

The PESTLE dynamics in tea trade: Effects on return to the farmer and sustainability of the smallholder tea enterprise

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ABSTRACT

Tea plays an important role in Kenya as it contributes about 26% of foreign exchange earnings and supports approximately five million people. Since independence, the Tea Industry has experienced rapid growth in acreage under tea production and in both export volumes and incomes. The smallholder tea sub-sector accounts for about 60% of the Kenyan tea production. Despite this state, the cost of production has also been on the increase. However, even as the percentage return to the farmer by Kenya Tea Development Agency (KTDA) has been shown to be on the rise, it is not clear how the net earnings to the smallholder tea farmer has been affected by the various macroeconomic factors which incidentally are beyond her or his control and being determined by KTDA in what is essentially a monopolistic business environment, the PESTLE (Political, Economic, Social, Technological, Legal and Environmental) and the Marketing Mix (Product, Price, Promotion and Price). This paper explores the effect of the PESTLE factors on the return to the smallholder tea farmer and the sustainability of the smallholder tea enterprise in Kenya. The paper was informed by secondary tea sector data, field data obtained from smallholder tea farmers sampled from Mount Kenya region in Central Kenya, and interview reports from key tea sector stakeholders in Kenya. The paper indicates that the smallholder tea enterprise in the Mount Kenya region is facing eminent danger of collapse with farmers considering substitute/alternative farm use with higher rates of return on investment. The paper recommends strategies that are required to manipulate the PESTLE factors to the advantage of the smallholder tea enterprise and the sustainability of the Kenyan smallholder tea sub-sector.

Key words: Economical, Environmental factors, Legal and Return to smallholder tea farmer, PESTLE, Smallholder tea enterprise sustainability.

INTRODUCTION

Smallholders play an important role in the tea sub-sector worldwide. For instance, in Sri Lanka there are more than 400,000 smallholders accounting for 76% of its total tea production and 64% of total the area under tea (Agritrade, 2011). In Indonesia, they account for 43% of the area under tea and 23% of production, and in India, the world's second largest tea producing country and largest producer and consumer of black tea, an estimated 160,000 smallholders account for over 26% of total tea production. In Kenya, an estimated 560,000 smallholders account for 62% of total tea production. Smallholder growth in production has been significant in the last decade as tea area under smallholders in China increased by 73%, from 1.1 million ha to almost two million ha, between 2001 and 2010. During the same period, tea production area under smallholders expanded by 34% in Kenya, from 85 511 ha to 115 023 ha, and by 30% in Vietnam, from 101 884 ha to 132 000 ha (Agritrade, 2011).

The definition of smallholder tea farmers varies from country to country. In Kenya, it means a grower cultivating tea but does not possess her or his own processing factory; in Sri Lanka, an

area of land less than 50 acres (20.2 hectares); in India, a holding less than 10.12 ha and does not possess her or his own tea processing factory; and, in Indonesia, land size between 0.8 to 2 ha and sell tea leaves without processing. Nyangito (2001) defines smallholder farmer as that who farms in less than eight hectares of tea farm. However, the average landholding in most countries tends to be on the lower side. For example, the average size in Indonesia is less than 0.4 ha, in India less than 1.6 ha, and more than 80% of smallholders in Sri Lanka hold less than 0.2 ha (IFC, 2011).

Chan *et al.* (2010) observe that small-scale tea farmers are generally price takers that sell their green leaf to collectors, plantations or processors, while in Kenya they supply their green leaf to KTDA factories which are owned by smallholder farmers but managed centrally. The main challenges in the small-scale tea sub-sector include low farm gate prices, poor extension services, limited marketing channels, poor access to credit and low level of farmers organization (Chan *et al.*, 2010). Smallholder farmers use mainly family labour in planting, plucking and delivery to collection centres (buying centres). However, Chan *et al.* (2010) argue that the activities of smallholder farmers are less environmentally friendly and are thus hard to be incorporated in export market supply chains that call for increased quality, social and environmental standards. This has also led to the question of whether smallholder tea farming is sustainable as an enterprise purely for maximizing profit and wealth and continuous improvement of the farmer's standard of living with an acceptable guaranteed return on investment.

Problem statement

In a review of six major tea producing countries (India, Indonesia, Sri Lanka, Kenya, Vietnam and Malawi), Sanne van der Wal (2008) reports that tea production is hindered by rising production costs (labour, fuel and electricity), mismanagement, age of tea bushes, high overhead costs, bad agricultural practices, low labour productivity, climate change and dilapidated infrastructure. In real terms, prices of tea have gone down by about 35% in the past 25 years (Mulder, 2007). Also the sector's environmental footprint is considerable, with reduced biodiversity due to habitat conversion and high energy consumption (mainly using logged timber), among other factors. Additionally, for the smallholder sector, problematic issues include low farm gate prices, poor extension services, limited market channels, poor access to credit and low level of farmer organization. Addressing these issues requires adoption of alternative agricultural practices and philosophy that take into account environmental, social and economic impacts of agricultural activities when making improvements in the current farming systems. Sustainable agriculture constitutes addressing these challenges. Smallholder tea farmers, producing tea on less than eight ha of land on average, have no capacity to address these issues on their own. There is a dearth of literature that seem to address the whole scope of factors (political, economic, social, technological, legal and environmental) in a situation where the smallholder farmer has no control and at the same time has no alternatives when selecting where to sell her or his green leaf, as obtains among smallholder tea farmers in Kenya whose main outlets are KTDA centrally managed tea factories, and the effect these factors have on the return to the smallholder tea farmer.

Objective of the study

The study was carried out to investigate the influence of PESTLE factors on the return to the smallholder tea farmer and sustainability of the smallholder tea farming as an enterprise.

Research questions

For the study to achieve its objective, it was guided by the following research questions:

- i. What are the returns to the smallholder tea farmers in Kenya?
- ii. How much and in what ways do the PESTLE factors influence smallholder tea farming in Kenya?
- iii. How sustainable is smallholder tea farming and what are the threats?

LITERATURE AND CONCEPTION FRAMEWORK

Pretty *et al.* (2008) observe that sustainable agriculture not only addresses environmental and social concerns, but also offers innovative and economically viable opportunities for growers, labourers, consumers, policy makers and many others in the entire food system. They further argue that concerns about sustainability focus on the necessity to adopt technologies and practices that do not have adverse effects on the environment, are easily accessible to and effective for farmers, can lead to improvements in food productivity and have positive side-effects on environmental goods and services. When farming is done by smallholders for the purposes of earning income, return on their investment also becomes a major concern as they are expected to meet their social obligations and continuously improve their standards of living. Adding to the necessity of producing tea sustainably, is the consumers voice indicating the willingness to pay for tea produced ethically as guaranteed by third party bodies (Divney, 2007; Rainforest Alliance, 2007; Sanne van der Wal, 2008). To achieve sustainability from the smallholder tea farmer point of view, the return to the investment has to be more attractive than available alternative land uses in the region. This is mainly dependent on the price paid to the farmer for the green tea leaf delivered to the factory.

Many governments have attempted to regulate the system of payments to smallholders by private processing factories, as opposed to those that are collectively owned such as in Kenya. An example of such successful system is that found in Sri Lanka. India and Indonesia have also intervened with regulations that determine the relative shares of the revenue from the sale of the *made tea* of the smallholder vis-à-vis the private processing factory based on market prices prevailing in the auction centre / primary market (Tradecraft, 2007). Sri Lanka had a system of support to smallholders since the 1970s. Their present scheme, evolved over the years, has been formulated by taking into account the cost of production and the profit margin of growers as well as the private processing factories. The price sharing ratio between smallholder and factory has evolved from the initial 75:25, which was revised to 70:30 and subsequently to 68:32. Implementation is through a system of “tea inspectors” who closely monitor the tea factories purchasing green leaves from smallholders and the price paid to them, based on the actual realization for the tea sold in the auctions (Traidcraft, 2007).

The Tea Board of India, within its powers under a delegated legislation, introduced in early 2004 a price-sharing formula based on the Sri Lankan model. The costs accruing to the small growers for producing green leaf, the cost of manufacturing “made tea” by the processing factories and the ratio of conversion of “green leaf” into “made tea” were considered and studied by an independent, professional body. The price-sharing formula envisaged that the sale proceeds were to be shared between the smallholder and the manufacturer/processor in the ratio of 60:40 when the average price realized by the manufacturer for all varieties of tea during the reporting month is either equal to or less than the monthly combined average auction price for varieties of tea of the said growing region. Where the price realized by the manufacturer exceeded the monthly average auction price, the differential between the auction average price and the price realized by the manufacturer was to be shared in the ratio 50:50 as in Sri Lanka (Traidcraft, 2007).

In Kenya, the returns to the small-scale farmers have historically remained lower than that for the plantations and other big producers. This is attributed to the high management fees charged by KTDA, the many taxes imposed on small-scale tea farmer, the high cost of production, the long and inefficient supply chain and general mismanagement. The situation is made worse by the fact that the small-scale farmers have remained at the bottom of the hierarchy in terms of participation, influencing and contribution to decision making in the sector (KTDA, 2007).

Although both the KTDA and estate tea fetch similar prices on the world markets, the participation of many players who have to get a share and management problems along the KTDA supply chain reduce the payments to small-scale farmers. Comparing tea farmers' assets with the non-tea farmers, Simbua and Loconto (2010) show that farmers involved in tea production own relatively bigger stocks of household assets compared to non-tea households. There is also evidence that households with larger stocks and better flows of assets tend to perform better in terms of green leaf yields than those with smaller asset bases.

Tea production is associated with accumulation of assets. Whether this has been sustained over the years, and whether involvement in tea production improves the quality of life of rural families in the recent, changing times, is a matter that calls for a review from the farmer perspective. It is expected that since tea is grown and partially processed in rural areas, it contributes considerably to the growth of rural infrastructure, creates rural employment and enhances the wellbeing of communities living in rural areas. Thus, it becomes a challenge of governments with such a huge smallholder involvement, such as Kenya, to be concerned about the key factors (Political, Economic, Social, Technological, Legal and Environmental) that influence not only the performance of the smallholder tea farming as an enterprise but also be seen to be doing so by the smallholder farmers themselves. This is particularly important in Kenya, since tea accounts for 26 % of the total export earnings and is the leading foreign exchange earner, contributing to about 4% of the country's GDP (KTDA, 2013). The earnings accruing from tea export in Kenya generally have been increasing. The country earned Ksh 47.2 billion in 2006 compared to Ksh 97 billion in 2010 (Tea Board of Kenya, 2012). The Tea Industry is a major source of employment in the country with an estimated four million Kenyans, about a tenth of the total population, deriving their livelihoods from the tea sector (Mwaura and Muku, 2007). Tea also directly contributes to environmental conservation through enhanced water infiltration, reduced surface erosion and mitigation of global warming through carbon sequestration (TRFK, 2011).

THE PESTLE FACTORS IN SMALLHOLDER TEA FARMING

The industry or companies' competitiveness is dependent on various micro-and macro-environmental factors. A firm is assumed to have control over its micro-environmental factors even as it attempts to build a competitive advantage and cope with competition within the macro-environment and its limiting factors. On the internal/micro environment, apart from a firm's competencies, capabilities, resources strength and weaknesses in building its competitive advantage, other concerns are the key industry traits; strength of competition, drivers of the industry, changes in the sector, market position and industries profit outlook or return to the investor. For the smallholder tea farmer, the big question is whether the tea enterprise is attractive and sustainable. In a much wider context, the macro-environment, the smallholder tea sectors' competitiveness, is affected by the political, economic, social, technological, legal and environmental (PESTLE) considerations that influence return to the farmer. In building a competitive advantage, smallholder tea enterprises take control of the micro-environment issues while the macro-environment ones are managed externally albeit with the smallholder's participation, a concept that led to the birth of Kenya Tea Development Authority/Agency (KTDA). In the Kenyan context, smallholder tea farmers have no control of both the micro-and macro-environment issues/factors. They do not decide or participate in the decision of the crucial

combinations in a marketing mix of the product-the price, the promotion and the place. This is done by KTDA. Monroy and Mulinge (2012) observe that KTDA assumes responsibility of the smallholder tea farming though there is limited quality of service received by the farmers. They also observe, in addition, that there exists a bias between well-off smallholders and the rest of the tea farmers, there is prevalence of particular interests of few tea farmers over the interest of the majority of the farmers, and that KTDA management is plagued by opaqueness and corruption.

The key PESTLE considerations that affect the smallholder tea farmers are outlined below.

The political factors in smallholder tea farming

Policy is about politics, power and reconciling different interests and aspirations. Part of the art of policy-making is to find proposals that are politically feasible: that are acceptable to stakeholders and that they will not obstruct. In the smallholder tea sector in Kenya, such policy decisions entail decentralization, democratization and privatization that have been attempted through the creation of KTDA. However, as noted by Monroy and Mulinge (2012), intense local politics in industries lead to poor management of factories which in turn affect the smallholder tea farmers. Government (national and local) policies and decisions affect the smallholder tea farmers in many ways including the following: i) Financing and building of infrastructure; ii) Construction of facilities such as dams for irrigation; iii) Supporting maximization of land use and improving productivity; iv) Subsidizing food production by paying farmers to produce certain crop; v) Supporting or facilitating marketing; vi) Planning and controlling cheaper imports; vii) Availing resources such as money and land to be best used in a particular; viii) Tax incentives and other financial support for both investment and for R&D; ix) Foreign trade policies and paradigms such as reciprocal trading and import substitution; and x) Setting up agricultural and or sector specific training colleges for new farmers and advisory groups.

These efforts must not only exist in the government's policy documents but also be known by the stakeholders and be seen to be having a bearing on a farmers' day-to-day operations and return to their investments.

The economic factors in smallholder tea farming

In Kenya, agriculture is the largest economic sector and remains the best opportunity for economic growth and poverty alleviation. Smallholders are known to be resource poor and operate below their potentials (Baloyi, 2010). A well-organized, sustainable, tailor-made and widely accessible rural agricultural financial system remains a major development challenge in Kenya (Kibaara, 2006). Other economic factors that affect smallholder tea farmers, as noted by Groosman (2011) and Angelucci (2013), among others, include: i) Access to financial services; ii) Access to information; iii) Financial management such as accounting and financial reporting, budgeting, collecting accounts receivable, risk management, and insurance for a business; iv) Acreage size; v) Prices; vi) Labour costs; vii) Credit facilities; viii) Extension services; ix) Lack of subsidies; x) Buying power of consumers; xi) Local currency exchange rates; xii) Local economic environment within each market; and xiii) Taxation level.

Social factors in smallholder tea farming

Chen (2009) observes that most people have no idea of the tea production process (processing, blending, packaging, transportation and sale), the major players involved in this process that spans agriculture, industry and retail, as well as the impacts of tea consumption and production on the tea growers' and workers' lives. It has, however, been established that tea production has social and environmental impacts (Sanne Van der Wal, 2008). From a social perspective, as observed by Sanne Van der Wal (2008), Bernhardt and Milberg (2011), Sen (2000), and Prabakar (2011), among others, working conditions in tea farms and plantations are usually poor and

affect the following: i) Skills of farmers; ii) Availability of labour; iii) Perception of farmers (they are progressive and believe) iv) Education (they went to school, they know how to read and write, and most are men); v) Age group (they are young, less than 40 years old); vi) Recognition of saving money and health; vii) Farmers who have stable economy believe in technologies, those who are old and conservatives do not; viii) Training; ix) Household size/income; x) Access to information; xi) Changing family patterns in developing countries; xii) Consumer preferences; xiii) Changing work patterns; xiv) Changes in lifestyles of population; xv) The level of education of population in local markets; and xvi) Changing values among population.

Technological factors in smallholder tea farming

Tea productivity in the smallholder sub-sector has been over the years relatively lower compared to the estates sub-sector and the yields are still well below potential (TBK, 2008). Smallholder tea farmers experience sub-optimal and declining crop yield (Owuor *et al.*, 2001) as compared to the large estates. The low levels of adoption of improved technologies in smallholder tea farms may also be a factor responsible for their sub-optimal production levels. The difference between the two sub-sectors is mainly attributed to the adoption of improved technologies, including improved tea clones (Tea Research Foundation of Kenya, 2011). Owuor *et al.* (2008) note that the low and declining crop yields among the smallholder tea farmers is probably because the improved production technology and innovations are not reaching the farmers or that they are not being adopted. Other technological concerns in smallholder tea farming, as discussed by Kinyili (2003), Daberkow and McBride (2003), Sudath (2008), Banmeke and Ajayi (2008), TRFK (2011), Porter and Miller (1985), Baourakis *et al.* (2002), and Lazarevic *et al.* (2007) among others, include: i) Technology on proper land preparation and soil conservation methods; ii) Technology on procedures for planting vegetatively propagated materials; iii) Technology on general crop husbandry methods; iv) Recommendations on necessary farm inputs; v) Machines and irrigation; vi) Greenhouses with computer-controlled technology; vii) Genetic engineering; viii) Innovative ICT systems such as SMART power systems, precise agriculture tools, and farm management software; ix) Biotechnological developments; and x) Developments in agriculture.

Legal factors in smallholder tea farming

National policies have not adequately addressed the needs of small-scale farmers; often there is a failure to listen to small-scale-farmers and also a failure in government policy to support commitments to international development (Farm Africa, 2002). The specific laws governing the Tea Industry are spelt out in the Tea Act (Chapter 343) and KTDA Order established under the Agriculture Act (CAP 318) to control and regulate smallholder tea farming. The Tea Board of Kenya (TBK) was registered as a regulatory body of the industry and has restrictive powers over the entry and exit into the industry through licensing of tea growers and factories. Other legal regulatory concerns, as noted by Monroy *et al.* (2012), among others, include: i) Introduction of policies and regulations on health; ii) Introduction of tough customs and trade regulations; iii) Licensing regulations related to the industry; iv) Chemicals use; v) Transgenic seedlings; vi) Gene manipulation; vii) Export policies; viii) International relations; and ix) Sanctions.

Environmental factors in smallholder tea farming

Smallholder tea farming affects the environment. The productivity of tea plantations is largely influenced by weather factors. Environmental issues that affect or are affected by smallholder tea farming, as noted by Muraleedharan (2008) and Deb Barua and Bhagat (2011) among others, include: i) Environmental rules and regulations (standards and certification requirements); ii) Environmental disasters in countries producing tea; iii) Global warming and other environmental issues in a global level; iv) Pollution of surface and ground waters because of intense fertilizer utilization, wrong management practices, or stocking densities that are too

high; v) Soil degradation and loss of soil; vi) Decline in the number of plant; vii) Increased air pollution affecting agriculture adversely; viii) Effects on the visual landscape and loss of cultural heritage; ix) Contamination of the environment by pesticides; x) Steep slopes hinder machinery and have thinner soils; lower, gentler slopes are less prone to soil erosion; xi) Tea and tea crops prefer the well-drained soil on hill slopes; xii) Temperature decreases by 6.5°C for every 1000 meters gained in height; xiii) Soil fertility; xiv) Good drainage (reduce the dangers of water logging).

In the smallholder tea farming sector in Kenya, there is scanty information on the farmers' awareness, involvement and efforts in dealing with the PESTLE factors that affect return to the farmer on the investments made on the tea farm.

THE SMALLHOLDER TEA FARMING ENTERPRISE AND THE MARKETING MIX

The structure of agricultural production in developing countries has radically changed. According to Kwa (2001), products from farmers must be unique in quality and standard for consumption. Deciding which crop or product the farmer will grow or sell depends on determining what is selling in the larger market, whether value addition is necessary, what competitive groups are selling, the quality needed to compete, amount of commodity that can be delivered at a specific time (scheduling), and develop or improving packaging. Farmers often have difficulty with pricing because it can be subjective (Ingram, 2009). In some cases, such as with smallholder tea farmers in Kenya, such a choice does not arise since the buyer dictates the price at which the product is sold to them. In most developing countries, prices are influenced by the quality of products, taste of customers, availability of substitutes, customers' income, climatic conditions, and technology-which are part of the PESTLE factors that the study sought to find how they influence smallholder tea farming enterprises return on investment (ROI).

RETURN ON INVESTMENT AS A FUNCTION OF PESTLE AND THE 4PS IN SMALLHOLDER TEA FARMING

A recent summary of over 600 rates of return studies suggests that returns to agricultural research average 50% in Africa, 78% in Asia, and 54% in Latin America (Allston *et al.*, 2012). According to Allston *et al.* (2012), variability of outcomes is highest in Africa, and, in specific instances, returns may even prove negative. The diversity of Africa's farming systems and frequent reliance on rain fed crop production explain these variations. Agricultural growth requires continual improvements in farm technology, well-functioning markets and infrastructure adequate to move goods at reasonable cost from farm to market. In all three areas, public goods are essential. Technology development in closed pollinating and vegetatively propagated crops requires publicly funded research and extension services. Well-functioning markets require property rights, grades and standards and enforceable contracts, which are typically public goods. Infrastructure such as farm-to-market roads, power lines and ports are, likewise, contributing to this high variability. Median returns, however, remain consistently higher than any other form of public investment (Haggblade and Tembo, 2003).

The emerging scenario in relation to the smallholder tea farmers in Kenya is that they operate in an environment where they have little influence on the micro and macro environment with restricted options when it comes to the marketing mix as illustrated in Figure 1.

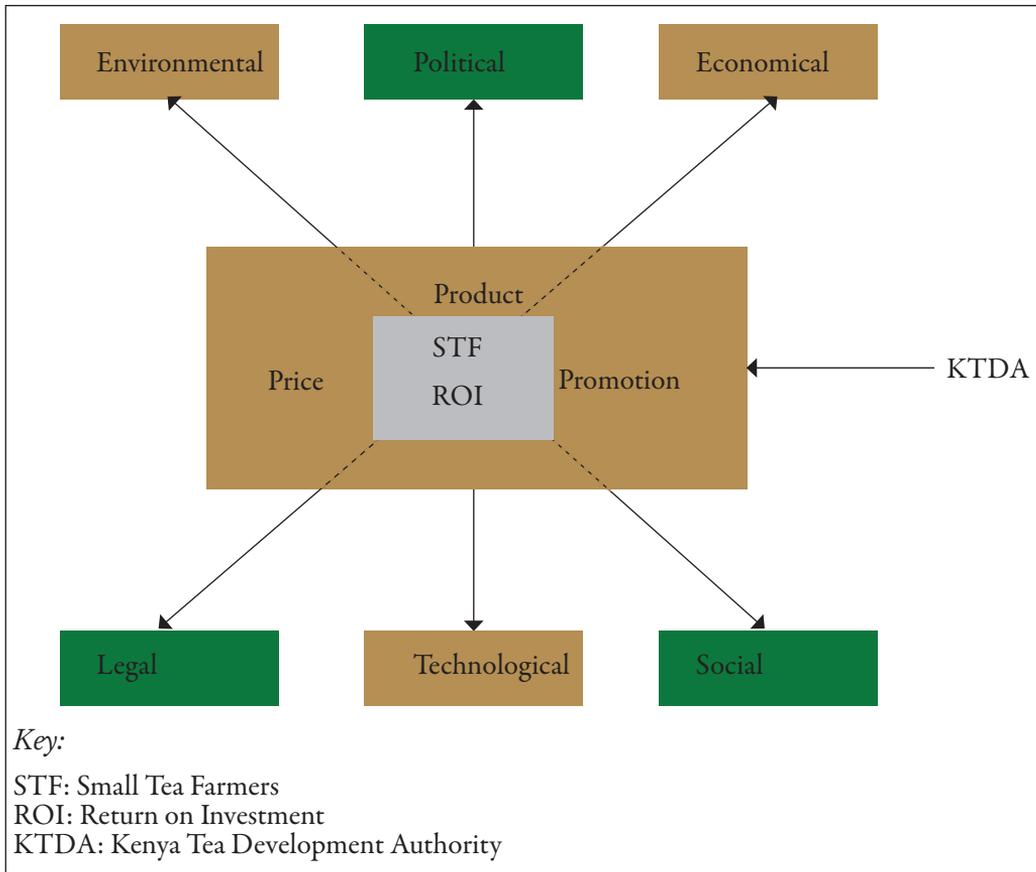


Figure 1: Conceptual frame work of the smallholder tea farmer operating environment.

The main focus of the study is the ROI to the farmer and how it is affected by the PESTLE factors, from the farmer’s perspective, and the influence the farmer has on what would ordinarily be an internal matter of the product mix.

METHODOLOGY

This study adopted interpretive and positivist epistemology. Interpretive epistemology requires the researcher to be much closer to the situation and, in effect, interpret life through the human experience. Every human being is unique and every bit of social life has its own meaning, feeling, intention and motivation (Chris *et al.*, 1985). The PESTLE factors are seen from the respondents’ perspectives (what they experience, what they interpret as the effect of what is happening around them and the way they judge the issues seen to influence their decisions and involvement) in this case, with the smallholder tea farming. Positivism emphasizes the quantifiability and predictability of mental and behavioural processes. The strength of positivism lies in its adherence to a well-established set of standards for rigorous research emphasizing such procedures as random assignment of subjects and control of extraneous variables through laboratory-like conditions (Gareth, 1989). In this study, the qualitative factors were PESTLE factors, and quantitative aspects of price, costs and tea returns to the smallholder tea farmer warranted both interpretive and positivism.

Study area

The survey was in region referred by KTDA as East of Rift Valley. Geographically, the region is located in the central parts of Kenya and is commonly referred to as the Mount Kenya Region lying between longitudes 36° 49" and 38° 41" East, and latitudes 0° 66" North and 1° 32" South. It encompasses Kiambu, Murang'a, Nyeri, Kirinyaga, Tharaka Nithi, Meru and Embu counties (Appendix 1) and has demographic characteristics outlined in Table 1.

Table 1: Demographic characteristics of the Mount Kenya region.

County	Area (km ²)	Population	% national Population	Poverty Level (%)	Age Bracket (%)			Growth rate (%)	Male (%)	Female (%)
					0 – 4	15 – 64	65+			
Tharaka Nithi	2639	365330	0.95	65.0	39.1	55.6	5.3	3.0	48	52
Embu	2818	516212	1.34	42.0	37.5	57.3	5.2	2.4	49.3	50.7
Kirinyaga	1478	528054	1.37	25.2	33.2	61.4	5.4	1.5	49.4	50.6
Kiambu	2543	1623282	4.2	27.2	34.5	62	3.5	2.6	49.4	50.6
Meru	6939	1356301	3.45	28.3	39.9	55.7	4.4	2.1	49.5	50.5
Nyeri	2475	693558	1.80	32.7	33.8	59.7	6.5	0.8	49	51
Muranga	2559	942581	2.44	29.9	30.0	59.0	11.0	2.2	48.6	51.4
Total	21451	6025318	15.55							
Mean				35.8	35.4	58.7	5.9	2.1	49.0	51.0

Source: KNBS 2010

The region has a tropical climate characterized by high temperatures (>18°C) and considerable precipitation. The mean annual temperature of Mount Kenya regions is 20.3°C while the mean annual rainfall is 1200 mm. This type of climate is suitable for subsistence and cash crop farming as well as dairy farming. The most common cash crops grown are tea and coffee. The entire region has 37 KTDA managed tea factories (see Appendix I).

Data collection and analysis

The researcher selected farmers near factories in the study area, 140 farmers were randomly sampled for the study and 104 valid questionnaires were returned. Data collected was carefully coded and entered into SPSS, descriptive statistics and factor indices generated and then subjected to regression analysis to establish the relationship between PESTLE factors and the smallholder tea farmers' return on investment, thus the degree of sustainability.

STUDY FINDINGS

The study findings are presented under three themes as the research questions: i) What are the return to the smallholder farmer? ii) How much and in what ways do the PESTLE factors influence smallholder tea farming in Kenya? and, iii) How sustainable is smallholder tea farming in Kenya?

Return to the smallholder tea farmer

The respondents indicated they have been in tea farming for 20 years on average, have a family land size of 1.33 hectares on average of which a mean of 0.67 ha is under tea which is about 57.5% of the land available. The volume of tea produced per year is on average 7,739 kilograms per year giving an average production of 4,881 kg/acre (10,982 kg/ha) produced by 5007 tea bushes per acre (11,266 bushes/ha) that give on average a productivity rate of 1.55 kg/bush per year (summarized in Table 2).

Table 2: Average smallholder tea production in the Mount Kenya region.

	N	Minimum	Maximum	Mean	Std. Deviation
Duration in tea farming (in years)	102	4.00	54.00	20.3137	13.42156
Land size in hectares	104	.10121	4.85830	1.3263002	1.02825118
Size of land on tea in hectares	104	.05061	3.23887	.6757046	.63092642
Value (price) of land per acre in the area (in Ksh)	103	1.80	13000000.00	1320873.8039	1288990.39609
Proportion of respondent's land under tea	104	.05	1.00	.5754	.24538
Volume of tea produced per year (in kg)	104	200.00	42857.00	7739.1827	9526.70354
Number of kilograms of tea per acre	104	333.33	25000.00	4880.6909	4209.90802
Total number of tea bushes	102	280	35000	5006.72	6884.682
Number of tea bushes per acre	102	115.00	50000.00	3868.7243	6906.99828

The smallholder tea farmers indicated that it cost them on average Ksh 68,605/acre (Ksh 154,361/ha) per year in tea production that works out to Ksh 496 per tea bush per year or Ksh 14.1*/kg, as shown in Table 3.

Table 3: Average cost of tea production in the Mount Kenya region.

	N	Minimum	Maximum	Mean	Std. Deviation
Cost of fertilizer per year	101	1500.00	100000.00	14734.0594	16032.41568
Cost of manure	33	600.00	60000.00	7886.8485	11339.11517
Input cost per acre	98	191.84	120000.00	15108.8850	19455.31390
Input per tea bush	98	.33	50.00	6.8497	7.44657
Cost of tea farm management activities	96	840.00	470000.00	77005.9097	89547.39472
Tea farm management cost per acre	96	2400.00	432142.86	47183.7210	54861.72452
Tea farm management cost per bush	98	1.23	166.67	26.3831	31.10566
Total smallholder tea production cost	99	3940.00	3075000.00	122688.7071	314952.79254
Total smallholder tea production cost per acre	99	23.58	1089333.00	68605.2229	117669.46593
Total smallholder tea production cost per kilogram				14.1*	

* The cost does not include family labour and cost of idle time as a result of leaf collection system in use.

The KTDA chief executive Lerionka Tiampati reported in *Daily Nation* (September 19th 2014), that:

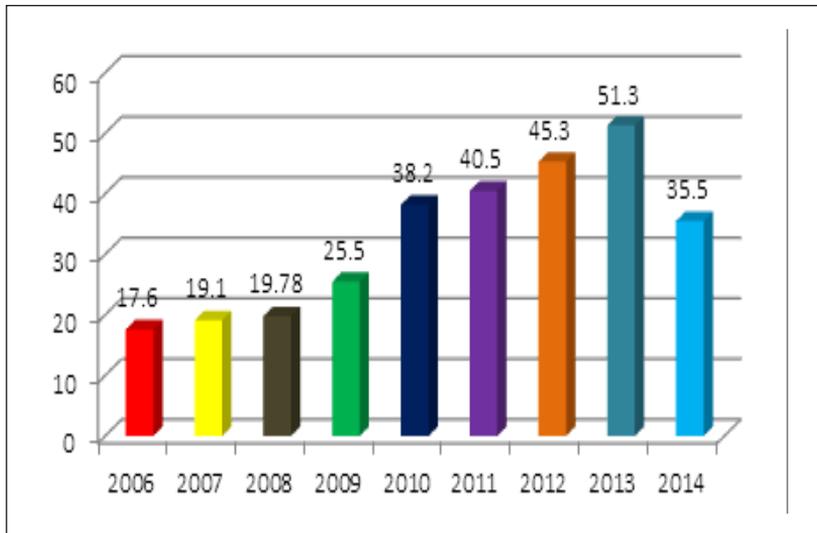
“A Kenyan tea farmer spends about Ksh 14.20 to produce a kilogram of green leaf, with plucking accounting for half the total expenses. At Ksh 8 a kilo, this is the single largest cost. Fertilizer expends Ksh 3.20 a kilo, pruning cess (KSh1). Other costs are tipping and weeding at Ksh 0.36 a kilo.”

This agrees fairly well with the farmers self-reported total cost of production. On income, the respondents indicate they are paid on average Ksh 13.9/kg per month with a return on investment of 15.1% as reported by farmers and 10.7% when computed by dividing average net earnings per year by average total investment on tea that includes value of land on tea, cost of establishing the tea plantation and cost of managing tea activities throughout the year, as shown in Table 4.

Table 4: Return on investment to the smallholder tea farmer.

	N	Minimum	Maximum	Mean	Std. Deviation
Price of tea per kilogram	100	12.50	14.00	13.8950	.38465
Total earnings per month	98	280.00	350000.00	16920.4646	39722.75204
Total earnings per year	98	3600.00	4200000.00	181941.5857	455868.42691
Bonus received per year	91	1750.00	1728000.00	214693.4066	290739.67588
Total earnings per year	93	17970.00	4550000.00	384800.2731	607146.91195
Total earning per acre	93	11199.50	1555200.00	207726.2294	192500.43548
Total earning per tea bush	93	18.50	3434.67	151.7797	375.75483
Net earnings per year	94	8880.00	2169400.00	272705.8907	379068.36649
Net earnings per acre	92	69.80	1446267.00	159498.9767	196230.33169
Net earnings per bush	91	.38	1084.70	78.1152	132.29192
Value of land under tea	92	150000.00	14000000.00	2168586.9565	2547891.75142
Cost of planting and tending to tea bush up to maturity (ready for picking)	48	28.00	7200000.00	652921.2292	1520547.02989
Total investment on tea	88	150000.00	18271550.00	2555381.5227	3487165.13142
Percentage tea ROI per year	89	.88	85.75	15.1047	17.55975

It should be noted that from the farmers’ perspective, it costs them Ksh 14.10 to produce a kilogram of green leaf for which they receive Ksh 13.895 as monthly payments. The farmers reported that tea picking costs between eight and ten shillings a kilogram and is the highest costing activity. KTDA Chief Executive officer indicated that in 2014 the highest paid farmers net an average of Ksh 26.22 a kilogram paid as bonus to which they add the monthly payment at an average rate of Ksh 14 per month and the highest paid farmers take home Ksh 40 per kilogram of green leaf while the least paid take Ksh 22.50 (*Daily Nation*, Friday September, 2014). The trend in overall smallholder tea earnings in Kenya for the last six years (2006-2014) is shown in Figure 2 while the overall return to the farmer and proportion of factory costs are shown in Figure 3.



Source: Daily Nation, Friday September, 2014.

Figure 2: Total payments in (billion Ksh) 2006-2014.

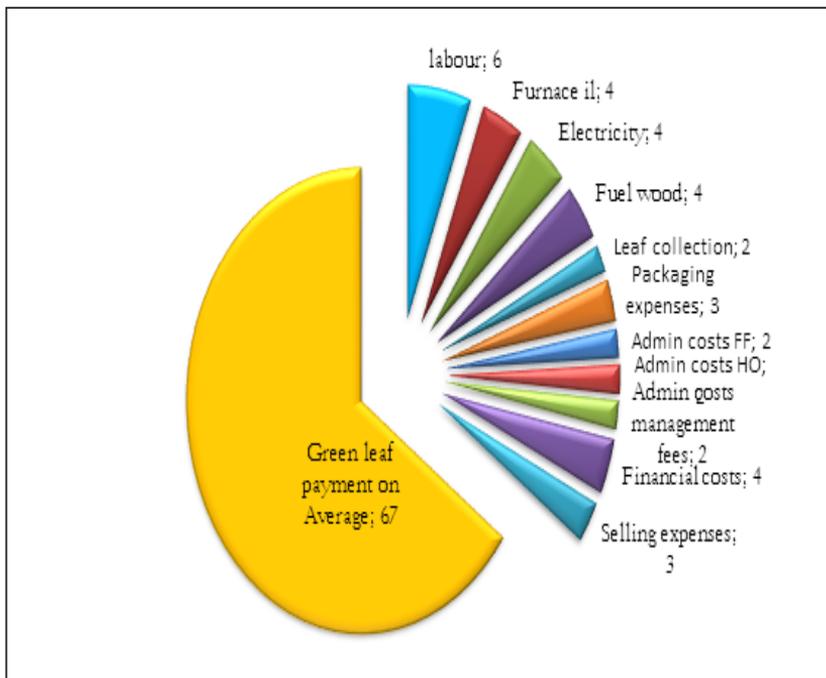


Figure 3: Overall factories production costs on average and percentage paid to the farmer for green leaf delivered.

At the macro level, the smallholder farmer is seen to be receiving a huge proportion of tea revenue (67%) which is not the case when looked from the individual farmer's point of view.

PESTLE factors in smallholder tea farming

As noted in the discussion above, a variety of political, social, technological, legal and environmental considerations influence the extent to which a smallholder tea farmer is facilitated, how she or he operates in a conducive environment, and how she or he is able to carry out

tea farming as a free enterprise under these factors. Under each factor, a set of statements were constructed positing an ideal situation, and the smallholder tea farmer was expected to indicate, on a likert scale type of questions, whether or not she or he is aware and to what extent she or he agrees that the happens in their case. An index for each of the PESTLE factors was then constructed on a scale of 0-1; the closer to 1 the better or the more facilitative/conducive the environment. The study shows that none of the PESTLE factors scored more than 0.4 (Figure 4).

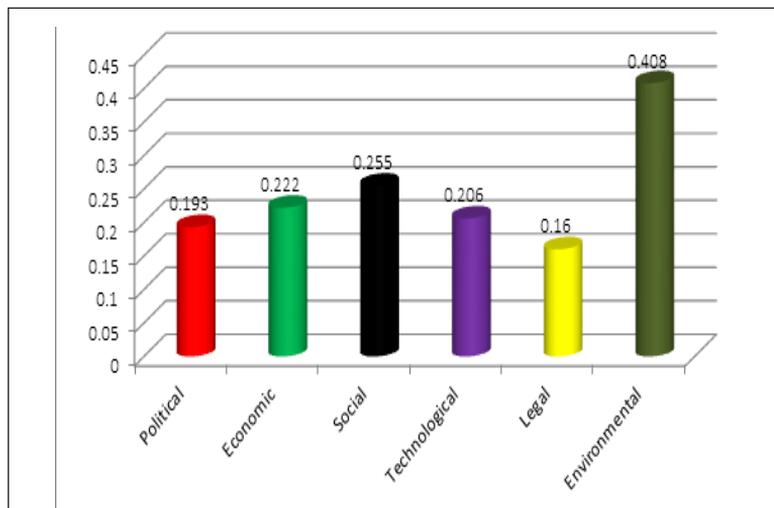


Figure 4: PESTLE factors index in smallholder tea farming environment.

On the PESTLE factors index in smallholder tea farming environment, the respondents’ response suggests a constrained business environment to the smallholder tea farmer from all perspectives in the Mount Kenya region. Asked to express the way they see the PESTLE environment in their own words, the response was as shown in Table 5.

Table 5: Other considerations as expressed by smallholder tea farmers in Mount Kenya region.

Economic	Frequency	Percentage
Expensive fertilizers, high taxation, poor payment to farmer	1	1.0
High interest rate of borrowing, price fluctuations	1	1.0
Inadequate capital and high labour cost	1	1.0
Low income and shortage of fertilizers	1	1.0
Tea monopoly to be done away with	1	1.0
Technological		
Lack of tea pruning machines and tea picking machines	1	1.0
Legal		
Wrangles between KTDA and KUSSTO	1	1.0
Other marketing mix issues		
Monopoly of tea prices at KTDA	2	1.9

An attempt to determine the extent to which, on the whole, the PESTLE factors influence the return on investment to the smallholder tea farmers gathered that the farmers agree that the economic, social and environmental factors have a significant effect while the political, technological and legal factors do not (Table 6).

Table 6: The PESTLE factors as predictor of return on investment to the smallholder tea farmer in the Mount Kenya region.

Predictor	r	r ²	Significance
Political	.253 ^a	.064	.009
Economic	.272 ^a	.074	.005
Social	.291 ^a	.085	.003
Technological	.262 ^a	.068	.007
Legal	.230 ^a	.053	.019
Environmental	.369 ^a	.136	.000

From the analysis of data provided in Table 6, it can be concluded that although the economic, social and environmental factors are seen to have an effect on return to the smallholder tea farmer, the influence is so small with the environmental factor having the highest impact but can only explain 13.6% of the change in return on investment as a result of a unit change of the social factor index ($r^2 = 0.136$). When subjected to a multiple linear regression, it can be concluded that, acting together, the environment factors still have the highest influence but not all are significant while the economic and technological factors tend to influence the return on investment to the smallholder tea farmer negatively (Table 7).

Table 7: Multiple regression model coefficients of the PESTLE factors on return on investment to smallholder tea farmers.

Model	Standardized Beta coefficients	Sign
Constant		
Political Index	.032	.798
Economic Index	-.068	.697
Social Index	.147	.408
Technological Index	-.072	.642
Legal Index	.074	.595
Environmental Index	.328	.018

Dependent Variable: Return on Investment Index

These findings on the ROI to the smallholder tea farmer are an indictment to the national government, the local government and KTDA regarding the policies on PESTLE factors and their implementation which must not only be done but must also be seen to be done to the benefit of the smallholder tea farmer in the Mount Kenya region.

Sustainability of smallholder tea farming

The sustainability of an enterprise may be enhanced by its competitiveness. The competitiveness is determined by the strategies an enterprise employs to maximize returns based on its marketing mix (the product, the price, promotion and place) as well as the competitiveness of its returns compared to expected returns from alternative sources. The smallholder tea farmers have no control over their micro as well as macro-environment, the PESTLE factors and the marketing mix are shown in the framework in which they operate (Figure 1). Farmers were asked the extent to which they agree with statements in a lickert scale type of questions designed to determine the amount of choice the smallholder tea farmer has in regard to the marketing mix of the product. An index was computed which on average was 0.24 (on a scale of 0 to 1) showing very low level

of such choice. This confirms lack of control of the product, the price, the kind of promotion or place for marketing of tea by the smallholder tea farmer. Asked about alternative land use, the farmers indicate an array with Gojet, Ribena, tomato, Irish potato and coffee being rated the best in that order in terms of return on investment, as shown in Figure 5.

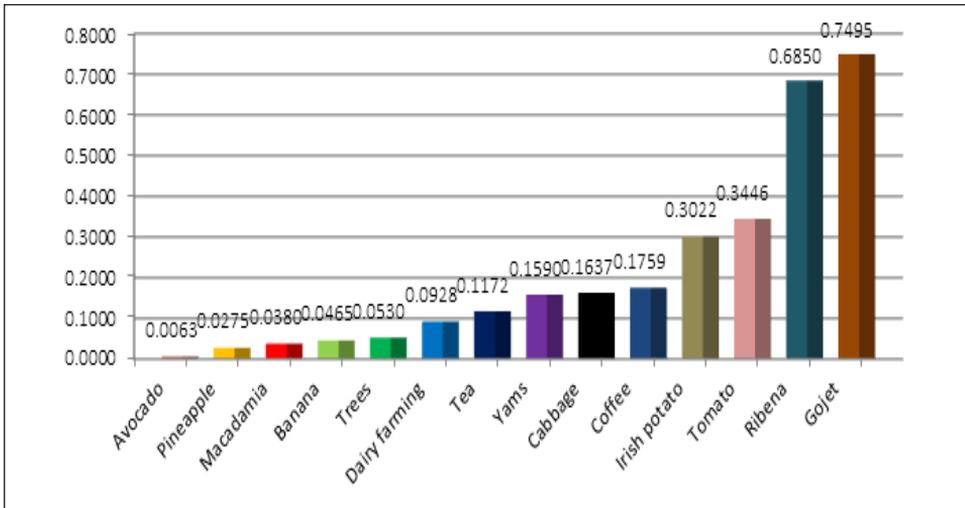


Figure 5: Percentage return on investment on alternative crops and tea.

The other alternative land use is leasing which gives an annual return to the landowner with a return on investment of 12.5%. When compared, return from best alternative land use is rated higher, as shown in Figure 6.

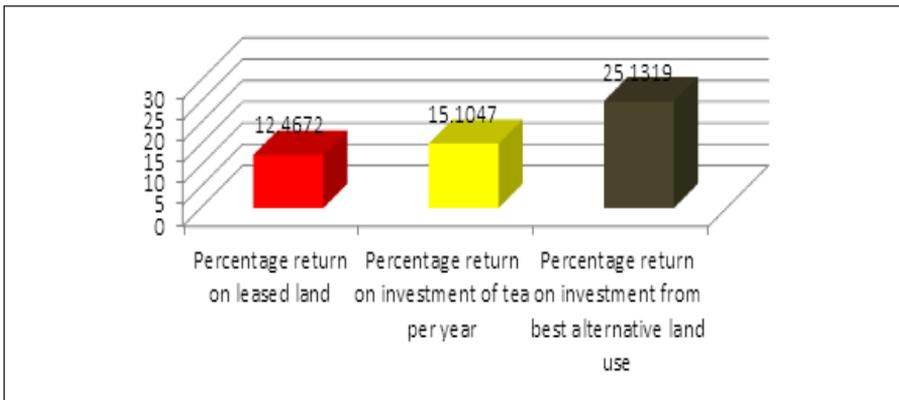


Figure 6: Comparison of return on investment for alternative land use in the Mount Kenya region.

Asked to compare directly tea farming as an income generating venture to alternative land use, most (42.3%) of the respondents said tea is better. On whether they would consider switching to alternative land use, 48.1% of the respondents said they would not. Most of the respondents (32.7%) said they derive 100% of their household income from tea. This indicates that, although the return on investment from tea is low, it is still preferred in the region to other alternatives land uses. The respondents were asked to give reasons for not switching to alternative sources of income and the main reason given was that it allows them to access loans, as shown in Table 8.

Table 8: Reason for not switching to alternative land use by smallholder tea farmers.

Reason for not switching to alternative source of income	F	%
Tea allows farmer to access loan	44	42.3
Tea is the major prime crop	14	13.5
Tea has been there since and switching is expensive	14	13.5
Income from other crops are so unpredictable than tea	10	9.6
Tea is picked continuously hence assured income	7	6.7
No irrigation required for tea farming	5	4.8
Land terrain is steep to support other crops	4	3.8
Hope that the tea prices will be better in future	3	2.9
Tea has bonus compared to other crops	3	2.9
KTDA restrictions as per agreement	1	1.0

The findings shown in Table 8 suggest that smallholder tea farmers are stuck with tea farming despite its low return on investments but also that stakeholders in the Government and sub-sector should come to their rescue by formulating policies and strategies that will see smallholder tea farmers get better return from their investments on tea farming.

DISCUSSION OF FINDINGS

At the macro level, payment to the smallholder tea farmers by tea factories tends to compare favourably to what is paid in Sri Lanka which has a price sharing ratio of 68:32% (Traidcraft, 2007) as compared to the current Kenya's payment ratio of 67:33% (KTDA, 2014 as quoted in *Daily Nation* on Friday 19th September, 2014). At the micro level, the return to the smallholder tea farmer, at 15.1%, is extremely low compared to what has been reported as the average return to agricultural activities of 50% in Africa, 78% in Asia and 54% in Latin America (Allson *et al.*, 2012). The return to the smallholder tea farmer in the Mount Kenya region would even be lower should the reported cost of labour include family labour. The PESTLE factors that are expected to play a key facilitative role in enhancing return on investment to the smallholder tea farmer have a very low score from the farmer's perspective with an index ranging from less than 0.15 to 0.40 on a 0-1 continuum. What this portends is that the efforts being made on all six (Political, Economic, Social, Technological, Legal and Environmental) fronts are not good enough or that the efforts have not been noted by the intended beneficiaries. As noted earlier, policy decisions on decentralization, democratization, privatization, devolvement, infrastructure development, international trade and provision of social amenities, among others, affect an enterprise performance and the wellbeing of the society (Monroy and Mulinge, 2012). Since smallholders are resource poor, they need support in accessing capital, market information and logistics as well as cushioning from external trade that marshal economies of scale to the detriment of the smallholder. In a developing country like Kenya, trade concessions and mutual agreement of reciprocal trading where a country has a comparative advantage like in the case of tea farming would be beneficial to the smallholder tea farmer. The labour issue in the Mount Kenya Region is seriously straining the smallholder tea farmer since either the cost is high or simply the labour is not available due to apathy by the youths, a phenomenon that has been observed elsewhere; in China, India, and Sri Lanka, among others (Prabakar, 2011; Kiprono *et al.*, 2011; and Iqbal, 2005). The question of tea brokerage and price fixing at the tea auction as an economic and a marketing issue has been raised and need to be addressed.

Technology use by the smallholder tea farmer in the Mount Kenya Region has been limited to crop husbandry and even then restricted to the variety of clones to grow by the KTDA who decide what they will buy and at what price. Use of the tea picking machines, tea picking being the highest cost centre to the farmer, has been outlawed on the ground that it would lower quality and lead to unemployment. Failure to adopt technology has led to sub-optimal crop yield and ever declining return to the smallholder tea farmer (Owuor, 2011). Tea at the auction is bought in bulk by multinationals mainly for blending purposes. This paper opines that tea blending the quality of tea produced in Kenya affects technological use, marketing issue marking of Kenya tea and the volume of sale at the auction with a consequence of low returns to the farmer. The legal regulatory environment is rather restrictive with KTDA gaining monopoly actuated by the tea act, the KTDA order established under the Agricultural Act CAP 318, and the KTDA managed factories practices. Licensing requirements for smallholder tea processing units and the cottage industry as a legal regulatory and political issue hinder tea value addition and affect return to the smallholder tea farmer. The region seems to be doing fairly well as regards the environmental factor where a farmer has a choice in say, planting trees. However, the farmer also operates under many expensive standards/certification requirements by foreign tea consumers whose cost trickle down to the farmer reducing ROI. The standards/certification requirements such as environmental, legal regulatory and economic issue are a major concern since they are too many, expensive, duplicate efforts and consume time that would otherwise be put to productive use. They require harmonization and their implementation localized.

The smallholder tea farmer has, therefore, neither the control of the external factors (PESTLE) nor the internal factors especially the Marketing Mix. This leaves the smallholder tea farmer operating in a choking environment in which she or he has no say on how or when to get out of any situation as envisaged in a liberalized free market environment. The applicability of the findings of this study is limited to the farmers' perspective in the Mount Kenya Region since operating conditions vary from region to region but can be used to inform what could be happening in other regions where smallholder tea farmers are controlled by KTDA through KTDA managed factories.

CONCLUSION AND WAY FORWARD

In conclusion, returns to the smallholder tea farmer in Kenya is extremely low at 15% compared to 50%, 54%, 78% returns on investment reported for agricultural products in Africa, Latin America and Asia in that order. This is affected mainly by the constrained operating environment where the tea farmer has no control over both external and internal environment, and more so the Marketing Mix. The farmer' perception of the PESTLE factors is that not much has been done in all six of them to facilitate the farmer achieve better returns on tea. The political environment has not engaged or come out strongly with specific policy frameworks in support of tea infrastructure development, reciprocal trading policies and demands, full democratization, decentralization and liberalization of the smallholder tea farming sector management and control of monopoly in the sector. In the economic factor, the brokerages, the KTDA monopoly, the concept of tea blending and world class quality tea from the KTDA management factors is working to the disadvantage of the smallholder tea farmer.

The legal regulatory framework that restricts free enterprise has since affected tea value addition and made Kenya a chief exporter of bulk tea for blending purposes and adding value to products of low quality, machine harvested varieties of tea in the rest of the world. The standards or certification requirements are too many and the costs are borne ultimately by the smallholder tea farmer. On the question of sustainability of smallholder tea farming as an enterprise, the respondents are categorical; they are stuck in it despite the low returns. They still harbour hopes that things will turn around for the better. It, therefore, becomes a crucial matter for the National

and County governments, and for the time being KTDA, to seriously address all the PESTLE factors and concerns, intervene and make smallholder tea farming viable as a business.

This paper recommends that both the National and County Governments address the PESTLE factors, issues and concerns and come up with policies and intervention that: i) Reduce volume of proportion of tea export in bulk by encouraging and supporting tea value addition; ii) Seek to encourage and support establishment and start-up of cottage industry as a way of creating smallholder tea farmers choice as regards the marketing mix; iii) Consider making KTDA factories autonomous, completely free from KTDA management, with a view to encouraging result-based management, free enterprise and direct accountability to the smallholder tea farmers as well as allowing the smallholder tea farmers “free choice” of where to sell their farm produces (the Marketing Mix); iv) Manage, control and regulate tea brokerage and practitioners in order to ensure smallholder tea farmer’s interests take central stage and not multinational tea customers. Tea agents could be deployed in Kenya’s foreign mission abroad for direct sales and circumvent the tea auction; v) The concept of tea quality, tea blending and Kenya’s competitive advantage be looked into to ensure maximum sale of the high quality Kenya’s tea to the world market as opposed to a fraction used strictly for blending other low quality tea; vi) The use of technology and machines be looked into with a view to reducing costs at the farm and the factory levels and in marketing, thereby increasing net income and return to the smallholder tea farmer; and vii) Further empirical research should be conducted to establish the actual effect of tea “blending” on the trend and sales volumes of tea from Kenya.

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