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MAKING MARKET ORIENTATION DECISIONS: THE CASE OF SMALLHOLDER FARMERS IN KENYA'S KIAMBU WEST DISTRICT

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ABSTRACT

Smallholder Agriculture is important to livelihoods of many rural households in developing and emerging economies like Kenya. Agriculture supports the livelihoods of about 80 % of Kenya's population, 70 % of who live in rural areas. The rationale for market orientation which is the focus of this study is that it enhances consumers' purchasing power for food, while enabling re-allocation of household incomes by producers to high-value non-food agribusiness sectors and off-farm enterprises. The idea of market orientation has been used widely in the manufacturing sector, but market orientation in agriculture, particularly in the development literature, is defined less on sophisticated concepts of market intelligence and competitive intelligence gathering and use of that information to make decisions, but more on the degree of allocation of resources (land, labour and capital) to the production of agricultural produce that are meant for exchange or sale. The aim of this study is to examine factors that influence smallholder farmers in Kenya to make decision to be market oriented. This study is based on primary data collected from smallholder farmers in Kiambu West district in Kenya. Descriptive measures and multiple regression models were the methods used to analyse the data. Factors such as age of household head, vegetable prices, contractual agreements and membership in marketing groups were found to significantly and positively influence decision to be market oriented. Household size and farm size significantly and negatively influenced smallholder farmers' decision to be market oriented. Policy measures such as those that can reduce the intensity of land fragmentation, improve physical infrastructure, facilitate smallholder farmers' access to credit and facilitate contractual agreements between producers and buyers were recommended as a way of improving market orientation among smallholder farmers in Kenya.

Key words: Market orientation, farm capitalisation, commercialisation, smallholder famers, developing countries, Kenya

(1). INTRODUCTION

Smallholder Agriculture is important to livelihoods of many rural households in developing and emerging economies like Kenya. Agriculture supports the livelihoods of about 80 % of Kenya's population, 70 % of who live in rural areas. The aim of this study is to examine factors that influence smallholder farmers in Kenya to make decision to be market oriented. Kohli &

Jaworski (1990) state that market orientation is defined as the organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide responsiveness to it. The idea of market orientation has been used widely in the manufacturing sector, essentially referring to the extent to which a producer uses market information such as customer needs and product prices as a basis to make decisions on the three economic questions of what to produce, how to produce and how to market (Kohli & Jaworski, 1990; Jaworski & Kohli, 1993; Fritz, 1996). However, (Hinderink & Sterkenburg, 1987; Immink & Alacorn, 1993) suggest that market orientation in agriculture, particularly in the development literature, is defined less on sophisticated concepts of market intelligence and competitive intelligence gathering and use of that information to make decisions, but more on the degree of allocation of resources (land, labour and capital) to the production of agricultural produce that are meant for exchange or sale. Berhanu & Moti(2010) states that market orientation in agriculture is mainly a production decision issue as influenced both by production conditions and market signals. Hence, Haddad & Bouis (1990) states that the concept of market orientation in agriculture implies the percentage of marketed output from total farm production.

In the 1990s, the concept of market orientation moved from an idea discussed among practitioners and academics to a rigorously developed and tested concept which can be empirically measured. (Day, 1994; Kohli & Jaworski, 1990; Narver & Slater, 1990) suggest that the study of the market orientation concept has continued, aided by the seminal works of a handful of researchers. Lafferty & Hult (2001) states that while these influential researchers had their own individual conceptualizations of a market orientation in theory and practice, common threads were evident. First, the search for value was universally viewed as the origin for the development of a market orientation. Secondly, each conceptualization of market orientation has within it embedded a cultural component which in turn influences the behaviour of the firm and its employees. The following paragraphs present previous empirical studies on the concept of market orientation.

(a).PREVIOUS STUDIES

While marketing academics and practitioners have argued for more than three decades that business performance is affected by market orientation, the study by Narver & Slater (1990) was the first systematic empirical analysis of the effect of a market orientation on business profitability. Following the study by Narver & Slater (1990), a number of studies examining the relationship between market orientation and business performance emerged, though mainly in the context of developed countries (Ruekert, 1992; Jaworski & Kohli 1993; Slater & Narver 1994). Although some of the results were mixed, there was an emerging consensus to suggest that market orientation did have a positive impact on business performance. The results of a longitudinal study using panel data across a large number of industries by Kumar, Subramaniam, and Yauger (2011) state that market orientation has a positive effect on business performance in both the short and the long run. (Jawoski & Kohli 1993; Slater & Narver, 1994; Chang & Chen 1998) suggest thatmany studies supported the positive relationship between market orientation and organizational performance.

Today the positive effect of market orientation on business performance in developed economies which have typically predictable environments is no longer in doubt. However, examining this

relationship in emerging economies is still in its infancy. A study in China by Liu, Luo, and Shi (2003) state that high levels of market orientation may be associated with higher levels of learning, entrepreneurship and the potential to achieve higher performance. In contrast, studies in Ghana by Appiah-Adu & Singh(1998) failed to generate evidence for the market-orientation-performance link and questions its generalizability to all contexts.

In Kenya, studies on market orientation have yielded mixed results. For example, Yabs & Awuor (2016) conducted a study investigating the relationship between market orientation and performance of fruit exporting firms. The results showed that market orientation influenced the performance of these firms. Another study by Langat, Frankwick and Sulo (2015) investigated the effects of market orientation on firm performance through innovation in an environment of emerging markets, competition, technological change and government regulations. Results indicated that market orientation affects firm performance in this environment. The aim of a study by Njeru & Kibera (2014) was to empirically assess the perceived direct effects of the three components of market orientation namely; customer orientation, competitor orientation and the inter-functional coordination on performance of Tour Firms in Kenya. The results revealed that the three components of market orientation affected the Tour Firms. Additionally, Langat, Chepkwony, and Kotut (2012) empirically tested the effect of the business environment in Kenya on the relationship between market orientation and firm performance, and found a positive relationship.

(b).STATEMENT OF THE PROBLEM

In Kenya, the contribution of smallholder agriculture to national income, employment, food and nutrition security is recognized in various development strategy policies such as the "Kenya Vision 2030" (Republic of Kenya, 2012). However, smallholder farmers' participation in modern markets is low despite the envisaged benefits of market orientation. Access to emerging high-income agricultural markets (e.g. supermarkets) is perceived to be skewed in favour of large-scale suppliers. The asymmetric structure of many markets which include high transaction costs and lack of market information may represent considerable barriers to market access by smallholder farmers. Moreover, remoteness, poorly maintained roads, inadequate transport and storage facilities hinder the smallholder farmers from participating in competitive markets, restricting them to non-contestable markets dominated by a few powerful purchasers (World Bank, 2007).

These challenges are exacerbated by climate uncertainties, where most crops are susceptible to drought, which leads to severe crop losses, especially where irrigation is unavailable. Diminishing land sizes observed in high-potential agricultural areas such as Kiambu West District (which was the site for this study); hinder smallholders' ability to practice crop rotation or commercialize their production.

Although previous studies on market orientation have been conducted in Kenya, they have focused on the relationship between market orientation and firm performance, with no study on

small-scale farming. This study examines the factors that influence smallholder vegetable farmers in Kenya to make decision to be market oriented.

(c).JUSTIFICATION OF THE STUDY

Poverty reduction and development of sustainable livelihoods is crucially important in developing and emerging economies. Understanding the drivers of market oriented farming and the benefits of accessing sophisticated markets by smallholder farmers is an important activity for developing strategies because it creates a self-reliant growth pattern out of poverty.

While some empirical studies have been conducted on the importance of a market orientation in agriculture, there does not seem to be any research studies where the market orientation of the smallholder farmers involved in vegetable value chains were empirically measured and tested. The reason for limited research on market orientation in production agriculture is the continued perception among firms of its limited applicability. Until recently, there has been little anecdotal evidence that becoming market oriented had any discernible impact on firm-level performance in agriculture. (Reukert, 1992; Chen, 1996) state that the nature of the pricing mechanism within agriculture may also limit the development of a market orientation attitude by farmers. Researchers have shown that the behaviour of firms and agri-food supply chains is influenced by the reward systems in place. Hence, this study adds to the existing literature on market orientation in agri-food supply chains by examining the factors that influence smallholder vegetable farmers in Kenya to make decision to be market oriented.

(2). METHODOLOGY

(a). DATA TYPES AND SOURCES

This study was based on primary data collected from smallholder farmers in six villages from Kenya's Kiambu West district, where a variety of vegetables are grown intensively. The district was selected mainly because of its proximity to the capital city, Nairobi, where there is a large and lucrative urban market for fresh horticultural produce (Ministry of State for Planning, 2009). The district covers an area of 958.2 km^2 and has a population of 493,158, with a density of 515 people per km^2. Agriculture is the district's main economic activity and the highest income earner, and comprises both crops and livestock enterprises. The key food crops grown are maize, beans, Irish potatoes, and a variety of vegetables, while the major cash crops are coffee, tea, pyrethrum, and horticultural export crops like flowers. The main livestock enterprises include dairy cattle, poultry, pigs, and sheep (Ministry of State for Planning, 2009).

A household survey was conducted to gather farm-level data on the level of investment on farm equipment as well as socio-economic and demographic characteristics of the study sample. The sample was randomly selected using multistage random sampling method. A semi-structured questionnaire was administered to 200 household heads using face-to-face interviews. Both qualitative and quantitative data were collected.

(b). MEASUREMENT OF VARIABLES

A semi-structured questionnaire was developed that measured the determinants of market orientation among smallholder farmers. Before the questionnaire was finalized, it was pre-tested so that any weaknesses and problems in the questions, as they relate to the research setting, could be identified. To enable the pre-testing, 20 farmers were selected and 15 of them agreed to participate in the pre-test. The principal researcher then made appointments with each and interviewed them. They were also asked to make comments (if any) on the ambiguity of the questionnaire or any other issues that they believed were irrelevant or should be changed. As an outcome of this process, several questions were modified in order to better reflect the local socio-cultural situation. A final questionnaire was then prepared for data collection.

Calculation of Market Orientation Index (MOI_i)

To measure market orientation, ten (10) types of farm equipment commonly used by smallholder farmers were used and named as Market Orientation Index (MOI_i). The total value of farm equipment each farmer had invested per acre of land was used to calculate the MOI_i.

Gebremedhin & Jaleta, (2010) state that in agricultural and development economics, market orientation is usually calculated based on the proportion of commodity sold to total amount produced in relation to the amount of land allocated to a particular crop to total land operated by a household. In this study, the definition for market Orientation in agriculture was adopted, i.e.- the degree of allocation of resources to the production of agricultural produce that are meant for exchange or sale. Hence the observed value of farm equipment that a farmer had invested in was used as a proxy for calculating market orientation. The equipment was allocated a monetary value based on the Kenya Shilling value as a way of examining its level of contribution toward improved productivity. Therefore, market orientation index (MOI_i)indicating the degree of allocation of resources by each farmer was calculated as follows:

$$MOI_i = \sum_{k=1}^{K} V_{ik}/A_i$$

Where V_{ik} is the total value for all equipment k owned by farmer i, and A_i is the total land in acres owned by farmer i.

The dependent variable (DV) is the MOI_i which represents the farm capitalisation (FC) density, i.e. the amount of money invested per acre of land. It has a minimum value of zero and no theoretical maximum.

The independent variables (IVs) that condition the market orientation of smallholder farmers as adapted from literature are; age of household head, gender of household head, level of education, household size, household labour, farm size, average price for vegetables, produce loss during transportation, contractual agreement, membership in marketing group, distance to the nearest important market, distance to the nearest all weather road, ownership of vehicle, access to extension services and credit. These explanatory variables are specified in Table 1.

Table 1. Definition of explanatory variables

Variable Name	Variable Type	Variable definition and measurement	Hypothesized effect on market orientation
Age of household head above 15 years' old	Continuous	Age of the household head (years)	+
Gender of household head above 15 years' old	Dummy	1 if household head is male, otherwise 0	-
Education of household head above 15 years' old	Continuous	Formal education of the household head (years of schooling)	+
Household size	Continuous	Number of household members	-
Household labour	Continuous	Number of active family members working on the family farm (aged 15–60yrs)	+
Farm size	Continuous	Amount of land under cultivation of farm household (Acres)	+
Average price for kale/bunch	Continuous	Average selling price/bunch in Kshs	-
Average price for tomatoes/small crate	Continuous	Average selling price/small crate in Kshs	+
Produce loss during transportation	Dummy	1 if significant and 0 if not	+
Contractual agreement	Dummy	1 if signed a contract and 0 if not	+
Membership in marketing group	Dummy	1 if member of a group and 0 if not	+
Distance to the nearest important market	Continuous	Distance in kms	+
Distance to the nearest all weather road	Continuous	Distance in kms	+
Ownership of vehicle	Dummy	1 if vehicle owned, otherwise 0	-
Access to extension services	Dummy	1 if accessed services and 0 if not	+
Access to credit	Dummy	1 if accessed credit, otherwise 0	+

Source:Author's definitions

(3). RESULTS AND DISCUSSION

The study used descriptive measures and Multiple Regression Models to analyse the data. In this section, descriptive statistics of the variables and the estimation results of the Multiple regression are presented. The results will facilitate the identification of the factors that influence a smallholder farmer to be market oriented.

(a). DESCRIPTIVE STATISTICS OF THE VARIABLES

The data collected from 200 smallholder farmers are analysed to show the relevant demographic, social-economic and farm specific features of the farmers. It was noted that the features of all farmers are not the same and there are significant variations across farmers. The key features of the variables used in the study are presented in Table 2. From the table, it is revealed that the average age of the household head is 46.6 years with maximum of 78 years and minimum of 24 years. The average level of education of farmers is 11 years of schooling with minimum of 0 years of education and maximum of 20 years of schooling.

Table 2. Description of collected data

Variables	Sample	Min	Max	Mean	Std Dev
Age of household head above 15 years' old (years)	200	24	78	46.6	9.44
Education of household head above 15 years' old (years)	200	0	20	11	3.77
Household size (number)	200	1	10	4.05	1.5
Persons involved in farming (number)	200	1	4	1.83	0.65
Farm size	200	0.25	10	1.23	1.27
Average price for kale / bunch (Kshs)	200	20	25	20.9	2.02
Average price for tomatoes / small crate (Kshs)	200	1000	2000	1341.8	242.42
Distance to the nearest important market (km)	200	6	45	32	7.77
Distance to the nearest all weather road (km)	200	0.25	8	2.29	1.5

Source: Author's calculations

From Table 2, it is observed that the average household size is 4.05, whereas the minimum is 1.5 and the maximum is 10 members. The number of persons involved in farm labour differed among the households. The average is 1.83, maximum of 4 and minimum of 1 person, but both family and hired labour is used. From the Table, the average farm size owned by the farmers is 1.25 acresindicating that most of the farmers in the study area are in the smallholder category. The maximum and minimum farm sizes are10 and 0.25 acres respectively. The average price for kale/bunch in Kshs is 20.9, maximum of 25 Kshs and minimum of 20 Kshs; while the average price of tomatoes/small crate in Kshs is 1341.8, maximum of 2,000 Kshs and minimum of 1,000 Kshs. It is also observed that the average distance travelled by smallholder farmers to the nearest important market is 32 kms, maximum of 45 kms and minimum of 6 kms. The average distance travelled to the nearest all weather road is 2.29 kms and the maximum and minimum distance is 8 and 0.25 kms respectively.

Market orientation of smallholder farmers

The level of investment in farm equipment per acre by smallholder farmers is presented in Table3. From the Table, it is observed that the average investment is 54,600 Kshs, the maximum is 197,400 Kshs and the minimum is 16,900 Kshs.

Table 3. Market orientation of smallholder farmers (value invested in farm equipment per acre (Kshs)

Dependent Variable	Sample	Min	Max	Mean	Std Dev
Market Orientation Index (MOI_i)	200	16900	197400	54600	42500

Source: Author's calculations

Data on market orientation were skewed; hence, they were transformed using the logarithmic (Log 10) method to improve the normality of errors. The transformed data was then used for analysis. The residual plots were checked and found to be good. Figure 1 presents histograms for the skewed and transformed data (Tabachnick & Fidell, 2007).
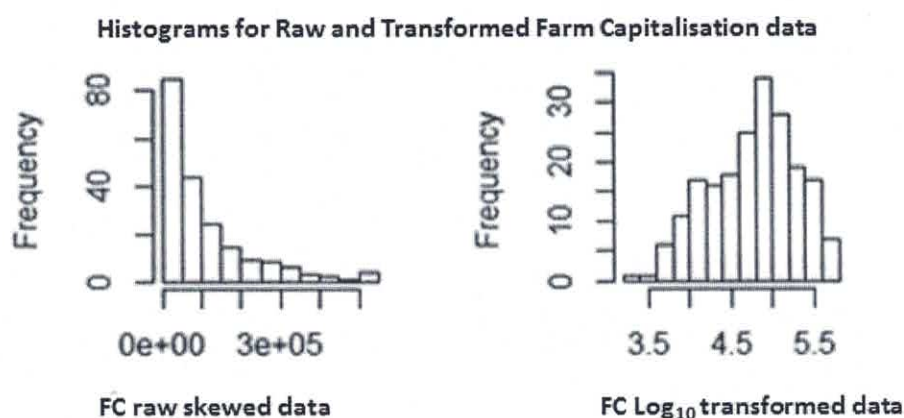
Histograms for Raw and Transformed Farm Capitalisation data

FC raw skewed data   FC Log_{10} transformed data

Figure 1. Histogram for market orientation raw skewed data (left) and market orientation Log10 transformed data (right)

(b). REGRESSION RESULTS ON MARKET ORIENTATION DECISION

In order to achieve the aim of the study, demographic and socio-economic variables are included in the multiple regression models. The models are used to predict the factors influencing the decision by smallholder farmers to be market oriented. To fit the multiple regression models, the model started by including all the explanatory variables presented in Table 1. Tabachnick & Fidell(2007) state that the first step in the analysis is to carry out a backward elimination process to remove the explanatory variables that were significant at probability level $p > 0.05$ (i.e., a strong presumption against the null hypothesis or, in other words, that they were not involved in predicting the dependant variable). Next, a stepwise regression to fit the regression models for dependent variable using the remaining explanatory variables is carried out to select the explanatory variables that were significant at probability level $p<.05$ and were involved in predicting the dependent variable. The estimation results are presented in Table 4.

Table 4. Multiple regression analysis of determinants of decision to be market oriented by smallholder farmers

Explanatory variable (P)	Coefficient estimate (CE)	Standard error	Factor=(Log_{10}^{PCE})	t-statistic	p-value
Constant	4.6662	0.1495	-	31.22	0.001**
Age	0.010396	0.003247	1.02	3.20	0.002**
Household size	-0.06509	0.02078	0.86	-3.13	0.002**
Farm size (acre)	-0.25492	0.02384	0.556	-10.69	0.001**
Vegetable price (Kshs X 1000s)	0.10216	0.04211	1.27	2.43	0.016*
Contracts	0.16041	0.07368	1.45	2.18	0.031*
Marketing group	0.16041	0.05845	1.45	2.74	0.007**

Number of observations=200

R^2= 0.476, R^2(adj)=0.46, f-statistic=29.28, probability (f-statistic) =0.000

p-value = * significant at 5% level; ** significant at 1% level

Source: Author's calculations

The model had a strong R^2 of 47.6% and adjusted R^2 of 46% suggesting strong predictive power.

The results in Table 4 show that the age of a household head significantly and positively influenced decision to be market oriented, with an increase in age by one year showing an increase in the decision to be market oriented by a factor of 1.02. This finding can be explained by the fact that older farmers usually have accumulated farm investments over the years, whereas their younger counterparts have not. This finding is similar to other studies that suggest that older farmers may make decision to be market orientation more easily than their younger counterparts because they might have accumulated capital. (Sall, Norman,and Featherstone 2000; Adegbola & Gardebroek 2007) suggest that older farmers may also have long-term relationships with their clients or preferential access to credit due to their age, availability of larger land sizes and larger family sizes that can provide cheap labour.

The price offered for vegetables significantly and positively influenced the decision to be market oriented. Farmers who get a high price for tomatoes have a higher likelihood to invest in farm equipment by a factor of 1.3. (Alene et al. 2008; Key, Sadoulet, De Janvry 2000) suggest that this finding can be explained by the fact that output price seems to be an incentive for farmers to produce surplus commodity for sale to the market, and when farmers receive high prices for their produce, they are able to generate adequate financial resources, which can be re-invested in farm equipment.

Smallholder farmers who have signed contractual agreements have a higher likelihood of making the decision to be market oriented by a factor of 1.5 than farmers without contracts. Contractual agreements lower transaction costs by reducing the time used to search for markets and negotiations. Jari & Fraser (2009) state that the results of their study supports this finding and showed that there is an increase in formal market participation with contractual agreements. The finding suggests that a smallholder farmer's capacity to invest in farm equipment is enhanced by improved earnings from the markets via having ready markets for their produce and decreased transaction costs.

Joining a farmer marketing group significantly and positively influenced decision to be market oriented by a factor of 1.5. This finding can be explained by the fact that joining a marketing group has benefits such as shared information among members and the ability to market produce as a group when an individual cannot provide the quantity of produce demanded in the markets. This latter benefit enhances the sale of fresh produce, which generates financial resources that can be re-invested in farm equipment. (Olwande & Mathenge, 2012; Kirsten & Vink, 2005) suggest that their studies support the findings and that they also found that being a member of a marketing group increases a household's access to market information, which is important when making production and marketing decisions. It also empowers farmers to bargain for better trading terms

However, household size significantly and negatively influenced decision to be market oriented. An increase in household size by one member decreased decision making towards being market oriented by a factor of 0.86. This finding is explainable by the fact that, apart from consuming more output, maintaining a large household requires larger amounts of financial resources, which diminishes the amount that can be re-invested as farm equipment. (Alene et al.2008 and Astewel 2010) suggest that their findings are similar to the finding in this studyand state that a negative sign on household implies that a larger household is likely to consume more output, which leaves smaller proportions for sale.

Contrary to earlier expectations, size of land owned by a household significantly and negatively influenced decision to be market oriented. An increase by one acre of land decreased decision making to be market oriented by a factor of 0.56. This finding can be explained by the fact that larger per capita land size will result in low farm capitalisation density since the equipment will be spread out over a large farm size. Other studies support this finding. For example, although studies by (Lund & Hill 1979; Mishra & Morehart 2001; Purdy & Featherstone 1997) suggest that that larger farms have somewhat higher performance ratios and that performance is positively affected by firm size; a study Lund & Hill (1979) warns that an increase in farm size may not necessarily lead to an increase in efficiency.(Barney (1991; Peteraf 1993) also question the ability of farm size to provide superior competitive advantage in the long-run. Accordingly, the difficulty for farm size alone to provide the firm a superior competitive advantage rests in the inability of this resource (land) to provide ex-post limits to competition, barriers of substitution, and imperfect imitability. Additionally, Sonka, Hornbaker and Hudson (1989) state that within a sample of Illinois grain farms, farm size was not one of the significant drivers of firm performance.

(4). CONCLUSIONS

Smallholder farmers in Kenya possess the potential to contribute to economic growth and development of the country. Market orientation of smallholder farming is getting priority in the developing countries like Kenya. This study examined the factors that influence decision by smallholder farmers in Kenya to be market oriented. The calculation of household market orientation index reveals that on average, farm households allocate 54,600 Kshs of their income to the purchase of farm equipment per acre of land, which is relatively low. This is because of the slow substitution of subsistence farming system by commercialized farming for high value crops in which every farm decision depends on the market signals. Lack of full transformation to market orientation prevents them from transiting into commercial farming and hence their low household income leading to poverty. Farmers are constrained by various factors in marketing,

making it difficult for them to commercialize. The technical and socio-economic factors include; lack of timely information, poor infrastructure, limited contractual agreements, lack of suitable transport for fresh produce, poor institutional support and low access to agricultural extension services, resulting to less marketable surplus. Thus, majority of the farmers are still producing at subsistence level as they will only go to the market to sell the surplus after consuming enough at the household level.

The results of this study show that households in the study area are characterized by low market orientation despite the district's location in a high agricultural potential region. Additionally, there are both positive and negative significant relationships in the multiple regression models. The age of household head, vegetable prices, presence of contractual agreements and membership in a farmer marketing group are significantly and positively related to market orientation decision, while household size and farm size are significantly and negatively related to market orientation decision.

(5). IMPLICATIONS FOR POLICY DEVELOPMENT AND PRACTICE

To transform smallholder farmers from subsistence to commercial farming in Kenya, the government needs to formulate new policies or streamline the existing ones to support the agricultural sector and the actors involved. This study recommends the following potential policy developments:

(a). Policy measures to reduce the intensity of land fragmentation especially in high agricultural potential areas such as Kiambu West District. This includes measures that support producers to farm sustainably and profitably to prevent further change of land use from agricultural to residential or commercial purposes.

(b). Policy strategies to improve physical infrastructure especially the "feeder" roads connecting farms and villages to all-weather roads, to reduce transportation costs and post-harvest losses, hence encouraging farmers to participate in markets throughout the year. Establishment of more points of sales in farming areas in order to lower transportation costs should also be considered.

(c). Policy developments that facilitate smallholder farmers' access to credit to purchase farm equipment. Since smallholder farmers are considered a risk factor by major lending institutions due to high default rate on loan repayment, joining a farmer group can improve their credit rating. This is due to the presence of peer mechanisms which has the capacity to enforce compliance to loan repayment schedule by individual members.

(d). Policy strategies that facilitate contractual agreements between producers and buyers, which are critical in ensuring ready market for farmers' produce and reduced effects of market price fluctuations.

(6). STUDY LIMITATIONS AND HOW THEY WERE OVERCOME

Several issues were encountered during the study, and the key issues that had significant impact were:

(a). LIMITATIONS

(i). The initial strategy for field work was a single field trip to Kenya for collecting data lasting six months. However, this field trip was reduced to two lots of three months each, as a result of logistic issues; hence data collection exercise was not optimal.

(ii). There were difficulties in obtaining national statistics, especially longitudinal data gathered for the same subjects repeatedly over long periods of time.

(iii). The fact that only vegetable farmers (kale and tomatoes) were included in the study while omitting farmers who did not participate in these two value chains, caused a major limitation to

the generalizability of the results in other areas.

(b). THESE LIMITATIONS WERE OVERCOME BY:

(i). The researcher recruited and trained a number of in-country enumerators and a technical supervisor who spoke the local dialect to assist in conducting face-to-face interviews, which sped up the data collection process.

(ii). Multiple sources of data, including online resources were used as secondary data, especially from researchers and organisations with the capacity to carry out longitudinal studies in developing countries.

(7). IMPLICATION FOR FUTURE RESEARCH

This study examined factors that influence decision by smallholder farmers in Kenya to be market oriented as a pathway towards transformation from subsistence to commercialised farming system.

However, the study's findings are based on a short time span of data collection. Data used in this study were collected over a period of two lots of three months due to logistical constraints. This timeframe was not sufficient to observe changes in the rural society over an extended period of time. Therefore, a longitudinal study (in which data is gathered for the same subjects repeatedly over years) to examine transformation from subsistence to commercialised farming systems among smallholder farmers over time is suggested. In the study by Hynes (2008), it is suggested that this is important when studying development issues that have a long lifecycle.

(8). ACKNOWLEDGMENTS

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