

MANAGEMENT PRACTICES AND PERFORMANCE OF TEA COMPANIES IN KERICHO COUNTY, KENYA

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©2019

**International Academic Journal of Human Resource and Business Administration
(IAJHRBA) | ISSN 2518-2374**

Received: 20th October 2019

Published: 26th November 2019

Full Length Research

Available Online at: http://www.iajournals.org/articles/iajhrba_v3_i7_410_424.pdf

Citation: Terer, K. M. & Kipkorir, S. C. M. (2019). Management practices and performance of tea companies in Kericho County, Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(7), 410-424

ABSTRACT

Performance in tea industry has been declining and the management face many challenges in trying to ensure there is affordable cost, better revenues, quality, flexibility and reliability. Cost of production and quality aspect if not controlled can negatively affect firm revenues. The aim of the study was to determine effects of management practices on performance of tea companies in Kericho County, Kenya. The specific objectives of the study were to analyse the effect of material management, to determine the effect of lean production, to analyse the effect of total productive maintenance and to determine the effect of balanced scorecard on performance of tea companies in Kericho County, Kenya. The study would be of great significance to researchers as it brings openness to new ideas that enable them to face challenging situations and to become critical and creative thinkers in their own rights in solving emerging issues. Tea companies would be able to understand better areas of improvements that led to huge cost savings and generate more revenue. The study used Generic strategic model and scientific management theory. The research used descriptive research design which is the most efficient design method in getting information concerning current status of the phenomenon being studied. It describes what exists in the current scenario with respect to the anticipated outcome of the study. The target population of study was 78, which included all the management and supervisors of Kenya Tea Development Agency managed tea companies in Kericho County. The study used simple random sampling technique. Data collection was done through semi structured questionnaires

and interviews. Content validity was determined by peers as well as managers and supervisors of tea companies in Kericho County. The reliability of the study was 0.821 and collected data was analysed using quantitative data analysis with the help of Statistical Program for Social Sciences. Multiple linear regression was used to test the effects of material management, lean production, total productive maintenance, balanced score card on firm performance. Open ended questions were analysed using contextual analysis. Data was presented using tables and bar graphs. The findings indicated that material management affected significantly the firm performance in terms of quality and quantity of tea produced. Lean production ensured wastage reduction at every stage of production through right process conditions and set up time. The total productive maintenance affects production through the level of plant optimization. Balanced scorecard ensured that the firms achieved desired targets through performance indicators. In conclusion, material management, lean production, total productive maintenance and balanced scorecards influenced the performance of tea production. It recommended technology that would ensure high quantity is harvested through mechanization as well as reduction of firewood usage during production. The study recommended improvement on marketing of Kenya's teas internationally and use of high yielding tea clones to ensure that Kenya fetch better prices in international markets. The Kenya government should also review on power tariffs that are becoming unfavourable to the tea sector.

Key Words: *lean production, performance, reduction, agile manufacturing, total manufacturing performance, management productive maintenance practices, material management, cost*

INTRODUCTION

The ever-changing business environment all over the world has made companies to change management strategies so that they can remain viable. From the studies reviewed, there is a correlation between operations management and operational performance. Chaves (2013) studied lean production management aspects in manufacturing firms located in Ireland and he found that this aspect significantly influences operational performance elements of quality, delivery, flexibility and cost.

According to Hicks (2009) tea is highly consumed in many world societies with three billion cups being drunk daily. The production of tea is increasing thus increasing the competition for markets. The tea production is increasing, with China being the biggest world producer. Their tea production rose by 9.5% in 2005 as result of their government's aim to improving the rural living standards (Hicks, 2009). This increased competition for other producers. The producers of tea have to come up with sustainable operations so as not to lose their market in the tea industry.

According to Schroeder (2004) the main purpose of a research on strategy is to identify driving forces for high performance and attainment of competitive advantage in the manufacturing industry. He argues that the link between practice and performance has been the aim of strategic research. He further argues that the focus has been to measure competitive performance summarised as Performance vis-à-vis competition. Shah and Ward (2003) argue that strategic performance helps in identifying challenges that are associated to lean production and also mitigation measures. Li and Young (2005) did a study on lean production whereby they focused mainly on set up time, small lot size, and pull production system. According to Li and Young (2005) modern manufacturing systems are developed based on the ratio of volume and variety of production. A plant can be designed for large variety of products with low volume of production or just large volume with minimum varieties.

The importance of maintenance function in a manufacturing firm has for the years increased significantly due to improvement in safety, cost control, quality and availability (Al-Najjar and Alsyouf, 2003). Management of materials has been for the years been considered as a cost centre. This is because, the department of purchase was spending money on materials and the stores department on the other side, was holding large inventory of materials, which blocked utilization of resources (Ramakrishna, 2005). In the global economy, many changes have taken place in the business environment, which have led to the exposure of manufacturing firms to stiff market competitions. Manufacturing firms in the world have worked very hard to devise strategies, which counters the challenges in view of cutting down

manufacturing costs. As noted by Ramakrishma (2005) progressive management in materials management and other aspects have resulted in reduction of manufacturing costs.

Tea Companies, which are the focus of the study, have tried to implement these concepts of manufacture as part of total production management practices in view of improving the various levels of performance. However, the study will try to find out the implications on overall performance in terms of the operational aspects as well as financial aspects of manufacturing. The cost of operations, materials and maintenance can make or break a business, especially with today's increasing demand on productivity, availability, quality, safety, environmental protection and the decreasing profit margins.

OBJECTIVE OF THE STUDY

To determine the effects of management practices on performance of tea companies in Kericho County, Kenya.

STATEMENT OF THE PROBLEM

Performance has presented a challenge to many organizations and in the current study, the problem on performance was analysed in terms of cost, revenues, quality, flexibility and reliability. Performance in any manufacturing firm all over the world is evaluated by the level of process efficiency, quality of products, profitability and brand acceptability (TBK, 2014). The customer has certain expected functionality of the products and they will either reject or accept. If the products meet their expectations, they get satisfied and dissatisfied if expectations are not met. With the current increase in industrial growth, the manufacturers who do not conform to the market demands cannot survive (Hicks, 2009). Manufacturing industry constantly borrows best manufacturing practices from other industries in order to succeed in their operational performance depending on the market requirements. The review of the related literature on the effects of management practices on performance have mostly focused on performance of processes and little focus on profit or financial payoffs. Kericho County has experienced adverse fluctuations in tea productivity for the past twelve years (TBK, 2014). This trend has persisted irrespective of efforts by tea companies and farmers to device methods and techniques to counter it. This problem has affected economic development, since farmers depend largely on tea production as their main source of income (TBK, 2011). Tea production in Kericho County, is an expensive process and thus become less competitive in the market due to high selling price that results from rising cost of production. Strategies for mitigating such challenges in the tea manufacture need to be developed so that tea produced becomes competitive (TRFK Strategic Plan of 2010-2015). Management practices, which have been adopted to improve performance, have received much attention among the scholars but the research done has some gaps. Ndumia (2010) noted that reliability of his research findings wasn't sufficient and did not address a more in-depth analysis of all strategic management practices. Ogage (2015) concluded that in his case study, few variables of operations management in KTDA managed tea factories in Kenya weren't considered (33.7%). Odhiambo (2015) found that the level of applications of strategy implementations differ in KTDA managed tea factories in Kericho County, Kenya. Guided by

the findings from past studies, this research aims to determine the effects of management practices on performance of tea companies in Kericho County, Kenya because there exists a gap in knowledge in terms of cost and revenue on one hand and quality and processes on the other.

THEORETICAL REVIEW

Generic Strategic Model

The theory was developed by Michael Porters in 1980. Generic strategic model was developed to examine the competitive behaviours that contributed to successful businesses (Porters, 1980). Porter, (1980) established that business strategic analysis can be done using the generic strategic model. According to Porter, (1985) there are three different 'generic' strategies which organizations can use or adopt in order for them to achieve competitive advantage in the market. These generic strategies are differentiation, overall cost leadership, and focus strategies. In the study, he uncovered ways in which companies could maintain long term advantages over competitors. Cost leadership for instance, allows a competitive edge by manipulating production costs.

The theory was relevant for the study because it covers the material management, total productive maintenance and balanced scorecard in the conceptual framework. The outcome influences performance as the theory puts more focus on management practices in the advancement of productivity and quality of the firms under study.

Scientific Management Theory

The theory was advanced by Frederick Wislow Taylor in 1911. Scientific management theory combines the principal of science, mathematics and engineering to reduce wastes and improve efficiency of the various processes and methods of production in a manufacturing (Taylor, 1911). The objective is to reduce wastage, increase process efficiency and methods of productions as well as a just distribution of goods. The theory advocates for team work which makes organizations improve on performance. It is a theory of management that analyses and synthesizes work flows.

The theory was relevant for the study as it addresses lean production concept of production and process aspect of a balanced scorecard. The outcome influences performance as the theory puts more focus on team spirit in the advancement of productivity of the firms under study.

EMPIRICAL REVIEW

Material Management and Performance

Chase, Jacobs and Aquilano (2009) found that the main objective of material management in any company is to ensure that the right item is at the right place, at the right time and at a reasonable cost. The purpose of materials management in any one particular company is to assist management monitor the work flow and proper resource allocation to any particular

process or activity. As explained by Jacobs, Chase and Aquilano (2009), the concept of supply chain brings in the total systems approach to managing the entire flow of information, materials and services from raw materials suppliers through factories and warehouses to the end customer. They further emphasize that companies that face diverse sourcing, production and distribution decisions need to weigh the costs associated with materials, transportation, production, warehousing and distribution to develop a comprehensive network designed to minimize costs. As confirmed by Chase, Jacobs, Aquilano and Agarwal (2009) organization success depends on how they manage supply chain as they indicate clearly how resources of the company are utilized.

In the study done by Ramakrishma (2005) on an average, half the sales income in an organization is spent. Suppose a firm is spending 50% of its volume on material and the profits are say 10% of sales volume, a 2% reduction in materials cost will boost the profits to 11% of sales or the profits will be increased by 10%. To achieve the increase in profit through sales efforts, a 10% increase in sales volumes will be necessary. In other words, organizations earn or lose large sums depending on how effective are their materials management.

In the study done by Ondieki (2012) on the assessment of material management in Kenyan manufacturing firms based in Nairobi, the findings showed that manufacturing firms in Kenya spend average of 56% of annual sales turnover on materials. He further showed that majority (77%) of the firms have not given a lot of recognition to material functions in the organizations. Karim and Arif-Uz-Zaman (2013) did a study on a methodology for effective implementation of lean strategies and its performance evaluation in manufacturing organizations. The research was applied to an Australian company manufacturing medium voltage switchgear products. The types of waste were identified through process mapping and time studies. They then developed an improved process map. They evaluated process efficiency and effectiveness by using an established continuous performance measurement (CPM) metric. From their findings, moving, holding and handling distance and time had drastically improved. The distance moved by the operators as well as holding and handling times had been reduced significantly by the proposed method and layout, efficiency and effectiveness of the new process had improved and waste cut from the process. They noted that their study had limitations in the industry scope and proposed further studies in diverse manufacturing processes and the integration of supply chain in manufacturing.

Lean Production and Performance

Chaneski (2002) suggested that lean production practices are continuously striving to eliminate waste, thereby increasing the percentage of time devoted to value-adding activities. According to Narasimhan (2006) production is lean if it is accomplished with minimal waste due to unneeded operations, inefficient operations, or excessive buffering in operations. Lean production practices are aimed to improve process while continuously reducing the resources required for production (Treville and Antonakis, 2006). Spearman (2007) also found that lean production leads to production of goods and services in a cost effective way as compared to goods and services produced without practice of lean management practices.

Hopp and Spearman (2004) indicated that practices of lean production include pull production, eliminate obvious wastes, swapping inexpensive buffers for expensive ones, variability reduction, and continuous improvement. The review of Spearman's (2007) indicates that lean manufacturing minimize production costs. This is supported by Lakshminarasimhan, (2011) who points out that lean manufacturing minimize waste. Lakshminarasimhan (2011), defined production to be lean if wastes are minimized by reducing operations that may not be necessary. Chauhan and Singh (2012) in their study found that benefits of lean manufacturing are automation, elimination of time wastage, less inventorying and economization of space to produce products that are of high quality and cost effective.

The findings from the study done by Chaves (2013) are that lean internal practices are associated with quality, delivery, flexibility, and cost. Also, process set-up and JIT can improve the level of quality. Delivery is improved with strategies focused on set-up time. Flexibility is achieved through lean practices like adjustment of capacity and new product introduction. Cost reduction is achieved through lean practices. They discovered that lean practices of process set-up time and JIT were likely to improve flexibility, delivery and quality in industries characterized by low industry clock speed. Cost improvement is not affected by industry clock speed.

Total Productive Maintenance and Performance

According to Al-Najjarand and Alsyouf (2003) there are various benefits which have been recorded in various plants due to implementation of TPM. According to Liyanage (2011) maintenance is a preventive measure that can be set up in the plant or outsourced and machine downtime can impact negatively on the performance of a plant; thus machines should be taken care of to maintain operational performance. Foon and Terziovski (2014) identify that maintenance management needs to be integrated into a company's management functions.

As noted by Shah and Ward (2003) TPM includes practices primarily designed to maximize equipment effectiveness through planned predictive and preventive maintenance of the equipment and using maintenance optimization techniques. Furthermore, the concepts of maintenance that have been identified, needs to be reviewed periodically due to continued changes in technology from time to time. This is in line to the calls for implementation of flexible maintenance methods with feedback and improvement.

According to Narayan (2012) asset reliability is affected by people, production processes, and equipment. People's productivity can be measured in terms of the actual against estimated resources. Asset reliability determines downtime duration and resources. As noted by Ahuja and Khamba (2008a) the inter-relationships between various TPM practices already implemented and tested with the manufacturing performance improvement parameters, have been evaluated and found to efficiently make firms realize goals and objectives. The results of their study found that significant manufacturing performance have been enhanced when focused TPM implementation is done over a certain period. Their study further reveals that

TPM initiatives have more noted impacts on manufacturing performance than traditional maintenance practices.

Balanced Scorecard and Performance

Balanced Scorecard is a carefully selected set of measures obtain from any firm strategies that have been put in place to achieve their mission, vision and objectives. Huang (2001), based on the analysis of 315 local firms in East Africa, identifies, on the basis of these studies that, there are no findings on the effects of strategic factors on performance.

In the study done by Ward (2007) on business strategies and manufacturing decisions, data was analysed by the use of analysis of variance (ANOVA), to assess the differences in the external environments for groups of firms. The most diverse industries were the broad-based and the price strategies in most of the content areas. There was no significant difference in investment capacity in the three study areas. They had almost equal investment capacity. On workforce empowerment, just-in-time (JIT) and development programs, broad-based competitor displayed a higher emphasis than the two other groups.

According to Erickson's (2012) study in the Zchech Republic the findings indicated that multi-dimensional measurement of operational performance has a relationship with cost, quality, productivity, and cycle time. Larger and older plants perform only slightly worse than smaller and newer plants. The relationships among different strategies in firms with different capabilities have been the locus for much attention in operations management research. Lawler and Mohrmon (2006) carried out a study in Japan and results shows that, despite its theoretical promise and enthusiastic response, anecdotal evidence suggests that attempts to implement it and achieve financial benefits are often unsuccessful.

A similar research was undertaken by Fuchsberg (2013) in Greece about companies that effected changes on strategic programs as a part of restructuring which considered them to have been effective. The results indicate that Strategic factors provide a paradigm shift in management philosophy for improving organization effectiveness. This depends on the use of improvement tools and the removal of barriers both within the organization and between the organization and its various stakeholders. Huang (2013) who used exploratory analysis on four constructs of the study found that there is a positive impact on manufacturing performance in terms of quality, time, service, cost, flexibility, service and innovations.

A study was done by Lusthaus (2000) in America on performance as a means of accomplishment and achievement of desired result or intended result. Performance of firms therefore refers to the extent to which those firms achieve its stated objectives. The activities a firm carries out to accomplish its mission will always give an indication of its performance stated that "outputs and their effects are the most obvious aspects that show an organization's performance." The reseacher found out that Strategy managers focus efforts of all members to continuously improve all organizational processes and increase value to customers, while relying upon a clear vision of the organization's purpose.

RESEARCH METHODOLOGY

This study adopted descriptive research design. The target population of the study was all management employees of KTDA managed tea Companies within Kericho County in Kenya because they are a major pillar of the economy in terms of business development (Cochran, 2009). The target population was 78 respondents (TBK, 2014). The sample of the study was 65 respondents. In-depth interviews and semi structured questionnaire were used to collect primary data. The study employed Quantitative Data Analysis (QDA to investigate the outcome of the research study by converting the numerical data collected into a meaningful result by use of a number of statistical operations and also the SPSS software. Multiple linear regression was used to test the relationship between material management, lean production, total productive maintenance, balanced score card and firm performance.

RESEARCH RESULTS

In the first objective, material management was significant to performance of tea industry. Material delivery influenced the cost and revenue of the firm as indicated in the ANOVA results which showed positive relationship between material management and firm performance. Production is continuous with influence from both raw and non-raw material. Proper recording of materials greatly assists in quality control of tea production. It also saved on cost and avoided misappropriation of material. Most of the materials were purchased weekly. Raw materials were delivered for 26 days within a month while non-raw material would be delivered after 8.5 days with a lead time of 6.9 days. The material management affected quality and quantity thus increasing the productivity based on the production target set. Hence material management ensured high quality tea as well as larger quantity in the production of tea.

In the second objective, lean production was found to be significant to tea production. The set up time was followed precisely which ensured quality tea. Work standardization, eliminating wastage and continuous improvement ensured quality in production. It affected both quality and quantity of tea. Lean production ensured that wastage was reduced at every stage of production through ensuring that the right condition for high quality is maintained. Set up time ensured quality and quantity tea production which were affected by external environment as well as handling. Harvesting stands at 0.26 man hours per Kg of made tea. The focus on wastage reduction in lean production is mainly practiced at the following sections; withering, CTC (Rolling), drying, sorting and packaging. This means that lean production contributed significantly to the quality as well as quantity of tea production. ANOVA result indicated that lean production had significant effect on firm performance.

In the third objective, total productive maintenance indicated that the level of total production maintenance affected significantly performance in the firms. The production maintenance enables reduction of failure rate, optimization to ensure quality in production and productive run are flexible enough for high production. Quality and quantity were also the main variable considered to be affected by total productive maintenance. The factory had a total production hours' target of 13.5 hour in a day and 1 hour of down time allowed per day. This ensured

high plant optimization reducing loss and increasing quantity of production to farmers. It saved cost and ensures increased income at the same time. Total productive maintenance ensured increased productivity through increased targets as well as improved quality and quantity of tea production. The ANOVA results indicated that total productive maintenance affected positively the performance of the firm.

In the last objective, balance scorecard also significantly affected the performance of the organization and hence enabled the firms to reduce wastage as well as quality and quantity improvements. Finance, customer, training and process in a balanced scorecard affected the reliability of production. The ANOVA results indicated that balance scorecard had significant effect on firm performance.

Management practices are attributed to high performance in tea industry. The performance of the industry from the research findings showed that tea prices runs at an average of 240 Ksh per Kg. The cost of production is 69 Ksh per Kg. The production targets volumes are considerable with conversion rate which needs to be improved. The rejected leafs daily are manageable. The power cost is still high in Kenya hence there is need for more improvement in power cost cutting either through tariff change or adoption of new technologies.

INFERENCE STATISTICS

Inferential statistic was conducted using ANOVA and regression analysis to test variation in firm performance.

Table 1: Analysis of coefficient of determination

Model	R	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. Change	
1	.708 ^a	.501	.50825	.501	14.082	4	56	.000	2.328

a. Predictors: (Constant), Balance score cards, Lean production, Total productive maintenance, material management

b. Dependent Variable: Performance of firm.

Material management, lean production, total productive maintenance and balanced scorecard lead to 50.1% contribution on variation in performance where 49.9% was due to other variables.

The ANOVA results for material management, lean production, total productive maintenance and balanced scorecard were tested against firm performance.

Table 2: ANOVA on Material Management

		Sum of Squares	df	Mean Square	F	Sig.
Firm Performance. * material management	Between Groups (Com bined)	9.011	3	3.004	8.558	.000
	Within Groups	20.006	57	.351		
	Total	29.016	60			

The result on table 2 indicates that material management significantly affect the performance of the firm (F = 8.558, p = 0.00 < 0.05).

Table 3: ANOVA on Lean Productive Maintenance

		Sum of Squares	df	Mean Square	F	Sig.
Firm Performance * Learn Production	Between Groups (Combined)	12.589	2	6.295	22.224	.000
	Within Groups	16.427	58	.283		
	Total	29.016	60			

Lean production was found to be significantly influencing the performance of the firm (F = 22.224, P = 0.000 < 0.05).

Table 4: ANOVA on Total Productive Maintenance

		Sum of Squares	df	Mean Square	F	Sig.
Firm Performance * Total productive management	Between Groups (Combined)	8.091	2	4.045	11.213	.000
	Within Groups	20.926	58	.361		
	Total	29.016	60			

Table 4 indicates that total productive maintenance had significant influence on the firm performance (F = 11.213, P = 0.00 < 0.05).

Table 5: ANOVA on Balanced Scorecard

		Sum of Squares	df	Mean Square	F	Sig.
Firm Performance. * Balance scorecards	Between Groups (Combined)	8.693	3	2.898	8.127	.000
	Within Groups	20.323	57	.357		
	Total	29.016	60			

The results indicated that balance scorecards had significant influence on performance of the firm (F = 8.127, P = 0.000 < 0.05).

Table 6: Analysis of coefficient

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
(Constant)	.799	.545		4.467	.000		
1 Material management	.311	.225	.316	3.282	.002	.517	1.934
Lean production	.491	.130	.462	3.788	.000	.599	1.670
Total productive maintenance	.308	.314	.319	2.951	.015	.566	1.768
Balance scorecards	.220	.211	.259	1.081	.044	.411	2.434

a. Dependent Variable: Firm Performance

The model was provided by $Y = .799 + .311X_1 + .491X_2 + .308X_3 + .220X_4$. This implied that Y indicated firm performance, X_1 material management, X_2 lean production, X_3 total productive management and X_4 balance scorecards. It revealed further that any increase of one unit of material management leads to 0.311 unit change in firm performance other factors held constant, one unit change in lean production result to 0.491 unit change in firm performance other factors remaining the same, one unit change in total productive maintenance leads to 0.308-unit increase in firm performance holding other factors constant. One unit change in balance scorecard leads to 0.220 unit change in firm performance as other factors remaining the same.

Material management, lean production, total productive maintenance, balance scorecard had significant positive influence on firm performance ($P= 0.002, 0.000, 0.15$ and $0.044 < 0.05$ respectively).

CONCLUSIONS

The study concludes that material management plays a crucial role in ensuring quality and quantity of tea produced. Handling of raw material (green tea leaf) requires timeliness and proper tracking to ensure quality made tea. Also cost and misappropriation of material is controlled through material management. Therefore, material management is significant in the performance of tea industry.

Lean production had significant influence on quality and quantity of tea produced. It ensured that there is limited wastage and the set up time ensured that the right quality as well as quantity is enhanced before, during and after processing.

The study also concluded that total productive maintenance significantly affected performance of the firms. It affected quality and quantity of products delivered for processing. The optimization of production in the factory ensured loss reduction and increased farmer satisfaction through increased income levels that are attributed to reduced overall cost of production and increased revenues. The balance scorecard also ensured reduction of waste, high quality and increased quantity of tea production.

Generally, management practices were found to affect the performance of tea firms but more training is still needed to workers especially on the importance of records keeping, accurate information, productive maintenance and importance of lean production. Only qualified staff should be allowed to carry out maintenance in order to ensure plant reliability is improved. These practices showed that both quality and quantity of tea production are influenced and therefore tea firms need to continuously improve and enhance operations at all levels. The findings also showed that plant reliability and flexibility coupled with quality aspects lead to growth in revenues. These findings are in line to the generic strategic model on cost leadership whereby competitive edge is allowed by manipulation of production costs. With lower production costs, market share of products increases significantly due to lower selling prices. The final outcome will be increase of firm revenues. In addition, the scientific management theory was validated in the findings of this study.

RECOMMENDATIONS

The study recommended the industry to continue improving implementation of management practices to ensure sustainability is maintained in terms of quality and desired quantities of processed tea. The management to consider trainings on productive maintenance, records keeping and importance of lean production. The factories should also consider other source of energy and technology that minimize or eliminate the use of firewood so as to not only protect the forest cover but also reduce production cost. The Kenya government should review on power tariffs that are becoming unfavourable to the tea sector.

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