maximum amount is necessary when the prices are low. As asserted by Weele (2010), small orders often require the same amount of work, in terms of production, administrative and physical processing as large orders. This means that small orders have a higher cost of production per product. To mitigate this, plans are made to handle bigger volumes in rainy seasons to ensure steady processing of tea while minimizing crop waste.

Electronic/online procurement is also a system that can be used to cut down procurement related expenses. As observed by Rayport and Benard (2001), switching costs for consumers who shop on the internet are significantly lower. This means that should a customer encounter unsatisfactory experience in shopping from one area and decide to shop elsewhere the switching costs are lower. Switching costs could include additional driving, new constraints on method of payment, and time spent on learning about the new retailer. Another advantage of using internet is the element of reducing the transaction costs involved in announcing orders requests and to receive bids, both the manufacturers and suppliers reduce the transaction costs associated with supply procurement. Out sourcing is an element embraced by many firms as a strategy of keeping the production costs down. Out-sourcing is the practice of sub-contracting certain work functions to an outside entity. Work functions being out sourced include accounting and finance functions, human resources, information technology and even contract manufacturing. According to Rue and Byars (2003), the potential benefits of out-sourcing includes allowing the organization to emphasize its core competencies by not spending time on routine areas that can be out-sourced, reducing operating costs by utilizing others who can do the job more efficiently. An outsider, by concentrating specialists and technology in its area of expertise, can frequently perform certain services as well or better and often more cheaply, than a company that performs these services only for itself (Thompson *et al*, 2004). It is worth noting that out sourcing is not a cure-all for there are potential draw backs.

#### **2.2.4 Alternative Sources of Energy for Production**

According to a report on Sustainable Issues in the Tea Sector, 2008, Tea processing is energy intensive. Withering, drying, grading and packing tea requires 4 to 18 kWh per kg of made tea, which compares to 6.3 kWh for a kilogram of steel. Different types of feedstock and energy are used, such as firewood, oil, natural gas, electricity and sometimes hydroelectricity depending on the country and area. This is further confirmed by a report of Tea Research Foundation of (2009), which notes that traditionally, electricity and petroleum-based products have been the main sources of energy for tea processing factories. Owing to increasing costs, the majority of factories have changed to wood as a source of energy. The increasing amounts of wood required by factories, in addition to domestic wood requirements, lead to more trees being harvested for fuel. This is a threat to the sustainability of wood as a source of energy and environmental conservation. Tree logging for the tea sector is also a serious issue in Kenya. The extensive damage caused by deforestation resulting from the use of firewood is another major factor. A need has therefore arisen to promote and adopt Energy Efficient and Environmentally Sound Technologies (E3ST) in the tea sector.

### 3.0 RESEARCH METHODOLOGY

#### 3.1 Research Design

This study adopted a causal design where both descriptive and inferential approaches were used to show the correlation of variables as it sought to explore the impact of cost reduction strategies on overall performance of tea factories in Embu County, Kenya. The research hypothesized that after the implementation of cost reduction measures (Independent Variables), the quantity of tea and annual returns (Dependent Variables) would improve if other environmental factors (Intervening Variables) dismally influenced the out. This was done through collection, analysis and interpretation of both quantitative and qualitative data.

#### 3.2 Sample Size and Sampling Technique

The study employed multiple sampling procedures. One (1) Factory Unit Manager (FUM) and five (5) operations managers were purposively sampled from each of the 3 factories making a total of eighteen (18) managers. Purposive sampling was employed because managers are section heads who were custodians of vital information. Employees from the operational areas (production, field services, human resources and administration) were sampled using stratified simple random sampling based on the population proportion of each factory employees. A 10% representative of employees was appropriate as suggested by (Saleemi, 1997). Based on the employee total population of 338, a sample size of 34 employees was determined. To cater for attrition a sample of 40 employees was preferred and comprised of Rukuriri 15, Kathangariri 11 and Mungania 14. In selecting the respondents from the farmers, a sample with probability proportional to the spread of the tea growers was used to cater for as closely as possible proportional representation. In most surveys or experiments, coefficient of variation of at most 30% are usually acceptable (Nassiuma 2000). The study took a coefficient of variation of 30% and a standard error of 0.02.

Nassiuma (2000) gives the formula as follows:-

$$n = \frac{NC^2}{C^2 + (N-1)e^2}$$

Where; N= Population  
 n =Sample  
 C= Covariance  
 e =Standard error

$$n = \frac{26208(30\%)^2}{(30\%)^2 + (26208-1)(0.02)^2} = 223$$

To cater for attrition a sample size of 225 respondents from farmers was determined. The total sample size of the study was 283 respondents. A summary of sampling matrix is presented in Table 3.1

**Table 1.1**  
**Sampling Matrix**

Category	Sampling Design	Rukuriri	Mungania	Kathangariri	Total
Managers	Purposive	6	6	6	18
Employees	Stratified simple random	15	14	11	40
Tea Growers	Stratified simple random	75	79	71	225
Totals		96	99	88	283



### 3.3 Data Collection Procedures

After satisfying the necessary approvals, an authorization letter was obtained from Chuka University for the researcher to carry out his research. An approval from National Council of Science and Technology (NCST) was sought and subsequently obtained in order to pave way for carrying out of the research. Questionnaires were administered to the factory managers and employees by the researcher while research assistants were used to distribute questionnaires to the tea growers. The assistants also assisted in filling the questionnaires since the farmers were widely spread in the County.

### 3.4 Data Analysis and Presentation

Data analysis started with data cleaning; editing, coding and arranging for analysis. The data collected was analyzed using both descriptive and inferential statistics. Data on the various cost reduction strategies used by factories in this study was analyzed using descriptive statistics in the form of frequencies and percentages and presented in tabular form. The results are discussed based on the guidelines of the overall cost leadership strategy.

## 4.0 Empirical results and Discussion

### 4.1 Response Rate of the Company Managers, Employees and Farmers

The response rate of the managers and employees from each factory is an important aspect to the study since it helps in establishing whether the desired sample of the managers and employees in the various factories under consideration was realized. The analysis was done by use of descriptive statistics mainly frequencies and percentages. The results are presented in Table 4.1.

**Table 4.1:**

**Response rate of Sampled Managers, Employees and Farmers by Factory**

Factory	Managers			Employees			Farmers		
	Sampled	Response	%	Sampled	Response	%	Sampled	Response	%
Kathangariri	6	4	67	11	11	100	71	70	99
Mungania	6	5	83	14	12	86	79	74	94
Rukuriri	6	5	83	15	14	93	75	71	95
Total	18	14	78	40	37	93	225	215	96

The analysis shows that the response rate of the managers in Mungania and Rukuriri had a record of 83% each and Kathangariri with 67%. Response from the employees in the three (3) factories, were Kathangariri with a 100% response rate, while Mungania and Rukuriri had 86% and 93% respectfully. This was fair distribution of the targeted population sample of 18 factory managers in total.

### 4.2 Measures for Cutting Down Tea Processing Costs

#### 4.2.1 Energy Utilized in Tea Processing

The researcher sought to establish how frequently each source of energy was used in the factories. This aspect was important in determining the frequency of utility of energy for production. The results are presented in Table 4.2.

**Table 4.2**  
**Energy Utility in Tea Processing**

Particular		Frequently		Rarely		Never	
Firewood	14	100%	0	0%	0	0%	0%
Furnace oil	3	23.1%	10	69.3%	1	7.6%	7.6%
Electricity	14	100%	0	0%	0	0%	0%

The results show that all the managers indicated that firewood was used most frequently as a source of energy in the factories at 100%. It is cheaper to use firewood in curing tea. It is noted that the cost of processing one kilogram of tea wood costs Ksh. 3 compared to furnace oil which costs Ksh.25. To further address the issue of energy, KTDA made the decision to convert boilers from diesel to wood fuel, in the process reducing the cost of energy.

Kimathi and Muriuki (2012), observes that the demand for wood forced KTDA to start the wood energy project to provide sustainable source of wood fuel for the factories. The project set a target of acquiring 34,000 acres of land to grow trees, with each of the KTDA factories expected to buy at least 620 acres to plant trees. The managers also indicated that electricity was used most frequently in the factories as a source of energy at 100%. Electricity is used in running machinery and lighting, though at higher costs. To mitigate this challenge, KTDA has ventured into the process generating own small hydro plants. This is evidenced by KTDA's first small hydro pilot project was at Imenti Tea Factory in Meru County, with its 1Mega Watt small hydro plant that was commissioned in 2009. Furnace oil was used frequently by the factories at a low 23.1%, rarely used at 69.3% and never used at 7.6%. The reason for this is that furnace oil is considered very expensive in curing tea. It was also important to explore what the factories were doing to the human resource capital in terms of training and retaining staff and farmers. The subsequent section presents this in detail.

#### **4.2.2 Training and Retention of Factory Staff and Farmers**

The study also sought to find out whether the capacity of the staff and the farmers had any contribution to the manufacturing costs and quantity of produce by the factories. This aspect is important in ascertaining the capacity and contribution of the staff and farmers in factories' performance. The results are presented in the Table 4.3.

**Table 2**  
**Training of Managers, Employees and Farmers**

Option	Managers		Employees		Farmers	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	13	92.9%	33	89.2%	206	95.6%
No	1	7.1%	4	10.8%	9	4.4%
Total	14	100%	37	100.0%	215	100.0%

The results from the Table 4.3 above show that a majority 92.9% of the managers had undergone some form of training as factory staff at some point during their employment. A majority 89.2% of the employees also indicated that they had undergone training as factory staff. As cited by Thompson *et al.*, (2005), training of employees is an important strategy in an organization especially where technical know-how is changing so rapidly. A 95.6% of the farmers had acknowledged to have received some training over the time. The results however show that 7.1% of the managers, 10.8% of the employees and 4.4% of the farmers had not undergone training of any kind. Generally training was evident to all from the results obtained. This means that the factories were keen to advance training to both staff and farmers to enhance their productivity and gain from benefits of learning and experience curves. As a way of keeping the production costs down, the factories embarked on employment of a number of cost reduction measures as discussed in the subsequent sections.

#### 4.2.3 Other Cost Reduction Strategies Employed by Tea Factories

Tea factories like any other firms continue to explore various strategies that can enable them keep operational costs as low as possible. Low costs of production have a direct bearing on the short term and long term performance of a firm. The tea factories employed a variety of cost reduction strategies as presented in Figure 4.1.

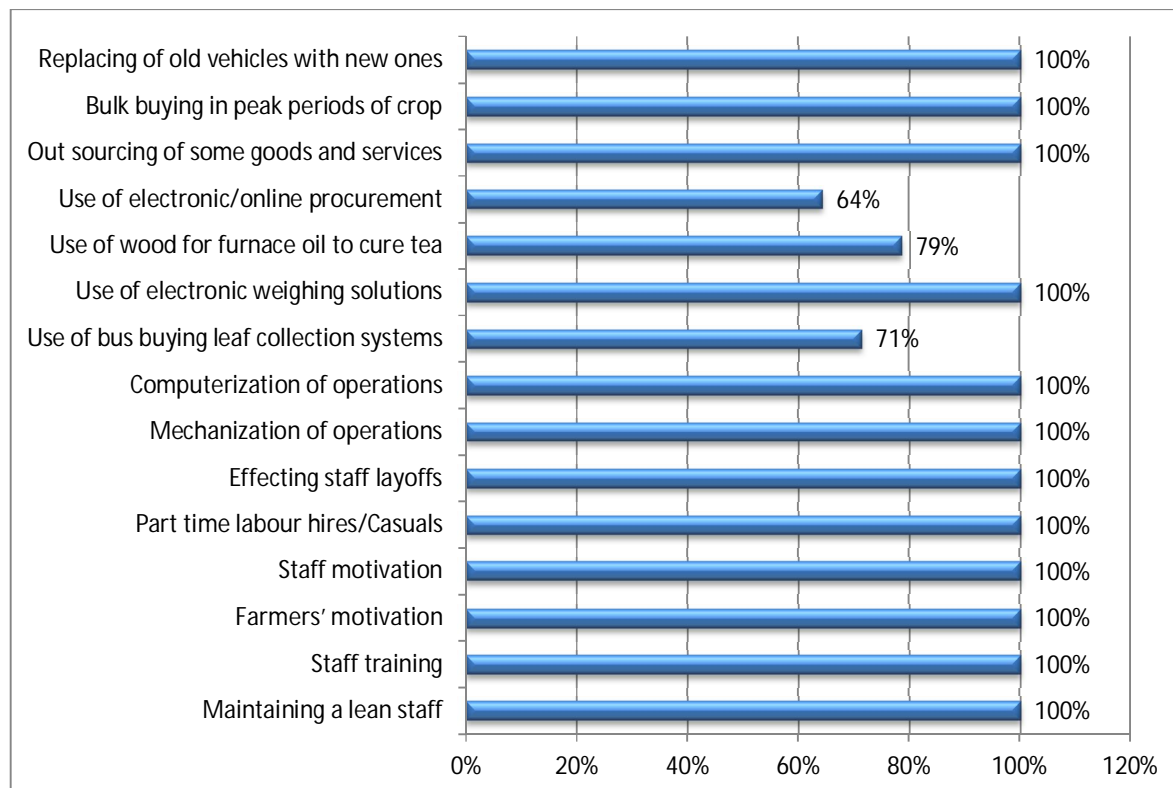


Figure 4.1: Other Cost Reduction Strategies Employed by Tea Factories

The majority of respondents' acknowledged the use of most of the cost reduction strategies in the tea processing factories. This implies that all the factories employed these cost reduction strategies as a way of keeping production costs down. The results revealed that out of the fifteen outlined cost reduction strategies, respondents acknowledged twelve of them at a 100%. There was however lower adoption of use of wood for furnace oil to cure tea, bus buying leaf collection systems, and use of electronic/online procurement at 78.5%, 71.3% and 64.2% respectively. Some factories had not fully adopted the new technology of on-line procurement. Generally the findings imply that the factories had adopted cost reduction measures.

#### 4.3.4 Frequency of Usage of Cost Reduction Measures

The study sought to examine the frequency of using cost reduction strategies. This was important as some strategies are routinely continuously applicable while others are used as measures in short term or long term as may be applicable. The findings are presented in Table 4.4.

Table 3

#### **Frequency of Usage of Cost Reduction Measures**

Measure	Frequently	Rarely	Never
Maintaining a lean staff	92.9%	7.1%	0%
Staff training	100%	0%	0%
Farmers motivation	35.7%	64.3%	0%
Staff motivation	78.5%	21.4%	0%
Part time labor hires	92.9%	0%	7.1%
Effecting staff layoffs	42.9%	57.1%	0%
Mechanization of operations	100%	0%	0%
Computerization of operations	92.9%	7.1%	0%
Use of bus buying leaf collection systems	90%	0%	10.0%
Use of electronic weighing solutions	100%	0%	0%
Use of wood for furnace oil to cure tea	85.7%	14.3%	0%
Use of electronic/online procurement	64.3%	0%	35.7%
Out sourcing of some goods and services	100%	0%	0%
Bulk buying in peak periods of crop	100%	0%	0%
Replacing of old vehicles with new ones	64.3%	35.7%	0%

The results presented in Table 4.4 show that Staff training was frequently acknowledged at 100%. On training Rue and Byars (2003) observes that initial training can greatly influence the employee's job attitude and productivity. Outsourcing of goods and services was acknowledged as frequently used at 100%. According to Byars and Rue (2003), the potential benefits of out-sourcing are reducing operating costs by utilizing others who can do the job more efficiently. Bulk buying of raw materials in peak periods was acknowledged as frequently used at 100%. Use of modern technology was highly acknowledged through a number of cost reduction measures. These were mechanization of operations at 100%, use of electronic weighing solutions at 100%, computerization of operations at 92.9%, use of bus buying leaf collection systems at 90%, use of wood for furnace oil in curing tea at 85.7%. Modern machinery which can handle big volumes of input can be cost effective. An example in the tea processing activity is an electronic weigh feeder which can weigh up to 6000Kg of green leaf per hour. Computerization of operations in firms has significantly taken manual work space reducing labor related costs.

A number of human related strategies were frequently used. One of them is a lean staff at 92.9%. A lean staff has an effect on the organization expenditure. As observed by Thomas and Waterman as quoted by Byars and Rue (2003), many of the performing companies had maintained a simple structure with a small staff. The use of electronic/online procurement as a system that can be used to cut down procurement related expenses was frequently used at 64.3%. Machinery replacement was also acknowledged as frequently used strategy at 64.3%. Generally most of the stated cost reduction strategies were frequently applied.

#### **4.4 Views of the Respondents**

##### **4.4.1 Perception of Managers on Cost Reduction Strategies**

Managers from the three factories gave their views on the impact of the cost reduction strategies employed by the tea processing factories and results presented in Table 4.5. The results presented in the Table below reveal that respondents agreed that staff training had increased employees' operational efficiency at 100%. This confirms what Rue and Byars (2003) observes, that initial training can greatly influence the employee's job attitude and productivity. They also agreed that staff experience had increased efficiency over the time at 100%. The results presented in Table 4.5 above reveal that respondents agreed that staff training had increased employees' operational efficiency at 100%. This confirms what Rue and Byars (2003) observes, that initial training can greatly influence the employee's job attitude and productivity. The respondents also agreed that staff experience had increased efficiency over the time at 100%. Retention of managerial and technical skills is contributors to organizations reaping benefits of learning and experience curve. Also agreed at 100% was that staff motivation had resulted into improved performance.

The other attributes that drew the respondents' agreement were hiring of labor on casual basis to reduce the operational costs at 92.2%. They agreed staff layoffs had been affected for a period of ten years to keep the wage bill down at 92.2%. Computerization of factory operations was noted to have had significantly saved on time and money at 85.7%. This is supported by Byars and Rue (2003) who argued that information technology today can make or break a company, whether large or small. They also agreed that training of farmers had improved the farmers' morale and loyalty to the factories at 92.2%. Respondents also strongly agreed that out-sourcing of some goods and services was less costly for the factories at 58.3%. This is also observed by Thompson *et al.* (2004) by arguing that specialists can perform certain services as well or better and often more cheaply, than a company that performs these services only for itself.

Results contained in the above Table further indicate that another 83.3% strongly agreed that factories had resolved to use wood for curing tea. This is because wood is relatively cheaper for processing tea compared to other sources of fuel. It was for this reason it was strongly agreed that factories had resulted to planting their own woodlots to ensure steady supply of wood fuel for processing tea at 83.3%. While most of the strategies were supported by most of the respondents, 30.8% of the respondents disagreed that e-procurement had reduced the cost of tea processing; revealing that some factories had not fully domesticated on-line procurement strategies.

**Table 4**  
**Manger's Perception on the Impact of Various Cost Reduction Strategies**

Attribute	S A	A	UD	D	SD
A lean staff has resulted in better salaries	64.3%	0.0%	7.2%	28.5%	0.0%
Staff training has increased employees operational efficiency	100%	0.0%	0.0%	0.0%	0.0%
Staff experience has increased efficiency over time	100%	0.0%	0.0%	0.0%	0.0%
Staff motivation results in improved performance	100%	0.0%	0.0%	0.0%	0.0%
Hiring labor on casual basis reduces the operational costs	92.2%	0.0%	7.7%	0.0%	0.0%
Staff layoffs have been adopted over the last ten years to cut on the wage bill	92.2%	0.0%	7.7%	0.0%	0.0%
Training farmers increases the morale and loyalty of farmers to the factory	92.2%	0.0%	7.7%	0.0%	0.0%
Every formal training calls for promotion to higher position in the factory	0.0%	25.0%	0.0%	75%	0.0%
Bulk buying enhances bargaining of fair buying prices to the factory	69.2%	23.1%	0.0%	7.7%	0.0%
E-procurement of goods has significantly reduced the cost of procurement	30.8%	38.4%	0.0%	30.8%	0.0%
Out sourcing of some services and goods has been less costly to the factory	58.3%	33.3%	0.0%	8.4%	0.0%
Fair prices is a product strong bargaining skills	0.0%	100%	0.0%	0.0%	0.0%
The factory has resolved to use wood in place of furnace oil to reduce cost	83.3%	16.7%	0.0%	0.0%	0.0%
The factory has resulted into planting its own woodlots to ensure steady supply of wood fuel for tea processing	83.3%	16.7%	0.0%	0.0%	0.0%
Bus stop buying has reduced the number of staff required to tea in the field	58.3%	16.7%	25.0%	0.0%	0.0%
Computerization of factory operations has significantly saved on time and money	85.7%	14.3%	0.0%	0.0%	0.0%
It is less costly to maintain new machinery	64.3%	35.7%	0.0%	0.0%	0.0%
New machineries have low rate of breakdown	64.3%	35.7%	0.0%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree

#### 4.4.2 Perception of Employees on Cost Reduction Strategies

Employees from the three factories gave their views on the impact of the cost reduction strategies employed by the tea processing factories and results presented in Table 4.6.

**Table 4.6**  
**Employee's Perception on the Impact of Various Cost Reduction Strategies**

Attribute	SA	A	UD	D	SD
With the introduction of computers, the farmers' and employees' information can be retrieved easily	78.4%	21.6%	0.0%	0.0%	0.0%
Staff motivation results in improved performance	75.7%	24.3%	0.0%	0.0%	0.0%
The factory management often engages external experts to train employees	29.7%	64.9%	5.4%	0.0%	0.0%
Our factory employees' take part in trade fair exhibitions in the county to show case their products	56.8%	43.2%	0.0%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree

A 78.4% strongly agreed that with introduction of computers the farmers' and employees' information could be retrieved easily. In the modern technology the management of information systems through computerization of firms is efficient, safe and time saving. This is supported by Byars and Rue (2003) who argued that information technology today can make or break a company, whether large or small. The respondents strongly agreed staff motivation had resulted into improved performance at 75.7%. Those that were in agreement that the factory engaged external experts in training employees stood at 64.9%. This is an element of out-sourcing of services which could lead to some savings to the tea factories. A 5.4% were undecided on whether the management was engaging external experts to train employees.

#### 4.4.3 Perception of Farmers on Cost Reduction Strategies

Farmers from the three factories gave their views on the impact of the cost reduction strategies employed by the tea processing factories and results presented in Table below.

**Table 5**  
**Farmer's Perception to the Impact of Various Cost Reduction Strategies**

Attribute	SA	A	UD	D	SD
Mode of leaf collection is satisfactory	94.8%	0.0%	2.2%	3.0%	0.0%
The factory management often engages external experts to offer technical skills to the farmers	90.4%	0.0%	6.6%	3.0%	0.0%
Farmers take part in trade fair exhibitions in the county to show case their products	66.9%	12.4%	20.6%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D=Disagree, SD = Strongly Disagree

The results presented in the above table reveal that the farmers were satisfied with the mode of leaf collection as this was strongly agreed at 94.8%. It will be noted that the factories had adopted the mode of bus stop leaf collection where the driver doubled his work by working as a weighing clerk. This had savings to the factories in regard to labour costs. The farmers also strongly agreed at 90.4% that the factory management engaged external experts to offer technical skills to the farmers. Some farmers were however undecided at 20.6% on whether they took part in trade fair exhibitions in the county to show case their products.

#### 4.5 Impact of Cost Reduction Measures on Quantity of Tea Processed

##### 4.5.1 Qualitative Analysis of Quantity of Tea Processed

This section ventilated on analyzing the perception of the managers, employees and farmers on their perception on the way they thought cost reduction strategies had impacted on the quantity of green tea processed. The results and discussions are presented in the following sub-sections.

##### Perception of Managers on Tea Processed

Managers were key respondents in this study. They gave their views on the way they thought cost reduction strategies had impacted on the quantity of tea processed. The results presented and discussed in Table 4.8. As can be revealed in Table below to ensure steady supply of tea products, it was important to do maximum booking of produce during peak periods. Another 85.8% strongly agreed that the factories had been replacing the old machinery to increase efficiency in operations. The respondents also strongly agreed at 85.7% that electronic weighing solutions had significantly reduced leaf loses. It was also noted that the respondents strongly agreed the factories had installed new machinery over a number of years to increase efficiency of operations at 78.6%. An example of this was installation of an electronic weigh feeder which can weigh up to 6000Kg of green leaf per hour. Another was installation of Cutting Tearing and Curling (CTC) machines 36'' Vikram Jumbo which can handle a capacity of 2500Kg. per hour.

**Table 4.8**

##### **Impact of Cost Reduction Measures on Quantity of Tea Processed**

Attribute	SA	A	UD	D	SD
Buying in large quantity at peak times guarantees steady processing supply during off-peak	33.3%	58.4%	0.0%	8.3%	0.0%
The factory has been replacing the old machinery to increase efficiency	85.8%	7.1%	0.0%	7.1%	0.0%
The condition of roads has improved over the past ten years enhancing motor vehicle turnaround	64.3%	28.6%	0.0%	7.1%	0.0%
The factory has installed new machinery over the last ten years to increase operations efficiency	78.6%	21.4%	0.0%	0.0%	0.0%
Electronic weighing solutions have significantly reduced farmers' leaf loss	85.7%	14.3%	0.0%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree



### Perception of Employees on Tea Processed

Employees were also key respondents in this study. They gave their views on the way they thought cost reduction strategies had impacted on the quantity of tea processed. The results presented and discussed in Table 4.9.

**Table 4.9**

#### **Perception of Employees on Cost Reduction Measures on Quantity of Tea Processed**

Attribute	SA	A	UD	D	SD
Training farmers increases the production and loyalty of farmers	43.3%	40.5%	16.2%	0.0%	0.0%
Farmers' trainings improved tea output	59.5%	35.1%	5.4%	0.0%	0.0%
Plant capacity of processing leaf has improved	59.5%	29.7%	10.8%	0.0%	0.0%
The condition of roads has been improved enhancing leaf collection turnaround	64.9%	32.4%	0.0%	2.7%	0.0%
Electronic weighing solutions have reduced farmers' leaf loss	89.2%	10.8%	0.0%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D =Disagree, SD =Strongly Disagree

The results presented in the Table 4.9 above reveal that employees strongly agreed that electronic weighing solutions had reduced farmers' leaf loss by giving accurate data at 89.2% while 64.9% of the employees strongly agreed that the condition of roads had improved thereby enhancing ease of leaf collection while. They also strongly agreed that farmers' trainings had improved the tea output at 59.5%. There were indecisive views from respondents on the indication that training farmers had increased production and loyalty of farmers at 16.2% while another 19.4% were undecided on whether plant capacity of processing leaf had improved.

### Perception of Farmers on Tea Processed

Farmers gave their views on the way they thought cost reduction strategies had impacted on the quantity of tea processed in the three factories. The results presented and discussed in Table 4.10.

A visual observation of the results in Table 4.10 below reveals that the farmers strongly agreed that bus stop buying had reduced the leaf loss for the tea growers at 97.1% and 97.7%. Another 95.6% of the respondents strongly agreed that farmers training had improved tea production output. The respondents also strongly agreed with the fact that electronic weighing machinery had reduced farmers' leaf loss by giving accurate data at 98.6%. However, the results show that 56.7% of farmers disagreed that their improved earnings had encouraged them to increase plantation acre rage hence improved produce. It meant that their increased earnings were not a motivator to increase of scale of production.

**Table 4.10****Perception of Farmers on Cost Reduction Measures on Quantity of Tea Processed**

Attribute	SA	A	UD	D	SD
Bus stop buying has reduced the leaf loss for tea growers	97.1%	0.0%	0.7%	2.2%	0.0%
The condition of roads has significantly improved efficiency of leaf collection	94.9%	0.0%	0.0%	5.1%	0.0%
There is very little leaf loss compared to the past years	97.7%	0.0%	0.0%	2.2%	0.0%
Electronic weighing solutions have reduced farmers' leaf loss by giving accurate data	98.6%	0.7%	0.0%	0.7%	0.0%
Improved farmers' earnings have encouraged farmers to increase farm acre rage hence improved produce	36.1%	0.0%	7.2%	56.7%	0.0%
Farmers' training has improved tea production output	95.6%	0.0%	1.5%	2.9%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree

**4.5.2 Quantitative Analysis on Quantity of Tea Processed**

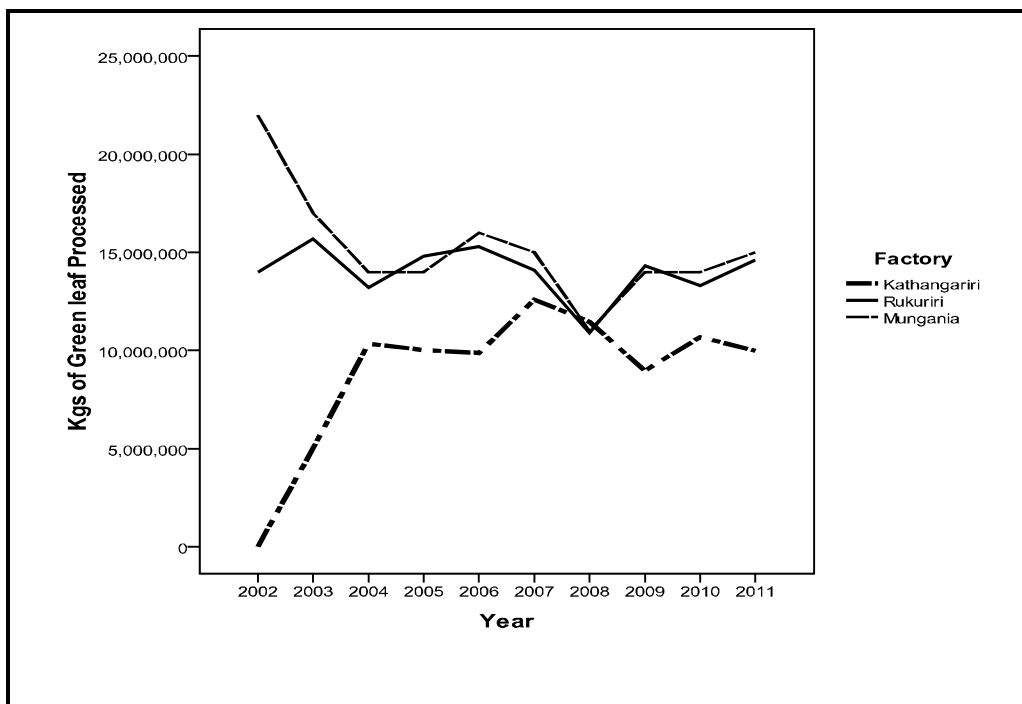
The quantities of the tea processed were analyzed to establish whether the cost reduction strategies had impacted on the amount of tea processed positively. The three factories under consideration, had adopted cost reduction strategies from the year 2006. The analysis therefore looked into the trend of the quantities of tea processed in the three factories between 2002 and 2011 so as to find out whether there was a significant difference before and after adoption of the cost reduction strategies in year 2006. The assumption was the factories had started implementing a report by Tea Industry Task Force of 2007. Year 2006 was considered in the category of period before the introduction of cost reduction strategies. Two elements were put in focus to present the analysis of the quantity of tea processed. One of them was analysis of the trend of green tea processed by use of a Table and Figure and the second was analysis of tea processed by use of t-test. The details are discussed in the subsequent sub-sections.

**Quantity of Tea Processed by Tea Factories**

Table 4.11 provides the quantities of the tea processed in various tea factories in kilograms while the plot for the amount of tea processed in various factories is presented in Figure 4.2 to give a visual impression of the trend in the quantity of tea processed in kilograms. It is important to note that Kathangariri tea factory had no record for year 2002. The reason for this is that this factory was undergoing trials for commissioning of its machines and that all tea processed in this factory was being accounted for in Mungania tea factory.

**Table 4.11**  
**Quantity of Tea Processed by Factories in kilograms**

Year	Kathangariri	Rukuriri	Mungania	Totals
2002	-	14,000,000	22,000,000	36,000,000
2003	5,023,156	15,700,000	17,000,000	37,723,156
2004	10,341,660	13,200,000	14,000,000	37,541,660
2005	10,019,103	14,800,000	14,000,000	38,819,103
2006	9,874,776	15,300,000	16,000,000	41,174,776
<b>Totals</b>	<b>35,258,695</b>	<b>73,000,000</b>	<b>83,000,000</b>	<b>191,258,695</b>
2007	12,589,639	14,100,000	15,000,000	41,689,639
2008	11,454,937	10,900,000	11,000,000	33,354,937
2009	8,969,740	14,300,000	14,000,000	37,269,740
2010	10,682,104	13,300,000	14,000,000	37,982,104
2011	9,984,232	14,600,000	15,000,000	39,584,232
<b>Totals</b>	<b>53,680,652</b>	<b>67,200,000</b>	<b>69,000,000</b>	<b>189,880,652</b>



**Figure 4.1: The Quantity of Tea Processed by Tea Factories in kilograms**

A visual look of Figure 4.2 reveals that only Kathangariri has had a trend of higher index record of the amount of tea processed after 2006 than before 2006. The other factories Mungania and Rukuriri are showing postings of lower means records after 2006 than before 2006. The records also give a visual impression that Kathangariri records of the tea processed in year 2002 missing. The reason for this is because Kathangariri machinery was undergoing commissioning. All the green tea processed in this factory up to 2002 was being accounted for at Mungania. This is confirmed by the results in figure 4.2 which show Mungania posting very high records of tea processed before 2002 but eventually dropped after losing its production scale to Kathangariri from year 2003 onwards. For Kathangariri, the quantity of tea processed seems to be on an upward trend while for Mungania and Rukuriri there seems to be a slight drop. This is because the latter two factories had started losing some farmers to the former factory through an agreed program of zoning tea farmers and this had an implication of having reduced outputs for Rukuriri and Mungania factories. Overall, there has been a decrease of the amount of tea processed since the cost reduction strategies were introduced in 2006.

#### 4.6 Impact of Cost Reduction Measures on Annual Returns

The study sought to determine whether the cost reduction strategies had positive impact in reductions of operational and processing costs hence improved annual returns. It is expected when companies realize good annual returns the shareholders and stakeholders stand to benefit from the resultant reap. The study therefore sought to explore the perception of managers and farmers regarding their views on the way they thought the cost reduction strategies had impacted on the annual rate of returns in the three factories. More details are discussed in the subsequent sub- sections.

##### 4.6.1 Perception of Managers on Annual Returns

Managers gave their views on the way they thought cost reduction strategies had impacted on the annual returns. The results are presented and discussed in Table 4.12.

**Table 4.12**

##### Annual Returns as viewed by Managers

Attributes	S A	A	U	D	SD
Government regulation on minimum wage for employees has reduced the factory annual incomes	53.9%	0.00%	23.1%	23.1%	0.0%
A lean staff has resulted in better annual returns	84.6%	0.0%	0.0%	15.4%	0.0%
Have the high sales volume increased individual earnings of the tea farmers.	83.3%	16.7%	0.0%	0.0%	0.0%

SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree

The results reveal that the managers strongly agreed increased sales volumes had increased individual earnings for the farmers at 83.3%. It is important to note that farmers receive bonuses on the basis of the sales volumes. They also strongly agreed that a lean staff had resulted in better returns at 84.6%. However 23.1% of the respondents each were undecided and disagreed that government regulations on minimum wage for employees had reduced factory annual incomes while another 15.4% disagreed that a lean staff had resulted in better returns. A record of data provided in Table 23 and reflected in Figure 4.3 support the trend of increased annual returns over the years.

#### 4.6.2 Quantitative Analysis of Growers’ Rate of Annual Returns

The tea growers’ annual returns were analyzed to establish whether the cost reduction strategies had impacted on the farmers positively. The three factories under consideration, had adopted cost reduction strategies from the year 2006. The analysis therefore looked into the trend of the tea growers annual returns before 2006 and after 2006 so as to find out whether there was a significant difference before and after adoption of the cost reduction strategies.

##### Percentage Annual Rate of Returns

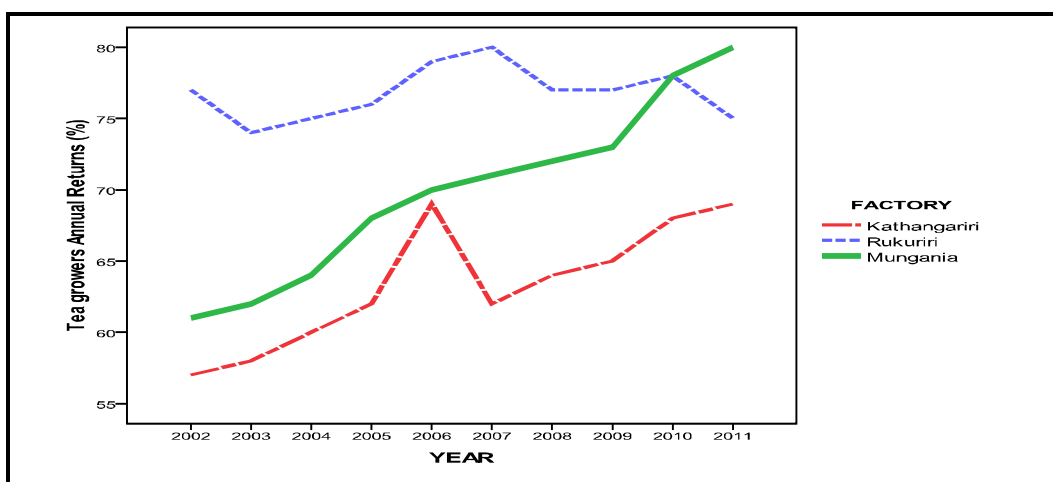
The record for the tea growers’ annual returns is presented in Table 4.13 while Figure 4.3 gives a visual impression of the trend of the percentage annual rate of returns of tea growers’.

**Table 4.13**

**Annual Rate of Returns to the Farmers for a period of 10 years in %**

Factory	2002 – 2006					Total	2007 – 2011					Total
	'02	'03	'04	'05	'06		'07	'08	'09	'10	'11	
Rukuriri	77	74	75	76	79	381	80	77	77	78	75	387
Munania	61	62	64	68	70	325	71	72	73	78	80	374
Kathangariri	57	58	60	62	69	306	62	64	65	68	69	328
Totals	195	194	199	206	218	1012	213	215	215	224	224	1089

A visual inspection of Figure 3 below reveals that Rukuriri has had a higher rate of returns compared to the other factories followed by Mungania and Kathangariri. For Rukuriri and Mungania, the introduction of cost reduction strategies had impact since the returns are seen to be on an upward trend. For Kathangariri there was a slight fall in returns after the introduction of the measures but later on the returns started increasing. Overall, there has been an increase in the tea grower’s annual returns since the cost reduction strategies were introduced in 2006.



**Figure 4.3: Tea Growers Annual rate of Returns in the Factories**

The results give evidence to this since the cumulative total of returns between years 2002 to 2006 was 1012 while that of between years 2007 to 2011 was 1089. The annual return means for five years before and after 2006 were 67.47% and 72.6% respectively.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.3 Conclusions

The study clearly revealed that the cost reduction strategies had no positive index on the amount of tea processed. This shows that introduction of the cost reduction strategies had no significant impact on the quantity of the tea processed since the factories had posted lesser means and therefore were not positively correlated with the amount of tea processed.

The study concludes that the use of cost reduction strategies do not result to higher outputs of the tea processed, hence increased use of the cost reduction measures would not lead to increased quantity of tea processed in the factories. The study therefore fails to reject the null hypothesis as stated:

- i. There is no significant relationship between cost reduction strategies employed and the quantity of the tea processed by tea factories in Embu County, Kenya.

The study further explored the second hypothesis which aimed at determining the impact of cost reduction strategies on the tea growers' annual returns. The results showed that in all the three factories, the means of the annual returns are higher after 2006 than before 2006. This clearly reveals that the cost reduction strategies were beneficial to the tea growers. The study concludes that the use of cost reduction strategies by the factories result in higher annual returns for the farmers. This implied therefore the null hypothesis was rejected and consequently accepted the alternative hypothesis as:

- ii. There is significant relationship between cost reduction strategies employed and the rate of annual returns to tea growers' of the tea processing factories in Embu County, Kenya.

### 5.4 Recommendations

Based on the findings of the study, the researcher makes the following recommendations;

The factories should continue adopting the use of cost reduction strategies in the areas of human resource management, best procurement practices and utilization of modern technology as ways of ensuring that they keep processing costs down in order to get improved performance in terms of annual returns. The factories should consider increasing the sales volumes by expanding the farming scales by motivating the farmers to plant more tea bushes. This can be done by introducing incentives like farm size bonuses. More innovative ways need to put in place to diversify the scale of production, branding and new markets for the tea products. There is also need to re-evaluate the value addition techniques to match the global demands satisfactorily.

Factories to fast track joint construction hydro electric power plants proposed at Thuchi River to supplement the electricity needs in the factories with a view of reducing electricity bills. They should also establish their own woodlots to keep a steady supply of wood fuel deemed cheaper for curing tea. Use of information technology should be up scaled so as to perform activities in real time rather than cycle time, to enhance screen-to-face contact rather than face-to-face contact, and to make services continuously available to customers.

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