

Determinants of Pro Competition Functioning of Agromarkets in Tanzania: Case of Green Tea Leaves

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Abstract

The study investigated the factors affecting pro competition functioning of the identified relevant markets. A GLS multiple regression model was used to identify factors influencing farmers' GM from relevant markets. Results reveal that there is need for economic regulation and that the current legal provisions are inadequate to provide for pro competition markets. The identified relevant markets are the buying and selling of green tea leaves in Southern Tanzania. Results showed that several factors do affect pro competition functioning of the three markets. It was recommended that there should be developed comprehensive legal and regulatory framework to provide for economic regulation. The identified anti-competitive issues should be pursued by the Fair Competition Commission by way of enforcement whereas non-enforcement issues should be pursued as matters of competition advocacy.

Keywords: *Green Tea Leaves, Pro Competition, relevant agromarkets, Tanzania*

INTRODUCTION

In Tanzania agricultural markets have undergone a series of reforms that can be linked to major political, social, policy and economic changes that the country experienced. Traditionally, major cash crops have been under management of crop boards, which centrally control development of the respective crop. Farmers on the other hand have been collaborators of the crop boards in their various organized forms of cooperatives as second key market player. The buyers of crops have equally been important third player in these markets; as such they have been pivotal in description of structure and conduct in these markets.

Following Tanzania's adoption of market economy approach in economic management during mid 1980s; there were changes in the multisectoral regulatory structures that saw a repeal of the Price Control Act of 1973 in 1993 and enactment of the Fair Trade Practices Act of 1994 to provide for competition and regulation issues in the economy. This law was hardly implemented as it had flaws which made its implementation either shoddy or impossible (FCC, 2008).

The Fair Trade Practices Act, 1994 was amended in 2001 and became known as Fair Competition Act, 1994. Eventually the Fair Competition Act, 1994 was repealed and replaced by the Fair Competition Act No. 8 of 2003 (FCA) which among other issues it established the Fair Competition Commission which is charged with the responsibility to promote and protect competition in trade and commerce and protection of consumers from unfair and misleading market conduct in the economy. Agromarkets fall squarely in the ambit of the FCA.

In the agriculture sector, these policy and legislation reforms changed both conduct and structure of most of its markets. Nevertheless, these reforms did not always bring about the desired effect partly because of the following:

- (i) The policy and legislation changes did not auger well with the philosophy of market economy, thus making their implementation either too difficult or impossible.
- (ii) There still exist policies and legislation that have not been fully reviewed in line with the spirit of market economy, yet they are expected to complement functioning of market economy.
- (iii) The foregoing is made worse with the fact that understanding and practice of the market economy principle including the discipline of competition remains generally low in the economy (FCC, 2008).

A combination of the factors in (i) to (iii) above remain the bottleneck to optimal functioning of most markets in Tanzania including the agriculture related particularly the Tea agromarkets which are the subject of this study. As a result of incomplete evolution of a sound competition regime in Tanzania, agricultural markets have

suffered from all forms of anticompetitive behaviors of firms in relevant markets i.e. anticompetitive mergers and acquisitions, anticompetitive agreements and abuse of market power by dominant firms in markets. Agro markets especially of traditional cash crops are facing market coordination failures resulting to low productivity, declining exports, low farm gate prices and failure to meet quality standards in the world market. The markets are fragmented to the extent that the actors (producers and buyers) in the markets make decisions in isolation from each other.

Often, the Government, Members of Parliament and farmers have complained about agricultural product buyers shortchanging farmers in cashew nuts, tobacco, cotton, and coffee among other crops. Complaints have been about a few buyers (levels of concentration, a trend towards consolidation) agreeing to pay low prices to farmers (anti-competitive conditions). There have been several efforts to cure the effects of the observed market failures since mid-1980's; most of these efforts have been policy oriented. These include introducing the warehouse receipt system and engaging the traditional crop buyers in dialogue with the Government, Presidential and Ministerial statements condemning the acts by buyers. Despite the efforts, the vice still lingers in most agro markets in Tanzania (Gibbs, 1990).

Some studies have been undertaken to find out lasting stability of the weakening market competition for the major traditional cash crops in Tanzania Gibbs (1990) on cotton and cashew nuts, Temu (1999) on Coffee and FCC (2014) on tobacco. There have also been relatively recent studies addressing this course such as Kahyarara, (2011) on market competition and performance of Tanzanian manufacturing which used HHI as a measure for competition in the manufacturing sector. In Dickson, (2014), the study endeavored to assess competition in commercial banks in Tanzania employing Panzar-Rosse model. In Mfungahema, (2014) the study assessed competition telecommunication markets in Tanzania using the structure conduct and performance model. In Chekwoti (2013), the study assessed competition pressure in agro processing at firm level in Uganda, Tanzania and Kenya. The study employed a combination of descriptive assessment on proportion of firms that cite product market competition pressure and logistic regressions for robustness checks.

In tea agro markets, farmers have been receiving very low percentage of the export price per kilogram. The Tea Board of Tanzania, 2015 show that farmers received 2.2 %, 2.0%, 2.3%, 7.8%, 10.2%, 10.3% in 2010, 2011, 2012, 2013, 2014 and 2015 respectively. According to World Bank, (2013), ideally, a farmer should be able to receive up to a minimum of 70% of the export price. The FCC (2015) has reported that there are competition matters that remain unattended in the agro markets partly because of the inappropriate enforcement model. To this effect, the FCC has had to drop a case of unnotified merger in the tobacco leaves market because of limitation of time that was occasioned by legal tussle on jurisdiction as to which law is applicable between the Tobacco Industry Act or the FCA. All these culminate to the fact that the regulatory framework is wanting to provide for greatly needed competition justice in the markets and tea markets in particular.

In the process of restructuring the tea industry the government repealed the Tea Ordinance that established Tanzania Tea Authority (TTA) and replaced it with the Tea Act No. 3 of 1997. The act established the Tanzania Smallholders Tea Development Agency (TSHTDA) and the Tea Board of Tanzania (TBT). The Tea Board is charged with among other functions, to advise the Government on the policies and strategies for the development of the tea industry; regulate and control the quality of tea and tea by-products; collect, refine, maintain, use or disseminate information or data relating to the tea industry; monitor the production and exportation of tea; regulate processing, exportation and storage of tea and tea by-products; regulate import and export of tea; promote, protect interests of farmers against syndicates of buyers, which may be formed through associations and performing any commercial functions as the Minister may consider necessary. These are market related functions that shape and determine market dynamics in the tea markets of Tanzania.

The non-enforcement measures employed by the government over all the years in resolving market related problems such as low prices in the tea sector are a clear demonstration that an alternative approach needs to be developed that will ensure the green tea leaves farmers receive a better pay. World Bank (2013), reports that in Rwanda, the passage of a crucial reform on green leaf tea pricing is boosting tea farmers' earnings and expanding production in this key sector. The reform brings into effect a new pricing mechanism set on the international market price of processed tea, the exchange rate, and the conversion rate from green leaf to processed tea. When market prices were high under the previous mechanism, tea factories would reap the benefits, but farmers did not garner higher earnings. The World Bank (2015) stresses on need for streamlining of the regulatory environment for agribusiness competition in priority agribusiness value chains in a holistic manner and prioritizing areas with recurring regulatory issues constraining agribusiness such as regulatory simplification to tackle monopolistic practices, constraints to competition, and opaque public sector practices in

the sector with a view to open markets to increased domestic and foreign investment. The Rwandan case is almost a replica of the Tanzanian case in this study and thus making the finding useful in the current study.

As earlier asserted, the Fair Competition Act is also a market support institution that is charged with the responsibility of enhancing the welfare of the people of Tanzania as a whole by promoting and protecting effective competition in markets and preventing unfair and misleading market conduct throughout Tanzania in order to (i) increase efficiency in the production, distribution and supply of goods and services (ii) promote innovation (iii) maximise the efficient allocation of resources and (iv) protect consumers. Figure 1 shows how competition enforcement result to efficient market competition model.

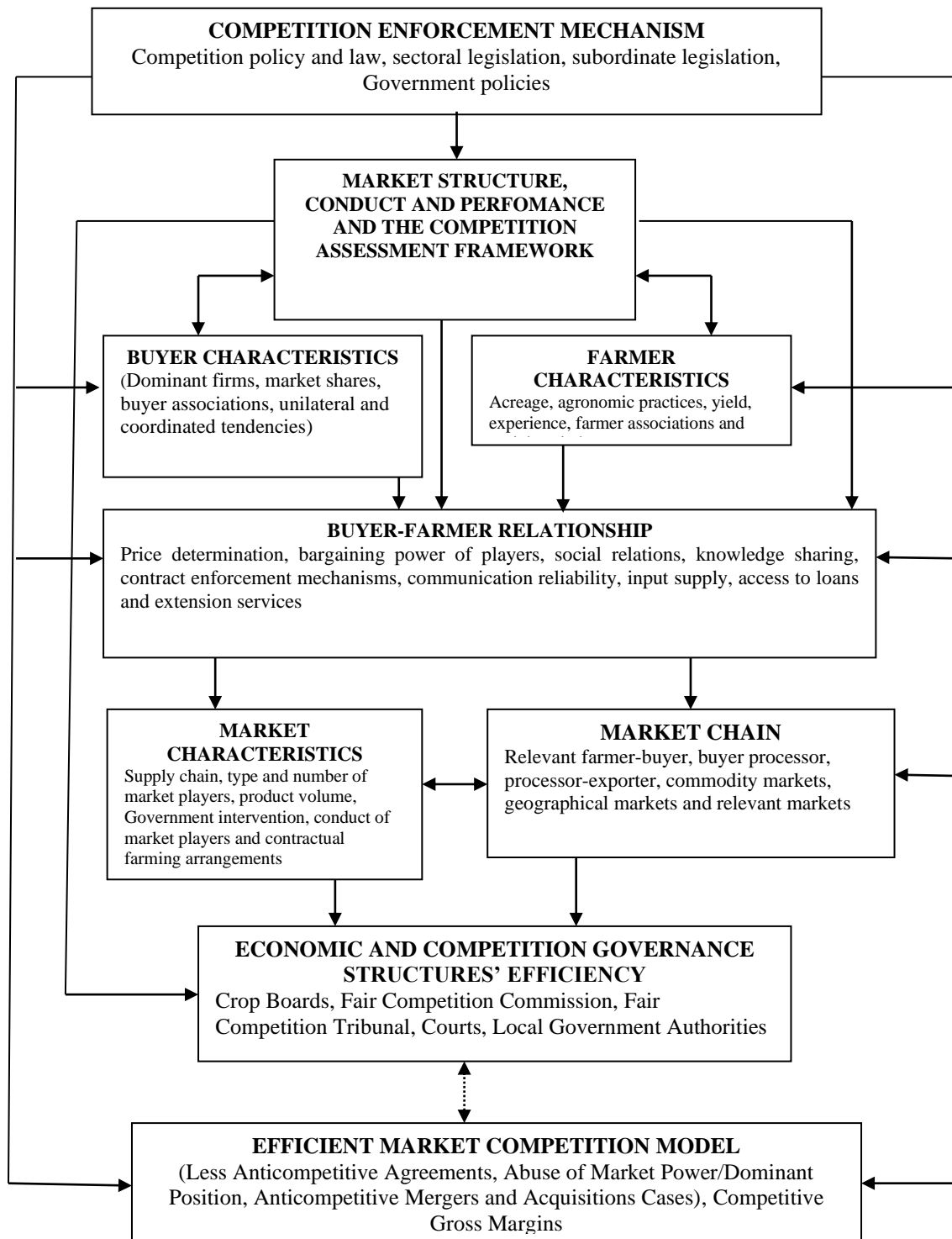


Figure 1: Conceptual Framework

The summary of causality is complex because of the mutual reinforcements and complementarities that exist among the players and various stages. Nevertheless, the general hypothesis is that gross margins (performance/efficiency) will be high under the auspices of a robust competition enforcement model in the tea markets. The overall objective of this study is to describe factors affecting pro competition functioning of the identified relevant markets the required interlink between sectoral and competition laws so as to provide for a plausible competition enforcement model in the identified relevant markets in the tea sector using the Competition Assessment Framework (CAF).

RESEARCH METHODOLOGY

Research Design

The research design of this study is constructed around the Competition Assessment Framework (CAF) which is basically a neoclassical approach. The CAF borrows from competition theory and methods common in studying complex phenomena such as market behaviour dynamics involving remotely located small holder farmers and giant multinational firms in interacting one market with the Government in a changed role play as an overseer. The study is descriptive in nature where both qualitative and quantitative approaches, using field data on green tea leaves trade so as to create deeper understanding of the actual behavior of economic actors in thin markets. Green tea leaves data were collected from the Rungwe, Mufindi and Muheza green tea leaves Districts in Tanzania where there are high, mid-level and low volumes of trade respectively. Cross-sectional data were collected from a sample of 180 farmers selected from purposefully sampled farmer groups. There was collection of primary data from a sampled tea buying companies operating in the relevant markets. A structured questionnaire for each group was developed and administered.

Regression Analysis

The theory behind regression models provide that linear regression, estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable. The regression model was employed to address the fourth objective.

According to Strutz, (2010), Generalized Least Squares (GLS) is a technique for estimating the unknown parameters in a linear regression model. GLS can be used to perform linear regression when there is a certain degree of correlation between the explanatory variables (independent variables) of the regression. In these cases, ordinary least squares and weighted least squares can be statistically inefficient, or even give misleading inferences (Strutz, 2010).

GLS technique was used in estimation because of the nature of its dependent variable (Gross Margins) being non probabilistic and having a normal distribution. Gross Margins were used as a proxy for pro competition functioning (performance) of the market. As farmers seek to raise their incomes from the green tea leaves business in their respective relevant markets on one hand and the Government seeks to ensure that the markets also work to the advantage of the same farmers; it follows therefore that a common denominator for the two farmer and Government can be arrived at in Gross margins thus the reason for its choice as a proxy measure for pro competition functioning of the market. The estimated parameters were also having logical signs proving further that the model had no severe multicollinearity after the corrections. The other common problem (inherent) with cross sectional data is heteroskedasticity, which makes the t values small due to large variances, the researcher transformed the variables in the model into natural logarithm form so as to take care of the inherent heteroskedasticity.

Both spatial and non-spatial factors were included in the model. Spatial variables included distance of the farm to green tea leaves buying centre and time taken from the farm to the green tea leaves buying center. Non-spatial variables include, age of green tea leaves farmers, duration of training on skills for green tea leaves farming, distance from the farm to the green tea leaves buying centre, time taken to get to the green tea leaves buying centre from the farm, distance from the farm to the green tea leaves buying centre, years of experience in green tea leaves farming, dummy for farmers’ ownership in the processing plant, number of mature green tea leaves trees in the tea farm and dummy for competition issues found in the relevant markets.

Specification of the model is as hereunder:

$$GM = f(A, S, D, T, C, E, O, N, C) \dots\dots\dots (1)$$

GM = Gross Margin (Performance)
A = Age of green tea leaves farmer

- S = Duration of training on skills for green tea leaves farming
- D = Distance from the farm to the green tea leaves buying centre
- M = Dummy for the marketing channel for which the green tea leaves are sold
- T = Time taken to get to the green tea leaves buying centre from the farm
- E = Years of experience in green tea leaves farming
- O = Dummy for farmers' ownership in the processing plant
- N = Number of mature green tea leaves trees in the tea farm
- C = Index for competition issues found in the relevant markets

In analyzing the factors affecting pro-competition functioning of the identified relevant markets, the following empirical model was estimated using Generalized Least Squares (GLS) estimator.

$$GM_i = \beta_0 + \beta_1 A_i + \beta_2 S_i + \beta_3 D_i + \beta_4 M_i + \beta_5 T_i + \beta_6 E_i + \beta_7 O_i + \beta_8 N_i + \beta_9 C_i + \varepsilon_i \dots (2)$$

Where

β 's - represent elasticity of parameters to be estimated.

i - represent individual farmer ($i=1, 2, \dots, 180$).

ε - is a random error term capturing all other factors that influences the Gross Margin but not included the model.

As the right hand side includes several variables both spatial and non-spatial factors, the model permits the multivariate analysis required to analyze the intricate relationships between these explanatory variables and farmers gross margins.

Detailed description for each and every variable used in the specified model above and their anticipated signs is as provided hereunder:

(i) Age of green tea leaves farmer (A)

Age of exporter was thought to be of significant influence since it could bear an element of decision-making and aggressiveness of labour offered by the participant in the course of trading. For these reasons, the researcher decided to include it in the model. It is expected that the variable would bear a negative sign implying that as age advances the gross margins would decline.

(ii) Duration of training on skills for green tea leaves farming (S)

Skills are practical ability to perform a certain job an individual acquires after a period of training. It is expected that the longer the training the more efficient an individual becomes and it would be reflected in the earnings one gets from whatever one does. The expected sign is positive.

(iii) Time taken to get to the green tea leaves buying centre from the farm (T)

This would reflect the picking and loading expenses that incurred by farmers through the price the producer receives from the buyer. It is predicted that the longer it takes to get the green tea leaves buying centre the higher the cost and thus the lower green tea leaves farmers' gross margin. The variable tries to assess how remoteness of the farm affects the gross margin of the respective green tea leaves farmers. The variable is expected to bear a negative sign.

(i) Distance from the farm to the green tea leaves buying centre (D)

This would reflect the picking and loading expenses that incurred by farmers through the price the producer receives from the buyer. It is predicted that the longer distance to the green tea leaves buying centre the higher the cost accruing to the green tea leaves farmer and thus the lower green tea leaves farmers' gross margin. The variable tries to assess how remoteness of the farm affects the gross margin of the respective green tea leaves farmers. The variable is expected to bear a negative sign.

(ii) Dummy for the marketing channel for which the green tea leaves are sold (M)

In the study areas there are nine different marketing channels identified for which green tea leaves are sold out to both domestic and international markets. The presumption is such that all the nine different market channels do result in different gross margins to farmers. Invariably, there are those marketing channels that results in bigger gross margins to green tea leaves farmers that the others. In this regard, the variable has value 1 "if the marketing channel results in bigger gross margins to green tea leaves farmers" and 0 "if otherwise". The two groups (marketing channel resulting in bigger gross margins to green tea leaves farmers and otherwise) were

identified by the green tea leaves farmers themselves during the study. The variable is expected to bear positive sign.

(iii) Years of experience in green tea leaves farming (E)

This variable aims at capturing the effect of experience of farming on gross margins of the producers. It is presumed that the more experienced the producer is the more efficient he is and thus realize big gross margin, for this case the variable is expected to bear a positive sign.

(i) Dummy for farmers’ ownership in the processing plant (O)

A dummy variable for the farmers’ ownership in the green tea leaves processing plant with 1 “for those farmers with ownership in the green tea leaves processing plant” and 0 “for otherwise”. It is presumed that those farmers who own a stake in the upper value chain that is in the green tea leaves processing plants are having bigger gross margins than those who do not have any ownership in green tea leaves processing plants. The variable is expected to bear a positive sign.

(ii) Number of mature green tea leaves trees in the tea farm (N)

The number of mature trees was used as proxy variable for farm size, it was thought that the productivity of the farm depended more on the number of trees present in the farm than the farm size. The higher the numbers of mature trees the higher the gross margins. The variable was expected to bear a positive sign.

(iii) Index for competition issues identified in the relevant markets (C)

A continuous variable representing the score for competition issues found in the identified relevant markets in terms of anticompetitive agreements between buyers, misuse of market power or abuse of dominance and anti-competitive mergers. The study had also investigated on possible barriers to entry into the identified relevant markets and vested interests as non-enforcement anticompetitive issues. It is presumed that those relevant markets where green tea leaves farmers reported anticompetitive issues (either enforcement or non-enforcement); those green tea leaves farmers are having smaller gross margins than those who did not report anticompetitive issues (either enforcement or non-enforcement). The variable is expected to bear a negative sign.

(iv) Gross Margin (Performance) - GM

This is a continuous variable independent variable that represents performance of every farmer that was a sampled in this study. For all those dependent variables which increased the margin they bear a positive sign and those that bear a negative sign means that the variable decreased the gross margin. The model was employed in addressing objective number four and testing the fourth hypothesis in this study.

RESULTS AND DISCUSSIONS

Gross Margins in the Identified Relevant Markets

In Table 1 gross margins for green tea leaves farmers under the different identified relevant markets are compared. The t-test aimed at testing how each of the relevant markets’ gross margins compares to that of the control relevant market in the study area. Rungwe was chosen as the control relevant market based on the fact that it bears the largest number of farmers and also is the oldest green tea leaves area in Tanzania. Moreover, it is established to accommodate farmers beyond the green tea leaves part of the values chain by providing ownership in the processing phase of the value chain.

Table 1: Results for Comparison of Relevant Markets’ Gross Margins

District	df	t	Mean GM	Std. Dev.	N	Sig. (2-tailed)
Mufindi	59	2.0	987431.57	2561700.5	60	0.048*
Rungwe	59	6.4	963360.25	3894986.1	60	
Muheza	59	4.1	754652.5	1026891	60	0.000**
Total			901814.77	2742631.2	180	

* Significant at 0.05 ** Significant at 0.0

The t test results show that farmers in both Mufindi and Muheza relevant markets had average gross margin of TZS 754 652.5 and TZS 987 431.57 respectively and that both where significantly different from that of Rungwe partly for the reasons explained earlier. Furthermore, to triangulate the results, ANOVA results also suggest significant difference between the marketing channels and within the individual marketing channel as in Table 2.

Table 2: ANOVA Results for Gross Margins' Differences in the Relevant Markets

Marketing channel	Df	F-ratio	Sig. (2-tailed)
Between relevant markets	2	13.65	.000**
Within marketing channel	117		
Total	179		
Bartlett's test for equal variances: Chi 2 (2)		83.6827	
Prob > Chi 2		0.0000**	

**Significant at 0.00

Based on the consistent statistical findings (t-test and ANOVA) that the gross margins are significantly different in identified relevant markets of this study; Hypothesis Three is answered not to the affirmative that the Gross margins are not the same for all the identified relevant markets.

Determinants of Pro Competition Functioning of the Relevant Markets Assessed in the Tanzanian Tea Sector

Coefficients estimated by GLS are known as elasticities which represent a causal-effect relationship amongst the dependent and independent variables in this research model. In economics, elasticity is the measurement of how responsive an economic variable is to a change in another. In empirical work an elasticity is the estimated coefficient in a linear regression equation where both the dependent variable and the independent variable are in natural logs. Elasticity is a popular tool among empiricists because it is independent of units and thus simplifies data analysis (Marks, 2003). Ideally, the interpretation of the results is such that a unit change (1) in independent variable causes a change (magnitude borne in the coefficient β 's). Since the said β 's are in decimals, they have been expressed in percentages for ease of readership and presentation of the findings. To this effect the unit change in independent variable is pegged at 10%.

Table 3: Regression (GLS) Results on Factors Affecting Pro Competition Functioning of the Relevant Markets

Variable	Coefficients	Std. Error	Sig.
(Constant)	-13.5	90.8	.145
Age of respondent	.43248	.1479	.024*
Duration of tea farming training skills	.26004	.18954	.041*
Experience in tea leaves farming	.6112	.2011	.000**
Dummy for the marketing channel	.518	.542	.524
Number of mature tea trees	.200	.83	.034*
Index for competition issues	-1.284	.765	.025*
Distance from the farm to the green tea leaves buying centre (in meters)	-1.0957	.4093	.043*

Dependent Variable: Natural log of gross margin of producers

Adjusted R Square (R^2) 0.602 F value 59.698**

* Significant at 0.05

** Significant at 0.01

The regression results in Table 33 based on the GLS estimator employed in this study show that age of the green tea leaves farmers had a positive sign and was a significant factor at ($p < 0.05$) implying that as the age of the green tea leaves farmers increased their gross margins also increased. This would be due to the fact that most producers were in the age group (40-60 years) with good adherence and commitment to green tea leaves farming requirements. Since coefficients estimated by GLS are elasticities, it thus follows that a 10% change in age of green tea leaves farmers led to 4.3 % increase in their gross margins in the identified relevant markets of this study.

It was also seen that 10% change in duration of tea farming training skills was significantly associated with 2.6 % increase of gross margin of green tea leaves farmers at ($p < 0.05$). The variable had a positive sign, indicating that the more time spent on training the more the gross margin. It is logically true that as one learns more on tea farming training skills both practically and theoretically, their farm outputs are commensurately expected to increase. A ten percent change in years of green tea leaves farming was significantly (highly) associated with 6.1% change in green tea leaves farmers' gross margins at ($p < 0.01$), meaning that many years of farming brought about an overall advantage in gross margin of a green tea leaves farmers.

The number of mature tea trees in a farm was also a significant factor at ($p < 0.05$). It was also observed that a 10% change of the number of mature trees was associated with a 2% increase of green tea leaves farmers' gross margin as the variable had a positive sign. This can be explained further by the fact that mature trees are the ones that bear green tea leaves so the more trees (to optimal level) the more green tea leaves and thus the higher the gross margins *ceteris paribus*.

A 10% change of the distance from the farm to the green tea leaves buying centre (in meters) was found out to be significant associated with 11% decrease in gross margin of producers at ($p < 0.05$). Since this variable (distance from the farm to the green tea leaves buying centre) was a proxy in measuring the effect of remoteness of the farms to the gross margins, the results suggests that as the distance decreased the gross margins increases implying that remoteness as defined affected gross margins negatively. This could be due to additional costs incurred in the process of bringing the green tea leaves to the buying centre.

Regarding the index for competition issues, results show that a 10% change of the index for competition issues score was found out to be associated with 13% decrease in gross margin of the green tea leaves farmers at ($p < 0.05$). This variable was formulated as a proxy in measuring the effect of anticompetitive effects faced by farmers in their respective identified relevant markets to the gross margins, the results suggests that as the index for competition issues score decreased the gross margins increases implying that anticompetitive effects as defined affected gross margins negatively. This could be due to either additional costs or loss of revenue as a result anti-competitive harm that the competition issues inflicted onto the green tea leaves farmers in the identified relevant markets in this study.

The dummy variable for the marketing channel was insignificant ($p > 0.05$). This notwithstanding, this variable had a negative sign thus going against the theory that institutions (such as marketing channels) reduce transaction cost and increases returns (gross margins for this study). This can be explained by the fact that benefits can be qualitative such as price stability and easing of liquidity which were not captured by this study.

The explanatory power of the model adjusted R^2 was found to be 0.602 implying that 60.2 % of the variations in the dependent variable (gross margins of green tea leaves farmers) were explained by the variations in the independent variables in the model. The model was powerful enough to explain the variations as it had an F-value of 59.698, which was also highly significant at ($p < 0.01$). This meant that the model was well estimated.

Based on the findings that age of the green tea leaves farmers, duration of tea farming training skills, experience in tea leaves farming, competition issues, number of mature tea trees and distance from the farm to the green tea leaves buying centre (in meters) in the identified relevant markets affect pro competition functioning of the identified relevant markets in this study; Hypothesis Four is answered not to the affirmative that there are factors affecting pro competition functioning of the identified relevant markets as discussed above.

CONCLUSION

The objective of this paper sought to identify factors affecting pro competition functioning of the identified relevant markets. GLS results as triangulate with cross tabs and key informant interview findings herewith show that the age of the green tea leaves farmers, duration of tea farming training skills, experience in tea leaves farming, competition issues, number of mature tea trees and distance from the farm to the green tea leaves buying centre (in meters) in the identified relevant markets do affect pro competition functioning of the identified relevant markets in this study; invariably this objective is concluded as per the later assertion herein above.

RECOMMENDATIONS

Based on the foregoing findings and conclusions, the current study puts forward a set of recommendations that might be a starting point or addition already existing body of knowledge regarding competition issues in the identified relevant markets. The recommendations are as hereunder provided. The Fair Competition Commission and the Ministry responsible for the relevant markets should collaborate in a inventing an incremental programme that shall ensure the percentage of green tea leaves farmers' gross margins in the export price for the made tea is at a level deemed equitable on the face of record. The Fair Competition Commission and the Ministry responsible for the relevant markets should embark on advocacy and awareness creation programmes with the green tea leaves farmers educating them on business acumen and in particular competition issues related to the green tea leaves farming business and the need for application of good agronomic practices in green tea leaves farming business. The advocacy and awareness creation programmes shall ensure that the

identified for pro competition functioning in the relevant markets are either created, increased or sustained as the case may be in the identified relevant markets.

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