

DETERMINANTS OF MARKET CHOICE AMONG TEA FARMERS

B. Chepkulei

Taita Taveta University College, Kenya

E-mail: belatoo2004@gmail.com

Abstract

Agricultural market liberalization was aimed at increasing competitiveness of commodity markets. Tea farming in Kenya, under Kenya Tea Development Authority has been ailed as a success story this was up to early 1990 when small holder farmers begun agitating for market reforms in the sector in order for them to have a greater say in the marketing of their produce. The government finally ceded by converting KTDA into a marketing agent and manager of factories, farmers were also allowed to sell their produce to alternative market. The main objective of the study was to find out factors determining the marketing choice for green tea among the small holder tea farmers. Field survey was carried out in one tea producing districts in Kenya. Using cluster sampling of farmers in four villages were interviewed, yielding 182 questionnaires from a target population of about 2000 farmers. The dependent variable was market choice either a farmer was selling to KTDA or not i.e. to multinationals through middle men. Given the binary nature of the dependent variable, a probability (in this case logit) model was used to predict farmers' decision on market choice. The key descriptive findings were that farmers supplying KTDA were on average older, less education, had more land under tea and had larger families. Farmers selling to middlemen were generally younger, higher educational status, smaller family sizes. There was a significant gate price differential with KTDA paying lower monthly price but offered bonus that comes at end of financial year. Logit regression results predicted that institutional factors mainly promptness in payment, quality requirements and flexibility in collection of green tea, and gate price predicted favourably a farmer's decision to sell to middlemen. It is recommended that KTDA should be more responsive to financial needs of the farmers by reducing the period of bonus disbursement to not more than three months. Each factory should be operated independently so that losses can be attributed to particular factory management, this will increase competitiveness in the tea sub-sector.

Key words: Market liberalization, market choice, market reforms and commodity prices

1 Introduction

Kenya has had a successful smallholder tea sub-sector contributing to more than 60 percent of total tea production in Kenya. As a result of liberalization policies in agriculture, the previously publicly owned tea factories were put in the hands of tea farmers whose companies undertake tea collection and processing. There are 46 tea factories operating under the Kenya Tea Development Agency (KTDA) umbrella, some of which are wholly owned by small-holder tea farmers, in accordance with a 1995 policy change that gave farmers total ownership of the factories. (Kinyili, 2003). By participating in a vertical ownership of the processing factories and KTDA, which manages the tea factory and organizes for the marketing of tea, farmers are expected to enjoy tremendous benefits associated with vertical integration. In Kenya, the KTDA represents a form of contract farming in the tea sub sector. Its performance has been subject to much controversy because of a lack of transparency in its dealings with farmers and limited access to information regarding the roles of the KTDA, the tea factory Company Directors and the various deductions from the price paid to the growers. In particular Chuma (2004) observed that the contention is on the governance structures of the KTDA are mainly the institutional arrangements for payment for tea delivered to the KTDA's factories. The KTDA's deduction system appears very arbitrary and lacks transparency. This can be compared with the situation in Sri Lanka where there is a clear formula for determining the price to the grower based on the out-turn, the auction price and an agreed cost structure. Whilst there are some complaints about this system, at least one can identify where costs are being allocated. In Kenya there is very little transparency. The pricing structure of the KTDA means that the end price to the farmers is the remainder after all factory costs have been accounted for. If the representative structures and control of the board are not effective, this can mean that there are few incentives to maximize the price received by the farmer (ibid). The proposed study seeks to understand from the farmers perspective why the preference for a particular marketing option from the other.

Liberalization of the smallholder tea sub-sector was aimed at replacing a single production-processing-marketing system of providing services to farmers formally operated by the Kenya Tea Development Authority (KTDA) with a broad based system run by different institutions. The thrust was to redefine the roles that government, the Tea Board of Kenya, the KTDA, tea factory companies and farmers' organizations should play in a liberalized economy. It is important to consider the extent of liberalization of the smallholder tea sub sector and evaluate the impact of liberalization on smallholder tea production. The critical driving force is enhancement of farmers' returns and those who have legitimate interests in the development of the tea industry in Kenya especially the middlemen.

Nyangito and Kimura (1999) observed that the smallholder tea production, processing and marketing was, until 1997, subject to government controls. The controls were implemented by the KTDA which was established under the Agricultural Act CAP 318, Section 190 and 191 as a parastatal and given the mandate to control and regulate the smallholder tea sub-sector under the Tea Act (CAP 343) and the State Corporations Act (CAP 44a6). Despite the de-control and subsequent liberalization of the smallholder tea sub-sector which saw the restructuring of KTDA and the tea factory ownership, KTDA continued to control some of the services especially tea processing and marketing and the supervision of the smallholder tea industry by KTDA still remain a thorny issues. A parallel system has emerged where farmers sell green tea leaf directly to private factories or to middlemen for immediate payments without any contractual arrangements. (Kinyili, 2003).

Proponents of market liberalization argue that liberalization leads to both greater efficiency and more rapid growth of economies. On a specific note Hiemenz (1992) pointed out that successful liberalization affect both traditional and non-traditional exports favourably such that increased efficiency in production of exports augment the size of the market and hence enable greater exploitation of the economies of scale. World Bank on the other hand reports that period before liberalization produced an accelerated growth of the agricultural sector (Chumba, 2004). Most of

the reviewed studies are of macro nature, for instance Chumbas study of 2004 used time series national data, and her main findings were that small holder tea farmer income had significantly increased due to liberalization. The proposed study will employ cross sectional data collected at household level on market choice and level of awareness of market liberalization.

The study is guided by the economic rationality model where the farmer is conceptualized as being rational in the selection of the market choice in this case the dependent variable in the proposed study is the marketing channel of green tea leaf measured by the choice of marketing choice by the farmer either KTDA or otherwise(middlemen). The independent variables are divided into two namely internal factors to the household head and external factors to the household head.

The internal factors are those emanating from the household head and are hypothesized to influence decision to choose a certain marketing option. These factors include family size, education attainment, age, fees obligation, farm size. External factors include season of the year, awareness of liberalization, food self-sufficiency. It can be noted that the dependent variable that is the decision to sell to KTDA or otherwise is a binary decision which can be represented as a qualitative variable whose range is actually limited since it can take one of two values: 1 or 0. This kind of decisions can be analyzed with binary choice models. Pindyck and Rubnifeld (1998) has pointed out that the binary models are based on two key assumptions that: The economic agent is faced with a choice between two alternatives that is participate or not. Secondly, the choice agent makes will depend on their characteristics and that of the farm / Enterprise. The objective of such a model would be to determine the probability of a particular agent making one choice rather than the alternative.

Agricultural market liberalization was aimed at increasing competitiveness of commodity markets. Tea farming in Kenya, under Kenya Tea Development Authority has been hailed as a success story this was up to early 1990 when small holder farmers begun agitating for market reforms in the sector in order for them to have a greater say in the marketing of their produce. The government finally ceded by converting KTDA into a marketing agent and manager of factories, farmers were also allowed to sell their produce to alternative market. It is therefore imperative to find out factors determining the marketing choice for green tea among the small holder tea farmers.

To undertake this study, the following three objectives were formulated

- (i) To find out the relationship between the socio-economic status (i.e. age, marital status, family size, school fees obligations) of the household head and the marketing choice for green tea leaf.
- (ii) To find out the extent of price differential for green tea leaf offered by KTDA and middlemen.
- (iii) To find out the level of awareness of market liberalization of the tea sub-sector and the subsequent choice of marketing channel among the smallholder tea farmers.

The general hypothesis of the study is that marketing choice for green tea is significantly influenced by socio-economic status of household head, institutional factors, and gate price for green tea. The proposed study is important in a number of ways. More importantly owing to the rapid changes in the tea sub sector there is need to understand the factors determining the marketing choice for green leaf tea among the small holder farmers who form a bulk of the tea producers in Kenya. There is also need to find out the level of awareness of market liberalization by small holder farmers.

2 Materials and Methods

The study adopted a field survey research design. Under this approach a specifically defined group of farmers were asked to answer a number of identical questions (see questionnaire in appendix 1). The answers formed the set of the study. The survey method was chosen because it enables one to describe what is going on in the research setting, to obtain relevant facts about the phenomena and

be able to state them quantitatively (Baker, 1994). The survey enabled the researcher identify problems and explain the cause- effect of what takes place in the research site. When using this method questions were put to a sample of respondents directly. In this way information is gathered from small population so as obtain empirical knowledge of a contemporary nature.

The survey research design allows the collection of background information and hard to find data (Busha and Harter, 1980). With such data it allows for generalizations to be made about the characteristics, opinions, beliefs, and attitudes of the entire populations studied. More importantly survey methods have been found to save time and money without sacrificing efficiency, accuracy, and information adequacy in the research process. (ibid). In this study the method was implemented using an administered questionnaire.

The target population for the study is all small holder tea farmers in kilibwoni Division in Nandi district of Kenya, about 2000 by 2003 (www.ktdateas.com). A small holder tea farmer according to the ministry of agriculture is any farmer with not more than fifty acres of land. The division was selected because of its strategic location. It lies in between Kapsabet town where KTDA factory Chebut, and Nandi-Hills where the multinational tea factories are located. Such a strategic location implies that farmers have almost equal preference to the two markets for their green tea.

According to Bailey (1994) when the target population is too large for the study to be handled effectively coupled with a widespread geographical distribution of the research subjects, it is recommended that a portion of the population or a sample of it is used. In this study it was not feasible to administer a questionnaire to more than two thousand small holder tea farmers in the district. The study was therefore narrowed to a division. Within the division one location was selected and all the farmers within Kaplamai location in Kilibwoni Division formed the sampling unit. All the farmers within the identified villages were all interviewed. This yielded a total of 182 farmers.

Reliability is a measure of the degree to which a research instrument yields consistent result or data after repeated trials (Mugenda and Mugenda, 1999). Piloting was done on 30 farmers not part of the study area. A re test was done after one week. The test-re-test statistical technique was applied in particular Pearson correlation coefficient in this case yield 0.78. *Validity* is the accuracy and meaningfulness of references, which are based on the research instruments, peer review by members of the faculty assessed the relevance of the content used in the questionnaires in relation to the objectives of the study.

Data was analysed both descriptively and inferentially. Descriptive statistics employed were mainly the frequencies, percentages, mean and standard deviation. Inferential statistics were employed to test the hypothesized relationships. In particular logit regression and paired sample t-test were used to determine the relationships and differences respectively. Output was represented in appropriate Tables.

3 Model Specification and Key Variables

The dependent variable of the study is the market preference of the stallholder tea farmers. Farmers are faced with two choices; they either sell their produce to KTDA or to middlemen who act as agents of multinational tea firms. Therefore the dependent variable is dichotomous/binary in nature. Available econometric literature identifies three types of models for estimating binary choice models; these are linear probability, logit and probit models (Pindyck and Rubnifeld, 1998). There are a number of limitations associated with the use of the Linear Probability Model (LPM) these are: Predicted probabilities can be greater than one, the disturbance terms suffer from heteroscedasticity and their distribution are non normal (ibid). The Logit and Probit model overcomes these problems since both are based on a cumulative distribution function in the sense

that they are monotonic transformation and guarantee that their predictions lie in the unit interval (Gujarati 2003) . It has been shown that neither of these models has any advantage over the other apart from convenience (ibid).

The Logit model is usually specified as follows:

$$E(Y_i) = P(Y_i) = \frac{e^{\alpha + \beta X_i}}{1 + e^{\alpha + \beta X_i}} \dots\dots\dots (1)$$

Where:

P_i is the probability of the individual with X_i attributes into either dependent variable categories.

$E(Y_i) = P(Y_i) = Y_i = 1$ if the individual farmer sells its green tea to middle men

$E(Y_i) = 0$ if the individual farmer does not sell its green tea to KTDA

X represents a vector of characteristics/attributes associated with the individual i

β is the vector of coefficients to be estimated.

α is a constant.

Hence the model to be estimated becomes:

$$E(Y_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots\dots\dots + \beta_n X_n + e \dots\dots\dots (2)$$

e is the white noise error term.

The model therefore estimates farmer decision on market choice as a function of:-

Institutional factors (INSTFA), food self-sufficiency (FSS), Land holding size (LHSIZE), land under tea (LANDTEA) non-farm income (NFIN), family size (FMSIZE), education attainment by household head (EDU), Number of years in tea farming (YRTEA), price per kg (PRICEKG).

Therefore the actual model to be estimated becomes;

$$E(Y_i) = \beta_0 + \beta_1 INSTFA + \beta_2 LANDTEA + \beta_3 LHSIZE + \beta_4 FSS + \beta_5 NFIN + \beta_6 FMSIZE + \beta_7 EDU + \beta_8 YRTEA + \beta_9 PRICEKG + e \dots\dots\dots (3)$$

Since data is at micro/ individual level we cannot estimate the Logit model (1) by the standard OLS routine. We therefore use the maximum likelihood (ML) method to estimate the parameters. (Gujarati 2003) Maximum likelihood estimation, MLE, is the method used to calculate the logit coefficients in regression. OLS seeks to minimize the sum of squared distances of the data points to the regression line. MLE seeks to maximize the log likelihood, LL, which reflects how likely it is (the odds) that the observed values of the dependent may be predicted from the observed values of the independents.

3.1 Measurement of Key Variables

The key variables of the study were capture using a questionnaire as earlier stated in the research design. This subsection highlights how the variables were measured using the questionnaire.

The dependent variable, market preference was capture by asking the farmers to state their preferred market for green tea; the options were either KTDA or the middlemen. The institutional factors were measured using a likert scale; the respondents were subjected to five closed questions/items relating to why they preferred a given type of market. The responses ranged from strongly agreed, agreed, disagree, and strongly disagree to not a reason. The five items were high payments, high quality requirements, and promptness in payments, near farm/ convenient and peak season of the year. All the responses were averaged to give a single variable.

Land holding size was the total acreage owned by the household, whereas the land under tea was the total acreage planted with tea. Family size was taken to be the total number of people within the household i.e. all the beneficiaries from the tea proceeds. Education attainment is the number of years in formal education achieved by the household head who is the chief decision maker. Number of years in tea farming is the actual number of years the farmer has been undertaking tea farming. Price per kg is the price (in Kshs.) of green tea per kilogram paid by the buying agent.

4 Findings and Discussions

4.1 Socio Economic Characteristics of small holder tea farmers

The main socio-economic characteristics studied were the farmers' educational attainment, age in years, family sizes.

Table 3: Descriptive characteristics of small holder farmers

variable	mean	Standard	Max (min)
Education	9.13	3.18	18(0)
Age	43.77	18.48	87(21)
Family size	6.21	3.00	14(0)

From Table 3 its shows that the mean educational attainment is nine years, with and maximum and minimum of eighteen and zero respectively. Considering the mean age, the sample indicates a significant number of respondents were literate. Literacy reflected in educational attainment is vital in decision making. In this particular case the need to decide on where to sell the green tea. The age was also considered, it's imperative to note here that market liberalization begun in the mid 1990's and it picked up in early 2000 (Chumba, 2004). Given a mean age of 43.77 it implies that a significant majority are aware of the liberalized market for the green tea. The family sizes were also determined; this was captured by the number of individuals within a particular household. The mean family size was about six individuals. With a large household it is likely that financial needs are frequent which may force a household to dispose off their green tea to the middlemen for immediate cash payment.

4.2 Farm Enterprise Characteristics

It was paramount to find out what kind of farm enterprises the smallholder farmers engage in. The key characteristics investigated were:- size of land holding in acres, size of land devoted to tea farming, years in tea farming and the mean earnings from tea farming.

Table 4: Descriptive characteristics of farm enterprises

Variable (min)	mean	S.D.	Max
Land holding	7.53		13.46
50(0.5)			
Land on tea	2.31		5.9
29(0.15)			
Yrs in tea farming	17.06		12.47
48(3)			
Price per kg	10.60	2.1	
14(9.50)			

Land is a vital factor in any agricultural investment. The mean land holding of 7.53 acres is an indication that the farmers are mainly small holders; this is further enhanced the fact that mean land acreage devoted to tea farming is only 2.31 acres. It can also be observed that majority of the farmers where already into tea farming before market liberalization given the mean years in tea farming is 17. It can also be noted that price for green tea per kilogram ranges between Ksh 9.50 to

14.00 for the financial year 2006/07. From the available records KTDA paid Ks 11.50 (www.ktdateas.com) in the same period, thus the deviations in prices are due to different prices offered by middle men.

4.3 Comparative Analysis of the Key Variables

The key variables of the study were compared on their distribution around the dependent variable

Table 5: Comparative analysis of the key variables

Market/variable	Age in yrs	Family	Yrs in formal educ	Land size(acres)	Land of tea(acres)	Yrs tea farming	Price @ kg	total
Middlemen	38.46	5.26	10.26	6.55	1.75	13.46	12.12	87
KTDA	48.53	7.06	8.10	8.41	2.81	20.28	9.50	96
Total	43.77	6.21	9.12	7.53	2.31	17.06	10.59	183

From Table 5 a number of observations can be derived. Farmers selling to KTDA as their preferred market had higher means for age, family, size, land holding, land under tea and they had been in the tea farming longer. Middle men offer a higher gate per kg price, this is lower than what KTDA finally pays as bonus at end of a financial year, for instance in 2006/07 financial year the bonus was Ksh 7.50 per kg. In a way we can deduce that farmers selling to middle men loose substantially since by selling to middle men they forego the future earnings in form of bonus of about Ksh 7.50 per kg. The mean values presented in table 5 are basically descriptive in nature, we are not able to determine whether the observed differences are due to sampling errors or indeed the differences are statistically significant, i.e., should another sample be taken from the same population are we likely to obtain consistently similar results? To over-come this hurdle paired sample t-tests were performed and the results were as in Table 6.

Table 6: Paired Sample Statistics on key variables

Variables	Correlations (sign)	t-values (sign)
Age	-0.128 (0.237)	4.667 (.000)
Family size	-0.054 (0.621)	3.728 (0.00)
Education level	-0.06 (0.959)	-4.652(.000)
Land size	-0.025 (0.820)	0.867 (0.388)
Land on tea	0.31 (0.774)	1.129 (0.262)
Years in tea farming	-0.094(0.384)	3.107 (0.003)
Price per kg	0.098 (0.367)	-12.321 (0.000)
No of observations/pairs	86	86

From the paired samples statistics it can be concluded that the observed differences in age, family size, education, years in tea farming and the price per kg were statistically significant at 1%. Farmers supplying KTDA were paid lower gate prices consistently and on average these same farmers were of lower academic achievement. On land holding and land under tea, the observed difference is attributed to sampling errors.

4.4 Hypothesis Testing

It was hypothesized that market choice is determined by institutional factors, socio-economic characteristics of the farmer, and prices of green tea. To test this hypothesis a logit regression was performed. This was appropriate because the dependent variable, the market choice was binary in nature. The aim of logit regression was to determine which independent variables could predict the likelihood of a farmer selling to middlemen = 1 instead of KTDA = 0. The results of the logit regression were as in Table 7.

Table 7: Logit regression results

Variable	Marginal Effects	S.E	Z	P> Z
Institutional factors	0.408	0.1384	2.94	0.003**
Educational level	0.068	0.0239	2.87	0.004**
Land under tea	-0.023	0.0312	-0.76	0.445
Years in tea farming	-0.008	0.006	-1.21	0.226
Price per kg	0.3110	0.052	6.01	0.000***
Food self sufficient	0.1004	0.134	0.75	0.456
Family size	0.0156	0.244	0.64	0.525
Non farm income	-0.00001	0.00001	-1.75	0.080
No. of obs = 182	M.E after logit = 0.52048	Log likelihood = 55.731249	LR chi2(9) = 139.77	Prob>chi2 = 0.0000

**Significant at 5%

The thrust of the regression was to determine the coefficient of the regressors and their significant level; this helped in the interpretation of the outcome. According to Pindyck and Rubinfeld, (1998), the slope coefficient of the model gives the log of odds of making a choice per unit change in the regressors. These coefficients have little economic interpretation. To overcome this limitation marginal effects (M.E.) were computed and the results are as in table 7. Based on the logit regression outcome in appendix 2. The estimated model becomes

$$E(I) = -22.20 + 1.551INSTFA - 0.108LANDTEA + 0.356FSS + 0.416 NFIN + 0.042FMSIZE + 1.637EDU - 0.0025YRTEA + 0.356PRCEKG + e$$

From table 7 it can be observed that institutional factors, prices and education level were significant at 5%. These findings can be interpreted as follows.

4.5 Effects of Institutional Factors on Market Choice

It should be noted that institutional factors were measured by finding out the degree to which farmers either agreed to disagreed regarding:- whether from their preferred market, payments were prompt, quality requirements and flexibility in centre of collection, these were measured on a likert scale of five to one measured either as strongly agreed, agreed, disagreed or neutral respectively. The outcome was averaged to yield one variable. From table 7 the slope coefficient was found to be positive and statistically significant at 5%. Other ways of doing this would have been principal component analysis (PCA). The outcome implies that institutional factors predicted favorably the decision of the farmer to choose selling green tea to middlemen instead of KTDA.

4.6 Effects of price on Market Choice

It was found earlier that middlemen paid a higher gate price for green tea than KTDA (see table 4). The regression results indicates that price also predicted favorably farmers decision to sell green tea

to middlemen and that the price difference was significant to influence farmers to forego the bonus payment that comes with supplying to KTDA. This implies that farmers are interested in the current value of money other than future payments.

4.7 Role of Education level on Market Choice

Comparative analysis on educational attainment in table 5 indicates that farmers supplying middle men had an average of 10 years of formal education whereas those supplying KTDA had 8 years. Paired sample statistics as shown in table 6 indicates that the difference was statistically different at 1%. The logit regression results in table 7 imply that higher educational attainment predicted favorably a farmer's decision to sell to middle men.

5 Discussions

The findings are a strong indication that farmers are gradually shifting away from KTDA for middlemen. Given the fully liberalized market for the green tea farmers have a greater say in the marketing of their produce. Prior to market liberalization of marketing of the green tea farmers were already complaining that KTDA was a monopolist and that the prices were too low, that time taken for the final payments were unnecessarily long. Maitha *et al.*, (1976) from their studies on found that KTDA which was at that time a government parastatal in charge of developing small holder tea farming was already behaving in a paternalistic manner. Given its monopolistic status it controlled all aspects of small holder tea farming right from sourcing planting materials, provision of extension services, collection of green tea, factory developments, processing and eventual marketing. KTDA was paternalistic in the sense that once a farmer enters into growing tea one is forced into the irrevocable contract where KTDA dictated terms and conditions of the contract such as how much was to be paid every month and final payment, deductions for items such as transport and miscellaneous expenses.

It is against this background that farmers begun agitating for change in the marketing of green tea with the aim of introducing competition in the form of market liberalization. The process of market liberalization begun in mid 1990's and by 2000, it was fully liberalized (Chumba, 2000). IPAR (1999) policy studies have found that KTDA despite the world market it controls continues to make losses thus failing to pass the benefits to the farmer in form of higher prices.

The question is- are farmers now better with middlemen, the agents of multinational firms? KTDA paid last financial year (2006/07) Ksh 9.50 per kg as monthly payments and declared a bonus payment of Ksh 7.50per kg delivered after deducting all the expenses in 2006. In addition KTDA provides extension services, it sources for fertilizers on behalf of the farmer, and it maintains rural access roads where tea is grown. Furthermore small holder tea farmers are bonafide share holders of KTDA factories and therefore are entitled for dividends at end of the financial year. Embracing the middlemen implies the foregoing of the aforementioned benefits.

6 Conclusions

From the findings of the study it can be concluded that market liberalization has given farmers a choice of where to sell their green tea. The multinational firms have at least managed to access the small holder tea farmers which were not possible before market liberalization. Middlemen are being preferred because they pay promptly for the green tea delivered (KTDA pays on monthly basis, middlemen pay as per demands of the farmer, daily payments are possible). Middlemen are also preferred because they do not impose strict quality requirements unlike KTDA whose code is the bud and two leaves anything beyond is rejected. Middlemen are flexible in their mode of collection, this not the case with KTDA, where a farmer must belong to a certain collection center nearest the farm, and these centers have specific time for tea buying and collections.

It is also concluded that younger farmers with smaller land on tea are more likely to sell to middlemen than the older generation of farmers with larger land under tea. That farmers selling to KTDA are not benefiting but instead they are losing by foregoing bonus payments.

6.1 Policy Recommendations

There is need to overhaul the structure of KTDA and make it responsive to financial needs of the farmer. This should include shortening the duration of bonus payment to a maximum of three months. Alternative policy is to make each factory independent like the multinational firms; this will increase competitiveness in the tea sub-sector since each factory management will be directly responsible to its farmers. Other policy considerations should include taxing or surcharging multinational for use of rural access roads that were initiated by KTDA, such taxes were being remitted to municipalities who in turn undertake repairs and maintenance of such roads.

6.2 Areas for Further Research

There is need to find the extent of quality difference between tea from KTDA factories and those from multinational firms and how this difference affects competitiveness of Kenyan tea in the international markets. There is also need for a national survey to find out the extent of penetration of multinational companies into the small holder tea sub-sector and the welfare losses to the farmer documented.

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References

- Baker, T. L. (1994). *Doing Social research* 2nd ed. New York McGraw Hill.
- Baumann, P. (2000). Equity and Efficiency in contract farming schemes; the experience of agricultural tree crops. Working Paper 139, London; Overseas Development Institute.
- Bush and West, B. J. (1994). *The principles of Education management*, Longman, Educational management Development unit, University of Leicester, England.
- Borg, W. R. and Gall, M. D. (1989) *Educational Research, an Introduction* 6th, ed Longman London. C.B.S, Statistcal Abstracts 2000, Government Printer, Nairobi.
- Chumba, L. J. (2004). The effects of Liberalization on the performance of tea industry in Kenya. A case study of the small holders tea sub sector. Unpublished MA dissertation, Makerere University.
- Drucker, P. F. (1985). *Innovation and Entrepreneurship*, Harper and Row, New York
- Eaton, C. and Shephered, A. (2001). Contract Farming partners for Growth. FAO Agricultural Services Bulletin 145, Rome.
- Gujarati, N. D.(2003). *Basic Econometrics*. 4th Ed. The McGraw-Hill Group of companies, New York.
- Gold, A. (1975). An Economic History of Southern Nandi District (Kenya) 1750-1919. African Economic History Review, Vol 2 (23-29) [http: links.jstor. org](http://links.jstor.org)
- GOK (1996). Nandi District Development Plan 1997 – 2001. Government Printer, Nairobi.
- IPAR Policy Brief Liberalisation of the Smallholder Tea Sub-sector; Progress, Impacts and Recommendations for Further Development Real Sector: Agriculture, No. I, 1999.
- Mugenda, O. M. and Mugenda A. G. (1991). *Research Methods, Quantitative and Qualitative Approaches*, Acts Press, Nairobi.
- Mukras, M. S. (1993.) *Elementary Econometrics. Theory, Application and Policy*, East African Educational Publishers.
- Kavoi, M.,Owuor, P.,Siele, D. and Oluoch- Koshura, W. (2001). A Measure of Economic Rationality in the Smallholder Tea Sub- Sector in Kenya. *Journal of Agriculture, Science and Technology*, **3** (10) Pp 10-21.
- Kenya, Republic of (2001) *the Economic Survey 2001*, Government Printer.
- Kenya Tea Development Agency (2000) KTDA
- [http://www. Kenyaaweb.com/agriculture/boards/ktda.html](http://www.Kenyaaweb.com/agriculture/boards/ktda.html).
- Kinyili Jacinta M. (2003) Diagnostic Study of the Tea Industry in Kenya [http://www.epckkenya.org/downloadfile.asp?filename=Tea%20 Diagnostic Study 20](http://www.epckkenya.org/downloadfile.asp?filename=Tea%20Diagnostic%20Study%20)
- Nyangito H.and Kimura J. 1999) Liberalisation of the Smallholder Tea Sub-sector; Progress, Impacts and Recommendations for Further Development IOAR Discussion paper No. DP/016/99

Pindyck, R. S. and Rubinfeld, D. L. (1998) *Econometric Models and Econometric Forecasts* 4th Ed; Irwin/McGraw-Hill; Gray Burke Publisher, New York.

Simmons phil (2000). Overview of *smallholder Contract Farming in Developing Countries* ESA Working Paper No. 02-04.FAO.

Agricultural Development in Kenya. An economic Assessment. Heyer J., Maitha J. K., Senga W. M., (ED0. OUP Nairobi, 1976.

www.ktdateas.com

www.teaboard.or.ke

www.tearesearchkenya.org