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Influence of Product Adaptation on Sustainable Competitiveness of Tea Firms in Kenya

Henry Kiplangat Cheruiyot
Ph.D. Student, School of Business and Economics, Moi University, Kericho, Kenya

Abstract:
Tea is one of the leading foreign exchange earners for the Kenyan economy; however, the product adaptation and sustainable competitiveness in tea firms is inadequate. There is concern to produce and process tea in an environmentally friendly manner through collaboration with the stakeholders, in a way that guarantees sustainable competitiveness. The objective of the study was to evaluate the effect of product adaptation and sustainable competitiveness in tea firms. This research utilized the resource based view theory. The study targeted 878 respondents from 107 registered tea firms in Kenya and multistage sampling method was used to get sample size of 484. Questionnaires were used to collect the primary data. Inferential and descriptive statistics was employed during data analysis. A positive relationship existed between product adaptation and sustained competitiveness [r = .552, n = 433, p<.05]. The product corporate environmental practices positively influence the sustainable competitiveness in tea firms in Kenya. Managers should conceptualize eco-design in order to reduce the impact of products on the environmental, leading to a longer lifecycle and its simplification, hence assisting it to project from the competition in making business their decisions.

Keywords: *product, adaptation, sustainable, competitiveness, firms*

1. Introduction

Sustainable competitiveness is important for a firm because it increases benefits. Barney (2001) indicates that sustainable competitiveness is procured through assets and abilities a firm controls, that are important, uncommon, defectively imitable, and not substitutable. Any firm should be competitive to survive and should have the capacity to meet focused gauges of profitability, that is, the effectiveness with which it changes over assets into better value. Smith *et al.* (2008) point out that worries about sustainability concentrate on the need to embrace advancements and practices that don't significantly affect the environment, are effortlessly open to and successful for farmers, can prompt to enhancements in sustenance efficiency and have positive reactions on ecological products and enterprises. Esty and Winston (2006) assert that organizations that don't add ecological speculation to their practices, risk missing upside openings in business sectors that are progressively molded by environmental factors. The consequences of corporate environmental exercises have stretched out to end up determinants of the long term performance. To be fruitful in the long term, organizations need to set up activities that have a quantifiable positive and durable effect on the environment (Ringbeck and Gross, 2008).

Epstein (2008) sketched out the significance of creating ecological methodologies, which would minimize environmental effects through reusing, life-cycle evaluations and waste reduction systems. Furthermore, for partnerships with contamination counteractive action situated corporate ecological techniques, the relationship amongst environmental and corporate performance was more positive (Wagner, 2005). Research has demonstrated that through corporate environmental practice systems, firms can accomplish positive financial execution results (Aragon-Correa and Sharma, 2003; Dowell, et al., 2000; Sharma, 2000) and gain an upper hand over their opponents. Ambec and Lanoie (2008) point out that all the more particularly, acting in an ecologically sustainable manner gives a chance to firms to make an incentive by upgrading incomes or potentially diminish costs. Through focused environmental activities and initiatives, firms can make interest for new, environmentally friendly products, which can open up new markets prompting to improved incomes. Dowell *et al.* (2000) noted that firms can likewise accomplish significant reputational profits by ecological activity which thus can prompt to expanded deals and in this way improve incomes.

Albeit many reviews have found a positive relationship between corporate environmental practices and sustainable competitiveness; none has analyzed how partners' coordinated efforts may direct that competitiveness, especially when those practices bear the cost of various degrees of partners' joint effort. This study attempted this line of study by looking at corporate ecological practices to four normal methodologies which include product adaptation. Suddenly, discoveries from an observational examination tested the review's fundamental theory; that is, there was no critical impact of partners' coordinated effort on the relationship between product corporate environmental practices and sustainable competitiveness of tea firms in Kenya. This study would provide recommendations on how to evaluate sustainable competiveness in accordance to environmental management in collaboration with the stakeholders and would be helpful to the tea sector and business practitioners in informing them in the area of environmental strategies.

2. Literature

2.1. The Concept of Sustainable Competitiveness

Competitiveness can be defined as a capacity and its potential must be acknowledged in an association's ordinary operations. Porter (2004) notes that unless there is suitable change at the micro and macro-economic levels, the political, legitimate and social changes won't bear meaningful outcomes that can be appreciated by all that are involved. At the end of the day, macro-economic conditions impact the micro-economic environment and the other way around. In addition, there are numerous cases where firms practice different levels of competitiveness (both decidedly and contrarily) despite the fact that they exist in a similar large scale business environment.

Porter (1990) posits that competitiveness is primarily established, in particular, in a country's micro-economic essentials, contained in the advancement of organization operations, the nature of the micro-economic business environment, and the quality of clusters. He additionally underscores the gainful utilization of assets in a country as a decent way of measuring the level of competitiveness. Scholars such as Oral (2009) and Porter (2004) have noted that despite the fact that there are substituting hypothetical models and their executions that guide policy makers around the world, shockingly there are no hypothetical or viable estimation models created to quantify competitiveness at the organization level. Organizations or firms are the small scale units where rivalry really happens however they shape the competitiveness for country at the total level.

Reasonable competitiveness was measured by utilizing the Hoque (2004) and Joiner et al. (2009) methodology which gives focus to the increment of sales or incomes, income from operations, rate of profitability, profit for value, market share, improvement and development of new products, market advancement, quality of products and services, work force advancement, workforce occupation fulfillment, worker efficiency, and worker responsibility or unwaveringness to the firm. The effect of environmental administration and assurance exercises on corporate financial execution has additionally been bantered about firmly for a long time. This means that there is no characteristic or mechanical law naturally connecting environmental performance with financial performance (Schaltegger and Synnestvedt, 2002).

Gray (2010) points out that practical competitiveness is a framework based idea and environmentally conceptualized as anything underneath planetary and species level while Aras and Crowther (2008) indicate that it is based upon effectiveness in the change procedure and value in the distributive impacts. Schaltegger and Wagner (2006) posit that the administration of sustainability performance requires a sound administration structure which firstly interfaces social and ecological administration with the competitive methodology, administration as well as business and, also, that incorporates social and environmental data with sustainability reporting aspects and monetary business data Ameer *et al.,* (2012).

The generally accepted result markers in the literature are development, export, and profit. This study utilized these markers and developed them by including the effect of the organization on the client and the society. On the off chance that manageability of competition should be measured, it ought to surely incorporate partners into the measure of the firm’s level of performance. The key assets for competitiveness can be gathered under three classifications, to be specific, human related, monetary and innovation related, advancement and configuration based assets. This means that the innovation assets are kept wide to incorporate advancement and configuration since innovation assets does not really cover non-specialized developments and design capability that can add to competitiveness. The pointers in the administrative procedures and capacity intend to assess how an organization creates and utilizes its assets through leadership, procedures and frameworks in an organization, and manageability of strategies.

2.2. Influence of Product Adaptation and Sustainable Competitiveness

Product adaptation alludes to all exercises that change the current item's plan to lessen any negative effect on environment amid production, packaging, utilizing, disposal and reuse. Basically changing to renewable assets in production, adjusting and packaging product strategies to encourage modifying, disposal and reusing, product adjustment activities are meant to lessen both the utilization of assets and the era of undesired by-products. Considering the environment in product configuration can be traced back over 30 years, when it was firmly connected to the first ever significant oil emergency (Plouffe *et al.,* 2011). Developing collective familiarity with the debasement of normal assets alongside progressively stringent environmental controls without a doubt cultivated the advancement and promoting of eco-designed yields. Additional to this is the ratification of the procedures and techniques for advancement of eco-designed yields.

Decrease in costs can be accomplished in different methods, for example, the utilization of re-cycled materials, which can cost less, better utilization of resources (Borchardt *et al.,* 2010; Platcheck *et al.,* 2008), enhanced energy savings and coordination. As a rule, these reductions are the aftereffect of the streamlining of one or a few parts of the life cycle of the product. Eco-designed products give more prominent fulfillment to customers, who are progressively concerned with environmental issues. Aoe (2007) noted that an increasing number of open and privately owned businesses are utilizing environmental performance as a model for selecting their providers. Eco-planned items along these lines empower firms to qualify as potential providers; As a rule, eco-design, while lessening a product's environmental effect, can prompt to its improvement and to a more drawn out lifecycle, subsequently helping it to emerge from the opposition. It can be simpler to develop client loyalty when eco-design drives a firm to offer a service instead of a product, since a long term relationship is set up for substitution of the product. This is the situation for Michelin tires where Aoe (2007) notes that the organization wants to lease the tires and replace them before they are totally exhausted, with the goal that they can be revamped. Clients in this manner have a higher likelihood of staying faithful to the brand.

On the other hand, Harrison *et al.* (2013) contended that a significant part of the current business publications argues that the interests of partners are in strife. A straightforward distinguishing proof of partners and their interests has a tendency to create lists that point in

various directions, especially that the firm has a fixed pie of assets, every group will be competing for the greatest number of those assets as they can and the accomplishment of any one group in getting assets decreases the sum left for the others especially on part of inspiration and demeanor, that they are self-intrigued and with cunning, the image of profound situated disagreement among partner interests is distinctively drawn.

In the meantime, Aoe (2007) notes that some eco-designed products can create financial advantages for the purchasers, for example, bring down energy utilization, and can in this manner add to their dependability Experimental reviews on eco-design are generally contextual analyses that allude to various monetary advantages originating from these encounters. Dutch cases are depicted with regards to an administration activity to advance eco-plan in SMEs; Mathieux *et al.* (2001) portray a few cases in the electronic products industry in Europe; in addition, Nickel and Tischner (2003) exhibit a case in the printing business. Every one of these reviews indicates positive components as far as productivity, either through an expansion in incomes or a lessening in expenses.

Johansson *et al.* (2001) led a more deliberate review on the financial advantages of eco-design on 11 organizations in the electronic and electric areas. Their outcomes additionally demonstrate positive outcomes for the organizations, both at the non-financial and financial levels. Such outcomes are perfect with a developing pattern in the literature demonstrating that it is conceivable to accommodate the organizations' financial and ecological performances (see Lanoie and Ambec, 2008).Kitazawa and Sarkis (2000) point out that this incorporates programs for operational procedures have been real activities in environmental focused practices since the early combination of aggregate quality administration- like ecological projects, for example, add up to quality natural administration programs. Like total quality administration programs that concentrate on aversion and product adaptation in quality issues, add up to quality environmental administration projects can likewise profit by the decrease and counteractive action of waste. In this manner, Sarkis and Cordeiro (2001) note that product adaptation programs constitute activities that can create considerable early ecological advantages which are regularly more noteworthy than those of end-of-pipe practices on environmental emissions.

Additionally, processes can run from proofing of mistake, to recognizable proof of substitutes, to basic housekeeping exercises in projects. Indeed, Zhu and Sarkis (2004) posit that complementarity has appeared to exist between quality projects and environmental projects. Fiksel (1993) noted that product adaptation hence involves coordinating the "voice of environment," that is, outside (partner) points of view, into product design and advancement forms. Hart (1995) stated that in reality, in the last decade, essentially every major industrialized nation on the planet has embraced a legislature supported program for confirming products as ecologically responsive. It hence appears to be sensible to infer that organizations in the developed markets will be driven progressively to minimize the life-cycle ecological expenses of their product frameworks. Through product adaptation, firms can exit environmental risky ventures, update existing product frameworks to lessen liability, and develop new products with lower life-cycle costs. Hart (1995) also notes that the relative significance of these three exercises will differ as per the way of the firm's current product portfolio.

Roomey (1992) points out that product adaptation requires broad representative contribution and constant improvement of decrease in emissions, instead of dependence on costly "clean" contamination control innovation. Through contamination prevention, Hart (1994) also notes that firms can gain significant savings, bringing about a cost advantage in respect to contenders. Proctor and Gamble, for instance, has committed quite a bit of its product adaptation endeavors toward changing its core detergent and cleaning products, which generally have been founded on phosphates and solvents. However, for Church and Dwight, whose core products depend on environmental considerate baking soda, Hart (1995) notes that it has possessed the capacity to arrange its product adaptation endeavors around new product advancement in both the purchaser and industrial markets. This favorable position can be accomplished through two essential means: by increasing favored or select access to vital, however constrained assets; raw materials, areas, productive capacity, or consumers or by building up principles, controls, or measures that are remarkably custom fitted to the firm's capacity. Stuart (2009) noted that this is a procedure to react to and shape social-environmental frameworks under states of instability and change to maintain the supply and opportunities for utilization of ecosystem services to bolster human prosperity.

3. Theoretical Framework

In the study done by Drees *et al* (2013) on resource dependency theory, it run on the notion that all organizations is contingent on each another for the privation of vital resources, which was adopted in this study. The study predicts that, firms will seek to establish relationship – often through informal and formal collaboration – in order to acquire resources due to their lack of essential resources. The influence of resource dependency theory on external factors on organizational behavior to reduce environmental dependence and uncertainty though constrained by their context (Collins, Hillman, &, Withers 2009).

Bridging and buffering are the two related strategies to the reduction of uncertainty. According to Lynn (2005), buffering can be referred to as “insulation and, or the regulation of organizational functions, processes, individual or entities from the effects of environmental scarcity of uncertainty, whereas bridging as occurrence from situation where a firm seek to adapt organizational activities to conform to external expectations.

Doh & Yaziji (2009), explained that the engaging with stakeholders by a firm either through buffering or bridging strategies is partly a function of past experience and nature of these dependencies, and the perceived significance and value of the resources these NGOs are able to provide. Hillman *et al*., (2009), added that the manner in which firms chooses to engage with external stakeholders are influenced by various bases of power within an organization and also the firms’ internal power dynamics. Therefore we expect characteristics of the focal organizations and the management within it to influence the degree to which external stakeholders such as customers, suppliers and government are perceived to be important and valuable resource providers. After all, resource dependency theory also presumes that firms are motivated by the potential to obtain social worthiness and legitimacy. As much of the literature on inter-organizational relationships in the business and society context has been influenced by the resource dependency perspective

(Hendry, 2005), and the emerging fields of corporate environmental practices and stakeholder management presume active and frequent interactions—and resource dependency theory perspective as our overarching conceptual foundation.

For instance, Le Ber and Branzei (2010) relied on several related theoretical perspectives regarding the micro processes of organizational realignment to explore the relational processes that underpin social innovation within strategic cross-sector partnerships. One of the critical variables they uncover, relational attachment, a personalized reciprocal bond between partners, which provides a stabilizing buffer in the face of unexpected contingencies, relates to resource dependency theory view in that it emphasizes the relational dependencies that occur when organizations interact over long periods of time. Drawing from the resource dependency theory framework, enhanced by other relational perspectives, therefore the specific question is what factors determine firms' propensity to engage. The factors outlined here are commitment to corporate environmental practices, resource complementarity, trust, and social network positions.

4. Research Methodology

The identification of the nature and extent of effect-and-cause relationships was through the explanatory research design. It assesses impacts of specific changes on existing norms, various processes. According to Creswell et al., (2007), the focus on a specific problem or an analysis of a situation by causal studies is to enlighten on the designs of relations between variables.

Several districts in Kenya mainly grow tea, for instance; Nandi, Kericho, Kiambu, Bomet, Thika, Sotik, Maragua, Kisii, Muranga, Nyamira, Kakamega, Nyambene, Nakuru, Meru, Trans-Nzoia, Nyeri, Embu and Kirinyaga. Eighty percent of favorable weather patterns are experienced in these areas. Small-scale growers and multinational companies share production as mentioned earlier and; several scientific advances in tea cultivation have come their way, currently small-scale sector average yields stands at 1800kg per hectare which is still below estates sector (Teas Research Foundation, 2002; Willson, 1999).Higher quality standards has been achieved in small-scale sector despite the disparities in yields leading to steadily higher selling prices. According to KTDA (2003), people earning their livelihood from the sector is approximately 3 million, with over 80,000 people employed in the estate, rendering it the largest employer in the private sector industry.

In addition, the environmental footprint of the sectors is considerable, with factors such as high-energy consumption (majorly use of logged timber), reduced biodiversity as a result of habitat conversion etc. Furthermore, poor extension services, low farm gate prices, poor access to credit, limited market as well as low level of farmer organization are among the smallholder problematic issues. When making improvements in the current farming systems, adoption of alternative philosophy and agricultural practices that takes into accounts social, economic and environmental impacts of agricultural activities are required to address the emerging issues. The contribution of sustainable agriculture aids in addressing this challenge. Tea firms registered under Tea Board of Kenya took part in this research.

The target population was 878 managers responsible for production, finance and human resource in tea firms because they understood the various environmental practices (Tea firms HR database, 2015) that are in place in their own firms and also have strong knowledge on how basic requirements in both local and international market for tea. Nassiuna (2006), argues that in most descriptive and experimental research, coefficient of variation of at most 20% is accepted and standard error of 0.02 can be used. Sample size for production managers in community owned tea firms is 134 and the rest of the managers as per the type of tea firms were calculated. Random sampling method was used so that the senior most managers in the three key departments was asked to fill the questionnaire at one in employee relations office and finance and two in production department. The exercise started on a Monday because most managers tend to report on duty on Monday before getting other office commitment outside the tea factories.

Multi stage sampling technique was used because according to Singh (2006); this type of sampling is more representative and comprehensive of the population. In this type of sampling inclusive groups are the constituents of primary sample units whereas sub-groups are the constituents of secondary units within these ultimate units to be selected which belong to one and only one group. Stages of a population were created, through stratification that is according to the nature of ownership of the tea firms that's; community owned and private owned tea firms. Then, the researchers used purposive sampling to administered questionnaire of managers responsible and have adequate knowledge of for the environmental practices being carried out by tea firms and random sampling to pick on the interviewee where there is more than the required number of managers.

This research collected qualitative data using self-administered questionnaires taken to tea firms then a follow-up visit after 7 to 10 days to increase of response rate. Four research assistants underwent two weeks training on environmental practices on data collection and thereafter, the researcher made formal request for approval for this research study from the Office of the President. Upon completion of the data collection, the data was checked, cleaned, coded and analyzed before making final report. Both primary sources of data was utilized in this study.

Primary data was collected using self-administered questionnaires to firm managers, employee relations managers and leaf based managers of the tea firms with telephone calls prior to delivery of the questionnaires to the contact persons and thereafter to made follow ups. Before this is done the interviewees were inducted through phone on areas where they did not understand. The same questionnaire was used by all the respondents to enhance consistency on the interpretation by all the respondents.

The study was concerned with various variables and with expressing and analyzing the variation that variables exhibit. Univariate analysis was carried out to know how data were distributed in relation to a single variable using frequency tables, histograms, and associated statistics. Having examined the distribution of values for particular variables through the use of frequency tables and associated statistics. The correlation analysis was used to give correlation coefficients between the four independent variables measured using seven-item likert scales. The correlation coefficients indicate the strength of the association between the variables. A coefficient was considered significant if the p-value was less than 0.05. There was significant correlation between all the independent

variables and there are no high correlations of 0.90 or above. (Bryman and Cramer, 1997) in (Boonand Arumugam, 2006) suggest 0.80 instead of 0.90 as the threshold. The investigation of relationships was an important step in explanation and consequently contributes to the building of theories about the nature of the phenomena in which the researcher was interested.

5. Results

5.1. Descriptive Statistics

During the study respondents from the firms were asked to provide information regarding to their levels of agreement with the items concerning corporate environmental practice on sustainable competitiveness. Descriptive statistics were computed and the outcome was important for investigating whether or not the variables were normally distributed.

5.2. Descriptive Statistics for Sustainable Competitiveness

During the study the dependent variable was the sustainable competitiveness among the tea firms. The respondents were requested to establish the extent they agree or disagree with statements relating to the sustainable competitiveness in tea firms as summarized in Table 1.

	Mean	Std. Deviation	Skewness	Kurtosis
Our market share grows faster than the market share of the rival tea firms	5.94	.799	-.046	1.332
Our profitability share grows faster than the profitability of the rival tea firms	6.07	.677	-.344	1.027
Our productivity grows faster than the productivity of the rival tea firms	5.99	.668	-.296	1.912
Our clients are more satisfied than the clients of the rival tea firms	5.98	.717	-.414	1.561
The skill of adjustment to the changeable needs of the markets in our tea firms is better than in the rival tea firms	5.99	.700	-.118	1.212
We have a better image than the rival tea firms	5.88	.738	-.784	1.131
The employees' motivation of our tea firms is higher than the employees' motivation of the rival tea firms	6.02	.745	-.982	1.594
We have less labour absenteeism than the rival tea firms	6.07	.690	-.287	1.328
Mean	**6.0007**	**.41491**	**-.609**	**1.964**

Table 1: Descriptive Statistics on Sustainable Competitiveness

The findings showed that all the statements representing sustained competitiveness had a mean of above 5.8, indicating that the respondents highly rated the tea firm sustained competitiveness. The overall skewness was -5.61 and kurtosis was 59.96, indicating that the distribution of values deviates from the mean. From the 8 statements used to explain sustained competitiveness characteristics at tea firms had an overall mean score of 6.00 indicating that respondents agreed on its sustained competitiveness. This implies that the sustained competitiveness was highly rated among the respondents.

5.3. Descriptive Statistics on Product Adaptation

The respondent's perceptions on the product adaptation were sought and their responses presented in table 2. The statement on substitution of renewable materials and reduction in resource consumption had a mean score of 5.98, while reduction in waste generation had a sore of 5.99. Finally the Recyclable responsible packaging and having a comprehensive policy on re-cycling of materials had a mean score of 5.86 and 5.75 respectively. From the 5 statements used to explain the product adaptation had an overall mean Score of 5.9238, indicating that the product adaptation was rated highly. This implies that the product adaptation was highly rated among the respondents.

	Mean	Std. Deviation	Skewness	Kurtosis
Reduction in waste generation	5.99	.822	-1.791	1.154
Substitution with renewable materials	5.98	.742	-1.672	1.905
Reduction in resource consumption	5.98	.761	-1.587	1.079
Recyclable responsible packaging	5.86	.789	-1.202	1.975
Reusability in resource consumption	5.75	.887	-.778	1.195
Mean	**5.9238**	**.57178**	**-3.607**	**1.726**

Table 2: Descriptive Statistics on Product Adaptation

5.4. Correlations Analysis

The description of the relationship between two variables was through the use of Pearson moment correlation which depended on the level of measurement. Table 3 shows the relationship between sustainable competitiveness (dependent variable) and the product (independent variable) using Pearson product-moment coefficient correlation investigation. A positive relationship exist between

product adaptation and sustained competitiveness [r = .552, *n* = 433, p<.05]. This indicated a positive correlation existed between the variables and the more the tea firms used product adaptation the higher the sustained competitiveness.

		Zscore (SCO)	**Zscore (PDA)**
Zscore(SCO)	Pearson Correlation	1	
	Sig. (2-tailed)		
Zscore(PDA)	Pearson Correlation	.552**	1
	Sig. (2-tailed)	.000	

Table 3: Pearson Moment Correlation Results
***. Correlation is significant at the 0.01 level (2-tailed).*
N=433

This indicated a positive correlation existed between the variable process adaptation and sustainable competitiveness. **These results supports earlier studies that** primarily switching to renewable resources in manufacturing and packaging, and altering product designs to facilitate rebuilding, recycling and disposal, product adaptation practices reduce both the consumption of resource inputs and the generation of undesired by-products hence reduce any negative impact on the environment during manufacturing, packaging, use, disposal and reuse' (Klassen and Whybark, 1999b); save not only the cost of installing and operating clean pollution-control devices, but it also may increase productivity and efficiency, (Smart, 1992). Less waste means better utilization of inputs, resulting in lower costs for raw materials and waste disposal, (Young, 1991).

6. Conclusion

Environmental performance is employed by a growing number of private and public companies as a measure for choosing their suppliers. The product adaptation positively influenced the sustainable competitiveness in Tea firms. It is through eco-designed products that qualify firms as potential suppliers. In many cases, eco-design, while reducing a product's environmental impact, can lead to its simplification and to a longer lifecycle, thus helping it to stand out from the competition.

7. Recommendation

Managers should conceptualize eco-design in order to reduce a product's environmental impact, leading to its simplification and to a longer lifecycle, thus helping it to stand out from the competition in making business their decisions.

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