The Causes of High Cost of Tea Production and Sustainability of the Tea Subsector in Kenya

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Abstract: *The crisis in the tea industry is not only one of unstable prices but also one of high cost of production. Over 3 million Kenyans, approximately 10% of the population, are directly and indirectly employed by the tea industry which is the largest sub-sector in the agricultural sector. Tea plays an important role as the economy's main anchor contributing about 80% in the agriculture sector. Although the volume of tea production has gradually increased, the smallholder tea farming has decreased per acreage and may decrease further if the current trend of price reduction continues. prices of commodities are fixed by the market forces of demand and supply in a perfect market, selling price of tea obtained at Mombasa tea auction are further affected by both controllable and uncontrollable costs at individual factory level and by the agency in processing and marketing tea for sale.Cost of production has continued to rise due to high energy, labour, financing and transport costs. Energy is still the single largest contributor to the cost of production according to Tiampati (2015) .This concept paper will greatly rely on the agency theory ,which underpins this study, given that the tea agency, KTDA manages the tea sector through their staff, who form management level in the tea factories, supported by directors elected by tea farmers in the tea growing areas. The paper will also endeavor to find out the causal relationship between independent variables proposed for this research i,e agency cost, price volatility, foreign exchange fluctuations and external factors and the high cost of tea processing.*

Keywords: Cost of production, KTDA, agency theory, smallholder tea farming

1. Background

Tea was introduced into Kenya from India by a European settler G.W.L. Caine in 1903 since then Tea planting and production have expanded rapidly from 18,000 tonnes and 24,448 hectares in 1963 to 294,000 tonnes and 131,000 hectares in 2003. Kenyan tea is unique in many ways, one being that planting materials released to growers are carefully selected by Kenyan scientists to ensure only high quality, high yielding and pest and disease resistant elite clones are planted.

The result is that Kenya tea is natural and pure as no pesticides or other chemicals are used. Kenyan tea has also consistently been certified as meeting the highest standards set by various world bodies.

Kenya prides itself as the producer of the best quality black tea in the world. This is because only the choicest of the upper two leaves and a bud are hand-plucked, followed by skillful manufacture under stringent conditions at source, to ensure maximum quality and cuppage. In order to meet growing global consumer demand for black CTC (crush, tear and curl) teas, Kenya has specialized in black tea processing and has developed a wealth of expertise to satisfy these needs. Consumers recognize that tea made by the CTC method has more infusion giving surfaces and brews stronger, thicker, brighter and brisk teas, which ensures maximum cuppage per unit weight. Apart from being the world's largest exporter of black tea, Kenya also manufactures limited amounts of green and orthodox tea. Tea and coffee industry in Kenya . Tea growing regions in Kenya are found in the Great Rift Valley - a spectacular natural geographical wonder that divides the country almost asymmetrically. In the East of the Rift are the cool Aberdare highlands, the home to the snow capped Mt. Kenya and the panoramic Nyabene hills. In the West of the Rift defined by the Mau escarpment are the Nandi Hills, highlands around Kericho, Mt. Elgon and the Kisii highlands. It is on the slopes of these highlands within the altitudes of between 1500, to 2700, above sea level that tea is grown. These regions are endowed with an ideal climate for tea growing. The tropical, volcanic soils rich in nutrients give the tea a unique flavour and character. The rainfall ranges between 1200mm and 2700 mm annually. Currently, about 62% of the total crop in the country is produced by the smallholder growers who process and market their crop through their own management agency, Kenya Tea Development Agency (KTDA) Ltd., which is the largest single producer of tea in the world. The balance of 38% is produced by the large scale estates, which are managed by major multinational firms associated with tea in the world. The leading districts in production include Kericho, Bomet, Kiambu and Nyeri.

Traditionally Kenyan tea has been sold to the market in bulk form and is much sought after by leading tea companies to blend and add taste to the most respected tea brands in the world. However, encouraged by Tea Board of Kenya, there is emerging a vibrant value-added sub-sector, led by the Tea Packers Association, which aims to provide consumers worldwide with pure Kenyan branded teas, blended at source. The main buyers of Kenyan tea are Pakistan who import about 23% of the total exports followed by the United Kingdom, Egypt and Yemen. However Kenya Tea Board in conjunction with other players in the industry are exploring new markets in West Africa, North Africa apart from Egypt, Middle East and Eastern Europe. The Ministry of Agriculture has the overall responsibility for the tea industry development. The Tea Board of Kenya established in 1950 under the Tea Act (Cap 343) of the laws of Kenya is a government body mandated to regulate the tea industry in all aspects of tea growing, research, manufacture, trade and promotion in both the local and the international markets. The Board also disseminates information relating to tea and advises the Government on all policy matters regarding the tea industry through the Ministry of Agriculture. The tea

sub-sector currently offers a number of investment opportunities for those wishing to invest in the industry. Some of these include investment in tea plantations and processing and packaging of tea for export under the Manufacturing Under Bond (MUB) or the Export Processing Zones programs. The attractiveness of Kenya as an investment location for the tea sub-sector is further strengthened by the presence of big multinationals operating in the sector in Kenya. Some of these include Unilever Tea (K) Ltd (Previously Brooke Bond), James Finlay (K) Ltd, Williamson's Tea (K) Ltd e.t.c.

2. Problem Statement

The size and make-up of the global population is undergoing profound change, with the world's population predicted to reach 9.6 billion by 2050 Muller (2007) on the other hand , the next several decades will see the 'global middle class' population rise from 440 million to 1.2 billion – a rise from 7.6% of the world's population to 16.1%

According to the World Bank, and two thirds (66%)of the population in developing countries will live in the urban environment – up from 45% today5.Underlying these figures are specific regional trends. Most of the next billion people to come into the world will be born in Africa and South Asia. The African population alone is set to double reaching two billion by 2050. Most of the growth inthe 'global middle class' is expected to come from countries such as India and China. Although tea production per ton is increasing year, after year, tea growing per acreage is gradually decreasing and therefore inversely proportional to the increase in population. On the other hand, it should be noted that farmers in tea growing areas put a lot of emphasize in tea growing with little space left for food crops and other types of crops. This leaves them vulnerable in the effect that tea prices decreases with the magnitude witnessed in Kenya over last years under review in this paper.Although prices of commodities are fixed by the market forces of demand and supply in a perfect market, and considering that Kenyan economy is mixed in nature, selling price of tea obtained at Mombasa tea auction through bidding by tea brokers are further affected by both controllable and uncontrollable costs at individual factory level and by the agency in processing and marketing tea for sale. Farmers are either ignorantof the need to know principal or over trust their agency and elected leaders in tea management, and only react to poor tea prices announced after the second tea payments (tea bonuses) and the downward trend continues thereafter. Tea farmers need to know how their tea is processed and the costs involved there in. This study will attempt to find out components consisting of the costs of processing tea per unit and also make recommendations thereafter on the best way to control or minimize production costs with a view to achieving maximum benefits from tea trade. Tea growing is a business like any other business and therefore profit maximization should be the aim of every player in the tea sector. By understanding price volatility in the market and other factors causing the high cost of processing tea, farmers will be more motivated to continue in the production of this very vital product not only to the farmers but also to the country as a whole, being an agricultural oriented economy

3. Rationale for detailed study of Kenyan tea industry

This Concept Document on Tea Industry is prepared based on the experience, available information, and secondary data only within a limited time and budget constraints. Therefore, it has been strongly realized that detailed information and data related to tea development has to be collected, analyzed, and summarized through actual field research and desk reviews in order to make a sound and realistic document. Although quite a number of individual researchers, and Donor Agencies have carried out tea development related studies in the past, however, a comprehensive analysis of the industry is still lacking. Therefore, it is recommended to formulate a comprehensive long term development plan for the sustainable tea industry in Kenya based on a rigorous, scientific and detailed research. The study will be carried out to find out the causes of high cost of tea production within Mount Kenya Region ,comprising of Kithangariri tea factory, Rukuriri tea factory, Mungania tea factory, Mununga tea factory, Kimunye tea factory, Ndima tea factory and Kangaita tea factory

4. Objective of the study

The broad objective of this study will be to find out the causes of high cost of tea processing in Mount Kenya region in Kenya. Specifically, the study aims at determining:
a) Whether price volatility affects the high cost of tea production within Mount Kenya Region.
b) How environmental agency problems affects the high cost of tea production within Mount Kenya Region
c) How foreign exchange fluctuations affects the high cost of tea production within Mount Kenya Region
d) How technological factors affect the high cost of tea production within Mount Kenya Region
e) Whether external factors affect the high cost of tea production within Mount Kenya Region

5. Research Methodology

The methodology for the detailed study will basically include desk review and field study in order to collect primary and secondary data and information from different but related stakeholders. The desk review will be based on the secondary sources of data and publications gathered from the related government and non- governmental organizations. The field visits will be done covering all the tea growing areas within Mount Kenya area. However, a representative sample size will be determined by using appropriate sampling techniques. A set of semi-structured questionnaire will be developed and administered to the related stakeholders in order to collect primary data and information. In addition, the focus group discussion (one of the common tools of participatory research appraisalmethod will be employed in several places. Moreover, key informant survey and observation methods will also be employed to supplement the primary and secondary information. The collected primary and secondary data and information will be coded and analyzed by using Statistical Package for Social Sciences (SPSS) and Excel.

6. Conceptual Framework
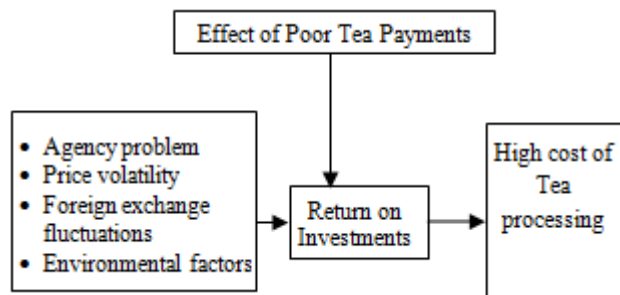
7. Research Methodology

7.1 Research Design

This study adopts a descriptive research design since the study intends to determine the causes of the high cost of tea processing within Mount Kenya Region in Kenya. According to Kothari (2006) descriptive research is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. The study considers this design appropriate since it facilitates gathering of reliable and accurate data that clearly will help to investigate the causes of the high cost of tea processing within Mount Kenya Region in Kenya..

7.2 Research Design

The study shall adopt a survey research design. Under this approach a specifically defined group of farmers will be requested to respond to identical questionnaires. The targeted population for the study will compose of all small holder tea farmers in Mount Kenya Region . According to the ministry of agriculture, a small holder farmer is any farmer with not more than 50 acres of land under production. Mount Kenya region is a strategic position for the study in that farmers have almost equal preference to the markets for their green tea.

7.3 Population of Study

The study will largely be based on Radom selection of small holder tea farmers in the five tea factories within Mount Kenya region, namely Kithangariri tea factory, Rukuriri tea factory,Mungania tea factory,Mununga tea factoryKimunye tea factory,Ndima tea factory and Kangaita tea factory, specifically in three Counties namely;Kirinyaga,Embu and Nyeri where the tea factory companies and are located.

7.4 Sampling procedure

Questionnaires consisting of both open-ended and closed questions will be administered to small holder tea farmers scattered in the selected tea factories some of the sampled tea farmers will be taken up for in-depth study through open interviews. Simple random sampling will also be used in selecting a sample from the population. A sample size of 40 households (tea small holder farmers) will be used. The sample size will be determined using the central limit theorem, where $n \geq 40$ .This is because a larger sample size

increases the accuracy of the results. A semi- structured questionnaire will be used in data collection. Administration of the questionnaire will be through face to face interviews.

7.5 Data Collection and Sampling procedure

Primary data will be collected from the small holder farmers' tea factories and institutions under the tea industry. A purposive, multistage and simple random sampling technique will be employed to select 40 tea small holder farmers in the five KTDA managed factories in Mount Kenya region. The study will sample each of the tea companies that handout growers section meant for the tea small holder farmers. Each of the factory sampled will cover small holder farmers randomly selected.

7.6 Reliability

Joppe (2004) defines reliability as the extent to which results are consistent over time and an accurate representation of the total population under study was referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument were considered to be reliable. Kirk and Miller (2006) identified three types of reliability referred to in quantitative research, which relate to the degree to which a measurement, given repeatedly, remains the same, the stability of a measurement over time; and the similarity of measurements within a given time period. Charles (2005) adheres to the notions that consistency with which questionnaire test items are answered or individual's scores remain relatively the same can be determined through the test-retest method at two different times. Joppe (2004) states that validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are.

7.7 Model Description

Ordinary least squares model will be used to test the factors affecting the high cost of production. OLS is a method of estimating unknown parameters in a linear regression model. The model is important since it calculates the slope coefficient so that the difference between the predicted y and actual y is minimized. Also, OLS will be used because the independent variable is quantitative (numerical) and therefore measurable.

7.8 Data Analysis

SPSS version 21.0 will be used in data entry and analysis. The descriptive statistics will be used to describe the basic features of the sample smallholder tea farmer by means of percentages. Descriptive are useful in analyzing characteristics of households as well as analyzing relationship between variables. Therefore, descriptive statistics will be used because they present quantitative data in a manageable form before processing the responses, the completed questionnaires will be edited for completeness and consistency. Descriptive analysis will be used; this includes the use of weighted means, standard deviation, relative frequencies and percentages. SPSS has descriptive statistics features that will assist in variable response comparison and give clear indications of response

frequencies. The data will then be coded to enable the responses to be grouped into various categories. Descriptive statistics will be used to summarize the data. This includes percentages and frequencies. Tables and other graphical presentations will also be appropriately used to present the data that will be collected for ease of understanding and analysis. A multiple regression model will be used to test the hypotheses of the combined effect of the four independent variables (price volatility, agency problem, foreign exchange fluctuations and Environmental factors and Legal factors affecting cost of tea production on which is the dependent variable under this study The study will therefore be guided by the following regression model to establish the relationship between the study variables.

$Y = + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Y = Dependent variable (cost of tea production)
α = Constant (The intercept of the model)
β = Coefficient of the X variables (independent variables)
X1= External factors
X2= agency problems
X3= foreign exchange fluctuations
X4=tea price volatility
ε = Error Term

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