Market Availability and Food Security in Rungwe District

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Received: July 2021
Reviewed: September 2021
Accepted: October 2021
Published: December 2021

Abstract

This paper assessed market availability as one of the key factors for improving food security in Rungwe District. Specifically, the study assessed the role of market availability on food security and investigated constraints facing households in the utilisation of market opportunities in the study area. The study was carried out in Mpandapanda and Kikota villages of Rungwe District and about 150 respondents were interviewed for the study. Data were collected through documentary review, household interviews, focus group discussions, key informant interviews, ranking and field observation. While qualitative data were analysed using content analysis. Quantitative data were analysed using SPSS and Excel spreadsheet. The study results show that Kiwira market was important for improving both food security and household income. About 87.3per cent of the respondents indicated that Kiwira market encouraged households to produce food crops for both sale and consumption which improves food security among households. About74 per cent of the respondents showed that they have consumed three meals per day, which was contributed by crop diversification in the area. Market availability promoted food security through encouraging food crop production and facilitating income source for food purchases in the study area. About 94 per cent of the respondents indicated that financial problem was one of the major constraints facing farmers

in the area. The study recommends that the government and private sectors should provide financial support to rural farmers to enhance efficient utilisation of marketing opportunities in the area.

Key words: *Market, Food availability, Food access, Rungwe District.*

1. Introduction

Market has emerged as one of important factors for the achievement of food security in developing countries (Timmer, 2017b; Martin, 2017). Kiwira market has emerged as one of the commercial centres for agricultural products in Rungwe District through acting as the collection centre for foodstuffs (Racaud and Bart, 2016). Various scholars have provided a general knowledge on the importance of markets in improving peoples' livelihoods. For instance, Burgess and Donaldson (2010) indicated that market improves the diversity of food for consumers, which reduces the problem of famine among households. As reported by Costinot and Donaldson (2014), through markets, farmers improve income from trading both within and outside agriculture and that markets improve food security and reduce poverty for households (FAO, 2015). The existence of markets close to farming households helps to reduce transport costs between production and market areas (Donaldson, 2014). Despite the presence of market, farmers fail to benefits from the existing market due to financial constraints and poor transport facilities (Aggarwal, 2018; Recaud, 2017), which make them fail to get out of poverty (Timmer 2017a).

Standard economic theory and the Boserupian theory recognises the role of market on food security for the growing population. While the Malthusian theory argues that rapid population growth results into declining land size which causes insufficient food production (Malthus, 1798), the Boserupian theory suggests that markets are important in improving food security through promoting access to food and to agricultural inputs which promote food production (Boserup, 1965). Standard economic theory shows that market improves livelihoods and raises real national income. For instance, David Ricardo explained the comparative advantages basing on the relative

productivity of different regions (Martin, 2017). Markets respond to various situations such as changing climate, technology and endowments, thus responding to evolving comparative advantages (Baldos and Hertel, 2015). Markets provide opportunities for trade among various regions which enables farmers to benefit from comparative advantages due to variation in products that can be complemented between one another (Remans et al., 2014). As Stevens (2003) suggests, when harvests fail due to climate change at a particular location, other sources of food are available from other areas. Nevertheless, poor transport facilities limit benefits from comparative advantages because it delays access to markets (Recaud, 2017). Aggarwal (2018) suggests that investments in infrastructures is important because it improves food distribution between different regions.

There are limited studies on the linkages between market availability and food security among rural households. Most literature have provided a general knowledge on the role of market on food security (Timmer, 2017; Martin, 2017; Baldos and Hertel, 2015), without paying much attention to impacts of market availability on food availability and food access in rural areas, in particular. It is important therefore to ascertain the existing relationship between market availability and food availability and access in order to inform policy makers on th appropriate interventions to improve food security among rural households.

This study aims at assessing the role of market availability on food availability and food access for rural households in Rungwe District. The paper addressed the questions of what is the role of market availability on food availability and on food access and what constraints farmers face in the utilisation of market opportunities in the study villages.

2. 0.Methodology

This study employs a descriptive research design that enables to collect data from a wide range of respondents about the role of market availability on food security. The study utilised both quantitative and qualitative approaches. The

combination of qualitative and quantitative methodology has been gaining credibility and relevance because it improves the validity of data (White, 2002). Triangulation technique was applied as it involves collecting information from multiple sources to reduce the chances of biasness while improving the research validity (Denzin and Lincoln, 2000).

The study was conducted in Mpandapanda and Kikota villages of Rungwe District. Data were collected through documentary review, household interviews, focused group discussion (FGDs), key informant interviews (KIIs), ranking and field observation. With the help of district officials, purposive sampling was applied to select Kiwira market which was among the dominant markets in the district, while Mpandapanda and Kikota villages were purposively selected due to their location near the Kiwira market. A random sampling procedure was used to obtain 5 per cent of the household heads for interview. This follows the recommendation by Boyd et al. (1981) who suggested a sampling intensity of 5 per cent of the total number of households in a study area. Therefore, about 150 households were interviewed. The structured interview provided information on the number of meals, food crops produced, sources of household income and constraints faced.

A documentary review involved reviewing various publications including books, journals and other published and unpublished materials and other sources including the internet. In-depth interviews were conducted with officials such as the Ward Executive Officers, village chairpersons, Village Executive Officers, Agricultural Extension Officers, Marketing Officers and representatives of community-based organizations. In every study village one FGDs was conducted and each consisted of 10 to 15 members, both females and males aged 18 and above. FGDs involved all key groups, such as the representatives of elders, local rulers, and leaders of various associations such as traders, drivers, coffee producers and tea growers. A checklist relevant to the study was used to guide the discussion. While FDGs and KIIs enabled the researcher to gain a deeper understanding and additional information on the relationship between market availability and food security and constraints

faced. Field observation was used in supplementing and confirming information provided by structured interview, FGDs and KIIs. Ranking method was used to rank the preferred food and the uses of household income.

Data collected through qualitative techniques such as FDGs, KIIs and field observation were analysed by content analysis. Quantitative data from household questionnaire and interviews were analysed using Statistical Package for Social Sciences (SPSS) version 20 and Excel spreadsheet. Cross tabulation was conducted between variables and a basic summary of different variables such as frequencies and percentages were obtained. The study findings were presented in various ways including tables and graphs.

3.0. Results and Discussion

3.1 The role of market on food availability and food access in Rungwe District

3.1.1 Market availability and food crop production

The study results show that the presence of Kiwira market promoted food availability and food access through encouraging food crop production for both consumption and sale at the market. Households obtained opportunities of making efficient choices of what to produce depending on the market demand. They produced a range of food crops such as maize, beans, banana, sweet potatoes, round potatoes, cassava, yams and avocadoes, which are consumed by households and demanded by market. When asked about the purpose of producing food crops, about 87.3 per cent of the respondents reported to have been producing food crops for both sale and consumption (Table 1).

Table 1: Percentages of respondents on purpose of producing food crops by villages

Uses of the produced crops	Mpandapanda (n=102)	Kikota (n=48)	Total	Percent
For sale only	1	0	1	0.7
For consumption only	13	5	18	12
For both consumption and sale	88	43	131	87.3
Total	102	48	150	100

As indicated in Table 1, the majority of households produced food crops for both consumption and for sale at the market. FGDs and KIIs indicated that households were encouraged to produce food crops due to their importance on improving food security and household income. Through field observation it was found that at Kiwira market most of the goods sold were in the form of food stuffs such as maize, beans, banana, sweet potatoes, round potatoes, rice, fish, vegetables and fruits. KIIs indicated that commercialisation of food crops encouraged households to produce food crops that can be easily sold at the market whereby various food crops have gained the importance of becoming cash crops. Similar findings on commercialisation of food crops were reported by Carlettoet al. (2013) that through commercialisation households have become very careful in selecting the type of crops to be produced and that commercialisation discouraged the production of non-food as they could lead to famine (Tipraqsa and Schreinemachers, 2009). This has been a strategy of making sure that households do not experience food shortages. Also, these findings are consistent with the findings in a study by Mainet and Racaud (2017) that in Rungwe District banana has replaced tea and coffee plantations as a source of income, while round potatoes have replaced pyrethrum in Uporoto highlands. Similarly, Racaud (2017) showed that in Rungwe District farmers have produced food crops such as bananas and maize which became both food crops and cash earning crops. This implies that high involvement in food crop production than traditional cash crops is a response towards

marketing opportunities which create potentials for new income sources facilitated by increased food demand from urban areas.

The high involvement in the production of food crops enabled many households to consume three meals per day. About 74 per cent of the respondents indicated that they have consumed three meals per day while 15.4 per cent consumed two meals per day (Table 2).

Table 2: Percentages of respondents on number of meals consumed per day by villages

Number of meals consumed per day	Mpandapanda (n=102)	Kikota (n=48)	Total	Percent
Three meals per day	76	35	111	74
More than three meals per day	13	10	23	15.4
Two meals per day	11	3	14	9.3
One meal per day	2	0	2	1.3
Total	102	48	150	100

As indicated in Table 2, many households consumed three meals per day. FGDs and KIIs reported consuming three meals has been facilitated by the production of a portfolio of crops that enabled sufficient food supply in the area. In addition to maize and beans production as the main food crops, households also produce other crops such as banana, cassava, yams, sweet potatoes and round potatoes and vegetables which ensure food availability throughout the year. Despite that households had no access to stable income sources from either wages or salaries, there was no problem of food shortages due to crop diversification. Through ranking, it was observed that maize flour was the main food in the study areas. When there is shortage of maize they opt for banana flour and cassava flour. The presence of Kiwira market has promoted crop diversification in the area which helps to reduce the risk of total crop failure in the area. Some household members consumed even more

than three meals because the counted meals do not take into account extra food types consumed either before or after consuming the main meal, for example eating roasted maize or potatoes or cassava or bananas and various types of fruits, which are considered as just refreshments.

In contrast to these findings on consumption of three meals, a study in Ghanaby Kuwornuet al. (2012) showed that about 62.8 per cent of the households reduce the number of meals as their coping strategy to food insecurity. Similarly, Ogutuet al. (2017), FAO (2015) and IFPRI (2015) indicate that in many Sub-Saharan countries households consumed less than three meals per day. Also, as Chhetri and Maharjan (2006) observe, when food crisis is experienced, households respond by migrating to other areas, there was no such a problem in the study villages due coproduction of several food crops. These findings correspond to the findings in a study by Lakhranet al. (2017) that the combination of crops provides a range of food types to be consumed. Similarly, a study by Mugendi Njeru (2013) reported that crop diversification ensures food availability throughout the year and that it is the only way of sustaining food security for households (Timmer, 2017a). The availability of food enables smooth running of various economic activities because everyone performs activities after eating a meal(Makhura, 2015). This implies that food is very important to both farmers and non-farmers in both rural and urban areas because everyone depends on food, whose availability and access could be difficult without markets.

3.1.2 Market availability and Trade on food crop

Through trade Kiwira market promoted food availability and food access not only in the study area but also in distant locations. KIIs and FGDs reported that traders have traded within and outside the districts as well as other regions such as Dar es Salaam, Iringa and Dodoma and in countries such as Malawi, Zambia, South Africa and Dubai. This is an indication that through traders, agricultural products from Kiwira market has improved food availability and access in the study villages and other regions. KIIs and FGDs reported that various products from other countries are available at Kiwira market which

helps to supplement the available food. For instance, it was observed that most of the sugar consumed in the study area was from Malawi and Zambia. This was confirmed by field observation at Kiwira market where street traders sold sugar made from Malawi and Zambia. This implies that market acts as a bridge and food distribution centres between food production areas and the needy areas while reducing the possibility of experiencing food insecurity.

Similar findings are reported in a study by Recaud (2017) that the market a major centre for food collection and distribution where products such as banana have reached distant areas such as Iringa, Dodoma and Dar es Salaam. Similarly, Mainet and Racaud (2017) reported that markets are the main points of entry of products from outside the area; this includes oranges from Tanga and onions from Iringa and dried fish from the Great Lakes. In addition, Makhura (2015) reported that market availability can determine the status of food security at various locations due to its significance in the collection and food distribution. This confirms that markets areas with inadequate food supply can be served from areas of surplus food production.

These study findings conform with the notions in the theory of comparative advantages that with markets availability, food scarcity areas can be compensated with food surplus areas. Markets respond towards various situations like changing climate, technology and resource endowments and other disruptions (Baldos and Hertel, 2015). Market availability attracts traders and producers to bring and sell their products while serving food scarcity areas, which has a positive implications for food security.

The availability of food products from other countries and the provision of products from Kiwira market to other countries such as Malawi, Dubai, Zambia and South Africa is an implication that Rungwe District has entered into the global economy. Similar findings are reported in a study by Mainet and Racaud (2017) that markets are significant in integrating rural areas to international markets. Similarly, Recaud (2017) emphasised that banana from Kiwira market have reached Malawi, Zambian, South Africa and Botswana, which also suggests that there is a cross border trade. Further, Racaud and

Bart (2016) suggest that exchange of food crops is a character of incorporating rural areas to national and international economy.

3.1.3 Market availability and access to income for food purchases

The presence of Kiwira market has created opportunities for farmers to sell their agricultural products to obtain income for food purchases. Households have concentrated on the production of food crops such as maize, beans, bananas and round potatoes which are easily consumed by households and have a high value at the market. The sale of food crops enables households to obtain income for purchasing food not produced by households and to obtain income for fulfilling requirements.

When asked about their main source of income, the majority of respondents (84.7%) indicated to obtain income through selling their agricultural products (Table 3).

Table 3: Percentages of respondents on their main sources of income by villages

Number of meals consumed per day	Mpandapanda (n=102)	Kikota (n=48)	Total	Percent
Agricultural outputs	84	43	127	84.7
Trade	11	2	13	8.7
Wages and salaries	6	3	9	6
Other activities	1	0	1	0.6
Total	102	48	150	100

The findings in Table 3 indicate that about 84.7 per cent of the respondents cited agriculture as their main source of income. KIIs and FGDs reported that, in addition to food crop as income sources, households additional income sources include the sale of animals and animal products such as skin, milk and eggs and the production of sugarcane, coffee, and tea for sale purposes. Also, Kiwira market has created opportunities for engagement in various income

generating activities including trade, wage labour, driving motorcycles, electronic money transfer, shoe shine and saloons are also income sources in the area.

The study revealed further that purchasing of food was ranked as the first priority given by households in the study area. This has been observed through ranking method where the FGDs participants were asked to list and rank the uses of household income. Other uses of household income included paying for medical treatment, purchasing agricultural inputs, education and buying households' facilities. It was observed that education was of low priority because the government has provided an assurance of paying education costs which enhances free access to education especially for primary and secondary levels.

The obtained income was used to purchase the preferred food types such as rice, meat, sugar, wheat, fish and vegetables that were not produced by households. About 86 per cent of the respondents indicated to have consumed both the food produced by households and the purchased food from the market (Table 4).

Table 4: Percentages of respondents on consumption of the purchased food type

Sources of consumed food	Mpandapanda (n=102)	Kikota (n=48)	Total	Percent
Produced by households	3	11	14	9.3
Both the produced and the purchased food	93	36	129	86
The Purchased food	6	0	6	4
From Relatives/friends	0	1	1	0.7
Total	102	48	150	100

It is evident that in addition to consuming food produced by households, many households have also purchased food from the market. KIIs and FGDs indicated that consuming the purchased food reduces the possibility of experiencing hunger in the area. In rural markets there are low prices for various food types which allows different levels of households to afford. Similar findings are reported by Oguenoet al.(2017) that rural households were encouraged to consume the purchased foods than depending on what is produced by their families. Similarly, Costinot and Donaldson (2014) highlighted that purchasing food from the markets was facilitated by commercialisation of food crops.

The study results revealed further that Kiwira market has provided an opportunity for practicing barter trade where households were obtaining the preferred food through exchange system. KIIs and FGDs reported that one or more food types can be exchanged for another depending on the agreement between the partners. This implies that even without having cash income households can access food which ensures food security for households. The exchanged products can either be used for consumption or for sale at the same market or at other markets. This is a unique opportunity that allows partners to meet and make agreement on the exchange, a situation that could not be easily done without markets.

3.1.4 Market and agricultural inputs for improved food productivity

The presence of Kiwira market has enabled the availability of agricultural inputs which is necessary for improvement of food productivity. There are various inputs such as chemical fertilisers, improved seeds, herbicides and insecticides at the market. KIIs and FGDs reported that the use of farm inputs was low due their high cost. For instance, the price of chemical fertilisers ranged from 50,000Tsh to 70,000Tsh per 50kg bag, which rural farmers cannot afford. The use of improved seeds are necessary due to their ability to mature earlier than the traditional ones and as one of adaptation mechanism for reducing impacts of climate change and variability. For instance, improved seeds of maize and round potatoes mature earlier and can be cultivated twice or thrice per year, which ensures constant supply of food throughout the year. Also, it

was observed that households preferred to use organic fertilisers because it is cheap than the chemical fertilisers.

The availability of farm inputs such as improved seeds, fertilisers and herbicides is an indication that Kiwira market provides the opportunity of transferring technology for improvement of agricultural production which enhance the process of industrialization in the country. However, high cost of such inputs have limited their application in the area. Similar findings are reported in a study by Mainet and Racaud (2017) that farm inputs such as seeds and fertilizes promote improved food productivity for rural households. Similarly, Racaud (2017) suggests that market availability promotes trade on products for agriculture including inputs, animal feed and veterinary products which can enhance food security. These findings are consistent with the findings in a study by Ngongiand Urassa (2014) that market facilitates investment in agriculture for improvement of food supply. Similar findings on the high cost of farm inputs are also reported in study by Makhura (2015) that the high cost of agricultural input results into declining food production among farming households. Similarly, as Ogutu et al. (2017) observe smallholder farmers fail to advance into more commercialised farms due to high cost of production including the high cost of agricultural inputs that have significant impact on improvement of food production.

These findings support the Boserupian theory that markets are important in improving food security through promoting access to agricultural inputs such as fertilisers, herbicides, insecticides and pesticides which improve food supply for both rural and urban populations (Boserup, 1965). Timmer (2017b) insists that urban populations depends more on food from rural markets and that any threat to food availability in rural markets threatens food availability in urban markets. As Makhura (2015) suggests, the provision of subsidised farm inputs is necessary to encourage farmers focus on food production for improving and sustaining food availability. Without support and incentives farmers could decide to focus on profit maximisation which can cause vulnerability to food availability. This indicates that the provision of subsidised farm inputs is necessary because they improve farmers' access to farm inputs at affordable costs which results into improved food security for households.

3.2 Constraints facing smallholder farmers in Rung we District

The study results show that farming households have not been fully benefitting from the available marketing opportunities due to various constraints. The majority of respondents (94%) indicated that financial problem was one of the major constraints facing rural households (Figure 1).

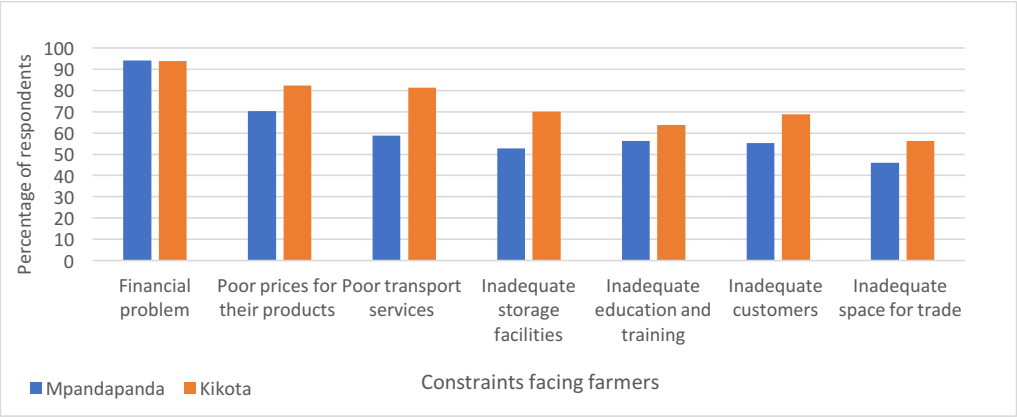

Figure 1: Constraints facing smallholder farmers

Financial problem had high response for both Mpandapanda and Kikota villages (Figure 1). FGDs and KIIs indicated that farmers fail to accrue more benefits from the existing market due to failure to invest in improved agriculture and other income generating activities due to inadequate finance, and therefore, fail to compete in the market. Farmers fail to purchase the required farm inputs such as fertilisers, improved seeds and herbicides to improve food production. Also they fail to meet transport costs which force them to sell their products cheaply at their farms. Traders and middlemen are interested in collecting products such as bananas, avocadoes and sugarcane directly from producer' farms and may pay in advance before the product matures so as to obtain fresh and cheap products. This implies that with small financial capital households are less likely to obtain high returns, therefore failing to reduce poverty situation in the area. These findings conform with the findings in a study by Skinner and Haysom (2016) that lack of capital is one of the greatest obstacles facing households. Similarly, Recaud (2017) indicated that low capital is a major constraint as it limit households from direct access

to market and therefore, forcing them to sell their products cheaply at their farms.

Lack of storage facilities limits farmers from making proper decision as to whether to sell or retain their products and compelling farmers to sell products at low prices. There were no areas to accommodate their goods and no refrigeration services to keep their perishable goods such as sweet potatoes, bananas, vegetables and fruits which lead to food losses in the households. Similar findings are reported by De Waal and Tumushabe (2003) that without proper food storage facilities food insecurity can be experienced because the available food cannot be retained. Also, Hebebrand and Wedding (2010) reported that inadequate access to storage facilities lead to damages during harvesting, packaging and improper storage which affects the realisation of profit from the available market. In contrast, a study by Racaud (2017) showed that at Uyole markets there were138 stores where some of the foodstuffs were stored and sold with some products being displayed on tables.

Through FGDs and KIIs the study found that poor transport services hindered smooth transport of products from production to market areas. In some areas of Kikota village trucks fail to reach the production areas due to poor roads, thus being forced to sell the foods at low prices at their farms while reducing the amount of food reaching the markets. These findings are similar to the observation by Aggarwal (2018) that investments in rural infrastructures is one of the critical techniques of improving food security through reducing transport costs between food surplus and food deficit areas. A report by Makhura (2015) in South Africa showed that development of infrastructure significantly promote food production for improvement of food security. Similarly, a study by Burgess and Donaldson (2010) in India indicated that connecting villages to railway networks resulted in a decline of famines in that region. Proper transport network improves food security while reducing the risk of declining quality of products such as vegetables and fruits because poor transport facilities delays access of markets on time (Recaud, 2017). This implies that market availability goes hand in hand with improvements

in transport facilities which is significant for improvement of food security in various locations.

Moreover, rural households have inadequate education and training on farm business and on entrepreneurial activities. For instance, they have no training on processing agricultural products which reduces the perishability of products. Through KIIs it was observed that households do not have experts like the agricultural economists to advise them on how to manage their farming as business. This make them fail to improve their returns. These findings conform to the findings in a study by Racaud (2017) that poor education to rural farmers have limited them from benefiting from agriculture due to inadequate knowledge on rules of exchange and on product quality control. Similarly, Hebebrand and Wedding (2010) insisted that inadequate capacity building and insufficient market information has also been a problem to rural communities in developing countries.

4. 0. Conclusion and Recommendations

Market availability is a key strategy of achieving food security because it acts as a bridge between food production areas and the needy areas. Market availability promotes food crop production both for sale and for consumption which improves food availability and food access to households. The production of various crops enabled many households to consume three meals per day while reducing the likelihood of experiencing hunger in the area. The results indicate that although households had no access to stable sources of income, there was no problem of shortage of food due to various food crops produced and consumed in the area.

The study revealed that the presence of Kiwira market has enabled the availability of various farm inputs like chemical fertilisers, improved seeds, herbicides and insecticides close to farming households. Despite the availability of agricultural inputs, rural households could not afford them leading to low use Farm inputs are necessary in improving food productivity.

Ignoring the use of these inputs results in declining food production which creates vulnerability in the status of food availability in the area.

According to the study findings despite the presence of Kiwira market, farmers have not benefitted fully from the available marketing opportunities due to inadequate capital to be invested in farming activities. Similarly, inadequate storage facilities, poor infrastructures and inadequate education and training on farm business and entrepreneurial activities faced households in the study villages. Lack of agricultural economists in rural areas make farmers fail to make their farming as business which lead to failure to improve their returns and move out of pov. On that basis, this paper recommends that the government should improve market conditions by offering good prices to improve the value of various crops which creates a strong incentive to invest in food production while promoting food security in the area. This will enhance efficient utilisation of the available marketing opportunities and promote agricultural development which consequently improves food security not only in the study area but also in other societies in Tanzania and the world in general.This paper recommends that the government should provide subsidies to farm inputs to improve food production. This will help to improve farmers' yields and transform their farming. This is because through market opportunities successful structural transformations can occur in agricultural activities because rural transformations are primarily determined by market processes.

It is recommended that the government and private sectors should provide financial support to facilitate investments in agriculture. Also transport services and storage facilities should be improved to promote food security in the area. Moreover, the government should provide agricultural economists and encourage private sectors to provide training on entrepreneurial activities and empower farmers to manage their farming as business. Training and capacity building are essential for rural households to compete in local and global markets for transformation of agriculture which enhance the process of industrialisation in the country.

This paper calls for policy makers to implement reforms which support for the creation of a policy that would increase people's access to farm inputs to promote increased food production. The increased access to farm inputs has greater potential for improvement of land productivity and consequent food production with possibilities to promote food security for rural households.

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