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Rural supply chain in the urbanizing country: the case of Kwahu, Ghana

Master's thesis

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Declaration

"I hereby declare that I worked on my Master's thesis Rural supply chain in the urbanizing country: the case of Kwahu, Ghana by myself and that I used only literature resources listed in references."

25th August 2017, Prague .....

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Abstract

Transparency of food supply chains and traceability as aspects of food quality assurance have gained lately more and more importance. Access to food for consumer in cities of developing countries depends largely on traditional domestic supply chains. Local food and agriculture are positioned as o core element of regional rural development. Ghana as a middle-income West African country employs in agricultural sector almost half of the national labor force and agriculture is a key sector of Ghana's economy. History of the trading in the country started with the first settlers came to the country and used barter system as main method of trading.

This thesis dealt with the local food supply chain in the Kwahu district. Characteristic features of the main channels involved in these chains were analyzed. Role of the farmer, middlemen and consumer were specified. We focused on the local markets, farm characteristics, main cultivated crops and market activities of the farmer, consumer shopping preferences and opinion on the quality of the purchased items. Main research questions studied relations between location of the farm and number of channels involved in the supply chain and if the size of the farm has an impact on farmer's market activities. Results have proven that even there is a relationship between these variables, we do not know how strong these relationships are. The survey nevertheless identified food supply chains in the Kwahu are as short supply chains, because there is not many different groups of channels involved in the goods exchange and relationships are very strong because they are direct.

Key words: food supply, local markets, local production, rural area, short chain

List of contents

List of Abbreviations:

CIA Central Intelligence Agency

FAO Food and Agricultural Organization of the United Nations

GhC Ghana cedi – currency

GSS Ghana Statistical Services

JHS Junior High School

MDG Millennium Development Goals

MoFA Ministry of food and agriculture

LFS Localized food systems

SHS Senior High School

UN United Nations

WB World Bank

List of Tables:

List of Figures

List of Pictures

List of Appendices

1. Introduction

Main current focus in terms of food safety and environment is nowadays in food supply chains. There is an increased interest in the transparency of these chains and therefore, traceability as aspects of food quality assurance have gained lately more and more importance (Bosona and Gebresenbet, 2011). Access to food for poor consumer in Third World cities depends largely on traditional domestic supply chains (Guarín, 2013).

Ghana as a middle-income West African country has experienced impressive economic growth from 2005 to 2012. This growth has slowed significantly since 2013 in light of macro-economic challenges, such as high budget deficit and inflation, but is still expected to remain positive, due to the country's stable democratic institutions and rich natural resources (WB, 2014).

Agriculture is a key sector of Ghana's economy, accounting for 23 percent of the national GDP in 2012. The sector has grown significantly since 2007, benefiting from high international prices, particularly for its main exports such as cocoa (WTO, 2014). Despite sectors growth, agriculture remains largely rain-fed and subsistence-based, with rudimentary technology used to produce 80 percent of the total output. Agricultural sector employs almost half of the national labor force (FAO,2015).

Local food and agriculture are frequently positioned as a core element of regional rural development. It can be a way to overcome farming crises, revive lagging rural economies and restore consumer confidence (Goodman, 2004; Renting, Marsden & Banks, 2003; Seyfang, 2006). Localized food systems (LFS) are an important element of regional development, yet understanding why some regions develop stronger systems than others is still unclear (O'Neill, 2014).

Although LFS are contested and difficult to define, they have multiplied over the last 15 years as producers and consumers seek alternatives from mainstream globalized food chains. A widely used definition comes from Feenstra (1997): 'rooted in particular

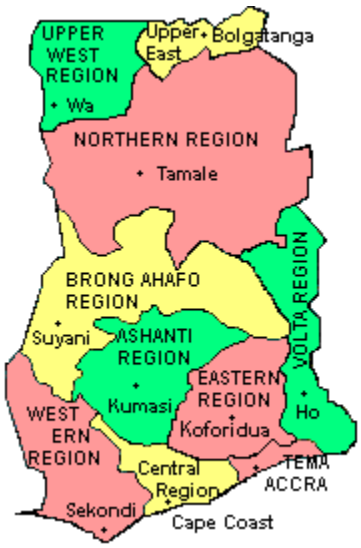
places, [LFS] aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practice, enhance social equity and democracy for all members of the community'. They have been described as food provisioning systems that are different, or even countercultural, to conventional food supply chains which dominate in developed countries (Tregear, 2011). As an example we can mention farmers' markets (Holloway & Kneafsey, 2000), farm shops, box schemes, community-supported agriculture (Holloway et al., 2007), community gardens and organic production (Holland, 2004). Very important is that LFS are often based on characteristics such as direct contact between consumers and producers, embeddedness within the region, increased trust and greater proximity (Kirwan, 2004; Sage, 2003).

The creation, operation and evolution of these food supply chains are one key dimension in the new patterns of rural development (Marsden, 1998).

2. Literature Review

2.1. Republic of Ghana

Republic of Ghana was formed as the merger from one of the British colony of the Gold Coast and to trust territory of Togoland. Ghana was the first sub-Saharan country in colonial Africa to gain its independence in 1957 (CIA, 2015).



Picture 1: Ghana Regions (source: Ghana Web, 2015)

Country is located in the Western Africa between states Cote d´Ivoire and Togo, bordered by the North Atlantic Ocean (Ghana Web, 2015). With the population of 26.79 million people and GDP at market prices $38.62 billion is considered as lower income country (WB, 2014).

Ghana's population is divided in about 75 ethnic groups. In year 2012, when the latest census was published, females covered 51 % and males 49 % (Ghana Embassy, 2015) of the population with density 111 people per sq. km (WB, 2012). Accra, the capital city of Ghana, is situated in the smallest but the most populated Greater Accra region (Ghana Web, 2015). The other most populated parts of the country are areas located on the coast, the Ashanti region and two principal cities Accra and Kumasi (Ghana Embassy, 2015).

Population distribution between rural and urban areas in the country is almost equal, but the classification of a locality as urban or rural is based on population size. Localities with population of 5,000 or more are classified as urban, where live about 53 % of all citizens. The rest, 47%, live in the rural areas (UN, 2014). Level of urbanization varies by region**.**

GDP per capita has reached US$ 1 858 in 2013, and the Human Development Index improved based on increase in access to health care and education, making Ghana one of the few 'medium human development' countries in the region. Ghana halved extreme poverty from 36.5% to 18.2 % between years 1991 and 2006, achieving one of the best records in sub-Saharan Africa. Furthermore, Ghana has met the Millennium Development Goal of halving poverty and hunger before 2015 (MDG1) (Government of Ghana, 2013). Nevertheless, particularly in the Northern regions, over a quarter of the population still remain below the poverty line of US$ 1.25/day (FAO, 2015).

2.1.1. Regions and Districts of Ghana

Ghana is divided into 10 main regions – Greater Accra, Central, Eastern, Western, Ashanti, Northern, Upper East, Upper West, Volta and Brong Ahafo Region (Ghana Web, 2015).

Ghana districts are considered as second-level administrative subdivisions of Ghana. System of local government consists of a Regional Co-ordinating Council, a three-tier Municipal/District Assemblies Structure and a four-tier Metropolitan. These District Assemblies are either Metropolitan with population over 250,000, Municipal, which are populated with over 95,000 habitants or District with more than 75,000 people (Ghana web, 2015).

These assemblies were created to serve as administrative and developmental decision-making units in the district and also to take care of basic government administrative. They are assigned with legislative, deliberative as well as executive functions. Monolithic structure was established to be responsible of the totality of

government to bring about integration of administrative, development and political support needed to achieve more even allocation of wealth, power and geographically dispersed development in Ghana (Ghana Web, 2015).

2.1.2. Eastern Region

The Eastern Region, with an area of more than 19 thousand square kilometers, occupies 8.1 percent of the total land area of Ghana and becomes the sixth largest region of the country. A total of 2,106 696 inhabitants in the region represents around 11 percent of Ghana's population. After the Ashanti and Greater Accra, the Eastern region is the third most populous region. The population is made up of 50.8 percent females 49.2 percent males (Government of Ghana, 2015).

On a broad sector basis, more than 58 percent of the employed population works in the agricultural sector including forestry, hunting and fishing, 14 percent in the retail trade and wholesale sector and close to 9 percent of the population in manufacturing. The population distribution pattern shows that 34.6 percent of the region's population live in 56 urban settlements (towns with population above 5,000) while the greater percentage, 65.4 percent, live in rural communities (Government of Ghana, 2015).

The region is rich in raw minerals (diamond, bauxite-tantalite, gold), limestone, kaolin and clay. The savannah and forest soils are suitable mainly for the cultivation of a variety of crops. Region's contribution is significant in the production of industrial crops such as cocoa, cola nut, pineapple, pawpaw and oil palm. It also has a substantial share in the national production of cassava, maize and citrus. Exotic crops such as black and sweet pepper, ginger, cashew nuts, Irish potatoes, rubber and mangoes, which are all gaining importance as export commodities are also available in the region (Government of Ghana, 2015).

2.2. Agriculture in Kwahu district

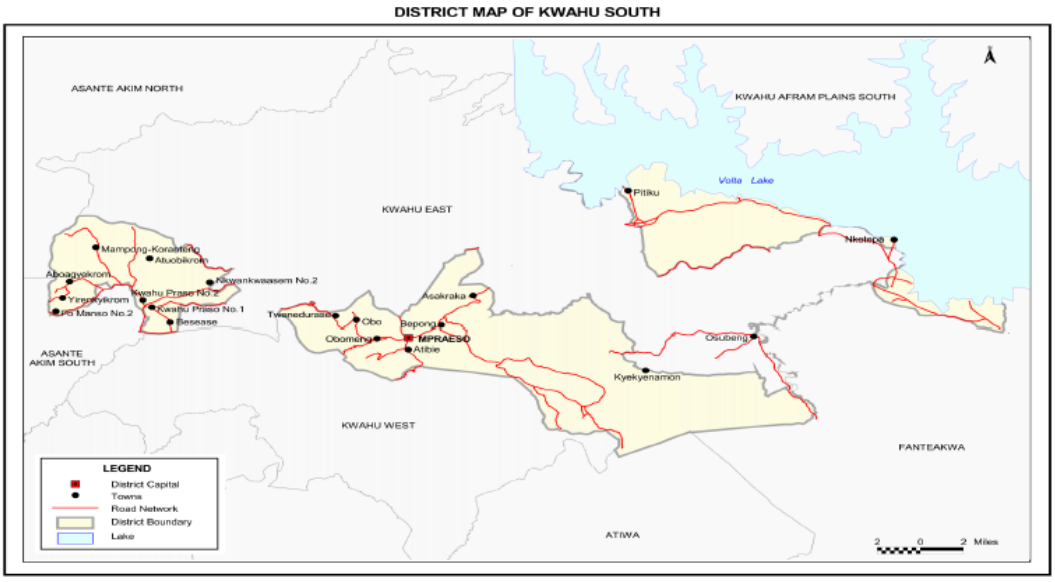
Kwahu district is located in Eastern region of Ghana. It is divided in 4 areas according to the administration and divided in 4 parts –north, south, west and east. Even though

agriculture carried out in each district has its own characteristics, it only has small differences between each one of them. The research was carried out in Kwahu south and west, which description is given below.

2.2.1. Kwahu South

The population of Kwahu South District, according to the 2010 Population and Housing Census, is 69,757 representing 2.6 percent of the region's total population. Males constitute 47.4 percent and females represent 52.6 percent. More than seventy percent (72.9%) of the population is rural (GSS, 2014).

Of the employed population, about 46.5 percent is engaged as skilled agricultural, forestry and fishery workers, 18.3 percent in service and sales, 14.9 percent in craft and related trade, and 9.5 percent are engaged as managers, professionals, and technicians (GSS, 2014).

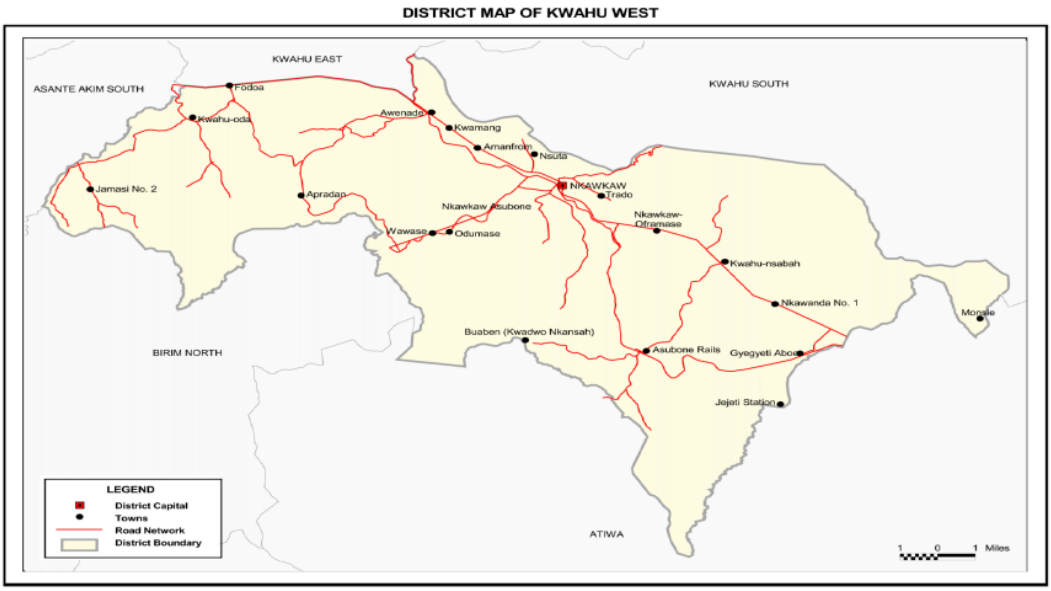


Picture 2: District Map of Kwahu South, (source: Government of Ghana, 2015)

As high as 63.5 percent of households in the district are engaged in agriculture. In the rural localities, seven out of ten households (70.0 %) are agricultural households

while in the urban localities, 47.2 percent of households are into agriculture. Most households in the district (94.5 %) are involved in crop farming. Poultry (chicken) is the dominant animal reared in the district (GSS, 2014).

2.2.2. Kwahu West



Picture 3: District Map of Kwahu West, (source: Government of Ghana, 2015)

Population of Kwahu West is close to 94 thousands habitants, representing 3.6% of the regions total population. Male are represented by 48 percent and females covers 52 percent. In the rural areas we can find forty nine percent of the population. Almost 30 percent of employed population is engaged in agriculture, fishery and forestry, while 26.8 % is skilled in sales and services. Crafts and related trade employ more than 16 percent (GSS, 2014).

Agriculture in the district, in its west and south part, is predominantly on small-holder basis and therefore subsistence with an average farm size of 1.8 hectares. The main system of farming is the traditional system of slash and burn with the use of hoe and cutlass. There is little mechanized farming. Agriculture production depends on rainfall and varies with the amount and distribution of rain Both crop production and livestock are on small scale. Major food crops are maize, cassava, yam, plantain, legumes

and vegetables. Poultry farming is practiced on a small scale while fishing is done mainly in the Afram River at Kotoso, Hyewohoden, Sempoa and Asempaneye. Technical backstopping to the agricultural sector is provided by the Extension Services Unit of MoFA in the district (Ghana Government, 2015).

2.3. Market role

Marketing systems in African cities can be categorized by the variety of functions performed and type of distributed food. We can divide these types on markets into local production and other for imported food products. By function we recognize wholesale, retail and modern distribution outlets, e.g. supermarkets, self-service groceries and shops (Tollens, 1997).

Access for poor consumer to the food depends largely on traditional domestic supply chains (Guarín, 2013). Consumers in developing countries purchase their food, perishables such as fruits, vegetables, fish and meat from open air markets, street stalls and corner shops (Cadilhon et al., 2006; Figuié and Moustier, 2009; Goldman et al., 2002; Jayne, 2008).

Markets play very important role in the economy of every country. In Ghana, we can find many unique types of markets, some of them being major some minor. There is hard to find a market that trades only one particular group of wares. History of the trading in the country started with the first settlers came to the country and used barter system as a main method of trading. They exchanged good and services for other commodities and services they believed measured up to what was being offered (GSS, 2016).

Nowadays, marketing chain begins with trader-collectors who buy production from rural markets or directly from individual farmers. These trader-collectors generate main link between geographically scattered small farms in rural areas and the distribution network of wholesale and retail markets in cities, and sell also directly to consumers (Tollens, 1997).

Every municipality has at least one major street market where local and original goods and services are traded. Smaller and minor streets are usually filled with markets readily available and with goods at cheaper price. Currency used in the country nowadays is the *Ghana cedi – GhC* (GSS, 2016).

Picture 4: Typical market place, Nkawkaw, Ghana (source: authors personal archive, 2015)

In these local markets and selling places relationships are easily made on personal level between traders (farmers, middlemen) and consumers (Lyson and Green, 1999; Hinrichs, 2000). They provide the ideal opportunity for exchanging opinions and information about techniques of production, the specific characteristics of the product and very important countryside knowledge (Renting et al. 2003).

2.4. Supply chain

Key dimensions in the new patterns of rural development are the creation, operation and evolution of food supply chains (Marsden, 1998). These chains are considered as complex, continually changing systems which involve many participants. Stakeholders across the food industries are presented with many considerable challenges (Mena, 2010).

The distribution infrastructure is in local food systems often partial, fragmented (Brewer et al., 2001; Saltmarsh and Wakeman, 2004) and rather inefficient. Because local food is generally positioned as a core element of rural and regional development, a way to overcome farming crises, revive rural economies and restore consumer confidence (Goodman, 2004; Renting, Marsden, & Banks, 2003; Seyfang,2006) and it is important to work on its improvement.

To be effective in logistics traders and farmers are required to deliver the right product in the right amount, in the right condition, at right time to the right place, for the right cost (Aghazadeh, 2004). If all this requirements are fulfilled it has a positive impact on the partners in the supply chain and their success (Brimer, 1995).

The fullest benefits of supply chains and their management will only be achieved from very close collaborative relationships of the participants. Collaboration in the supply chain means: ‘working together to bring resources into a required relationship to achieve effective operations in harmony with strategies and objectives of the parties involved thus resulting in mutual benefit *(*Wilding and Humphries, 2006).

The lengthening of the supply chain we have seen in the last decades, mainly through the multiplication of the intermediaries, has caused effects from an economic, social, environmental and territorial point of view that cannot be unnoticed (De Fazio, 2015).

In all the continents of the world, primarily where economy is booming, middlemen operate. These groups of people represent the role of an intermediary

between the producers (farmers) and the consumers (Oguama et al., 2010). In the cases where fewer middlemen operates in the supply chain, charge of the larger part of products distribution and marketing must be taken in charge by the farmer. It is practicable for direct sales on local or niche markets, but for indirect sales (supermarkets, foodservices) volumes it is important that supply chain network is properly designed in order to organize flows of products and to minimize transport and transaction cost (regard to be competitive with global supply) (Ogier et. al, 2013).

In the point of fact, essential amount of participants taking part in all the stages of the supply chain have created the basis for an increase of environmental impacts due to numerous factors. Implementation of farming methods, that are getting more intensive lately, put pressure not only on the environment, on the sustainability of the agricultural industrial process but also increase the number of miles the goods that have to travel towards the distribution. The extension of the supply chain has produced a decrease share of added value to the benefit of the farmers and as a consequence has excluded many small producers from the market and also caused a negative impact on rural areas such as unemployment and depopulation due to migration (De Fazio, 2015).

From the consumer's point of view, information asymmetry and the impossibility to trace origin as well as to lower quality standards have resulted in increase of intermediaries and standardization of production process. The long supply chains reduce the locally specific production and impoverish the agriculture biodiversity. On the other hand, short supply chains have potential to be defined as a tool enable sufficient income to the producers of agriculture, production's high standard that would meet the demands of the consumer and, in general, a competitive development of the rural areas (De Fazio, 2015).

Globalization, market liberalization and reform are able to touch off a diffusion of private retail development. Rise of private retail chains can be possibly driven by domestic capital and penetration of the food markets of the poor, of small cities and

even rural areas, fresh product markets, and use diverse formats to help toward the above ends (Minten & Reardon, 2011).

There is an enormous potential in African countries to trade with the global market and more intensive trade among themselves. Regional trade can play a vital role in Africa by diversifying economies and reducing dependence on mineral products export, in food delivery and energy security via job generating for increasing amounts of young individuals, and in promoting a shared prosperity and alleviating poverty (Brenton & Gamberoni, 2013).

3. Aims of the thesis

There is a current focus on food supply chain in terms of food safety and environment. Interest in transparency of the food supply chain and consumers demand to have good information and knowledge of the food origin and how it is handled is increasing and therefore, traceability as aspects of food quality assurance have lately gained more and more importance (Bosona and Gebresenbet, 2011; Bantham and Oldham, 2003). Main aim of this thesis is to analyze rural food supply chain in the urbanizing country on the example of Ghana, Africa. In particular, we will focus on the local market and production in very rural municipality of Kwahu district. Thesis analyzes structure, performance, employment and benefits of local farms and its supply chain for farmers and community. Performance and benefits of local farms are only used to define characteristics of the local farms and its usage for chosen area. We do not take them into account as an important economic indicator. They are not calculated in any form, we only do analysis based on the results from questionnaires and gained knowledge from closer interviews with the farmers. We looked at them as quality determinant factors – if the famer is satisfied with the quality and amount of the production on his/her farm is enough to satisfy both, farmer's and customer's needs. Based on this analysis optimal recommendation for future improvement will be suggested.

3.1. Specific Objectives and Tested Hypotheses

As more specific objectives of this thesis we looked at the channels involved in the Kwahu food supply chain and what roles play farmers as producers, middlemen and consumers in it. We wanted to find out with what aim farmers produce and market their production. If it is important for the farmer to only put the production on the market and make a profit or if they produce for their own need or trade goods with other farmers.

Area of the research has close and quite good connections to capital city Accra and its surroundings, perspective for future business development.

Based on this we formulated 3 hypotheses.

H_1: Location of the farm has an impact on the number of channels involved in food supply chain

H_2: Size of the farm has an impact on farmer´s market activities

H_3: Capacity of the region to supply food to the capital city and other coastal areas.

With H1 we will look closer at the significance of two variables – location of the farm and the number of channels involved in the supply chain. Location of the farm was either at the same position as the household of the farmer or further from the place of sell. This place was identified as market or stand of sale, where final customer was reached. Purpose was to find out if the farmer uses different channels to bring the crops or final goods to the consumer.

We assume that location of the farm can play important role for farmer and his/her decisions on number of channels involved in food supply chains he/her is part of. Farms located further from the place of sale or final consumers will prefer to use middlemen or farm worker to supply easier, but on the other hand closer plots will be reached by final consumer directly or the farmer brings the produce to the market himself/herself. Similarly more distant farms will more likely use barter (exchanging produce with their neighbors) instead of travelling to the market to buy missing food.

Influence of size of the farm on farmer's market activities is analyzed through H2. Size of the farm was stated in ha and farmer's market activities specified by decision of the farmer to sell or not to sell his/her production to the consumer. Different ways of yield distribution were discussed with farmers via opened questions, which provided detailed description of the market processes.

It is expected that bigger the plot is, the bigger the production is and farmer wants to make profit of selling the surpluses in the market. If the plot is smaller, we assumed

farmer utilizes harvested production only for own consumption and do not market the produce.

The third hypothesis is rather considered as a research question and concerns the capacity of the region to supply food to the capital city Accra and other coastal areas. We assume that local farmers and produce enough to expand their operations to the bigger cities and support thus the urban centers.

4. Methodology

4.1. Study Area

Research for this study was conducted in Kwahu district in the villages located in eastern part of the district. Concrete villages and their names are possible to see in the map below – Adawso, Asakraka, Mpreaso, Nkawkaw, Obo, Osubeng and Twenderese. These villages are characterized as rural, but each of them has its own specifics. We tried to choose similar, but also little different areas so we can define in the best way how the supply chains work in this district. Population of these villages is less than 5000 inhabitans (Adawso, Asakraka, Osubeng and Twenderese) and more than 5000 inhabitants - we can consider these areas as small towns – Mprease, Nkawkaw, Obo. Markets in these towns are much bigger and offer much wider variety of goods and services.

Picture 5: Study Area (source: Ghana Web, 2014)

4.2. Time frame

From the beginning of the research preparation till it final data collections approximately 6 months have passed. We started with the proposal of the research in February 2014 when the basic theoretical part for the research was prepared. Finalization of the questionnaire for farmers, middlemen and consumer was done since March till April 2014. Before going to Ghana and visiting area of the research pilot testing of the questionnaires and some changes were done. Collection of the date in area of Kwahu district was made since June till August 2014.

4.3. Research design

Selection of the study area was inspired by lack of similar topic research and potential of selected rural areas of Kwahu district and actors of its food supply chains to improve and supply surrounding areas. Research was conducted only with people involved in farming and food supply process of this region and chosen villages. Sample was divided in to three groups – farmers, middlemen and consumers. Example of the research questionnaires can be found in the appendix no. 2, 3 and 4 at the end of this thesis.

At the beginning of each interview, respondent's demographic information such as age, gender, level of education and job activity were specified for all the categories of the sample. Following parts of the questionnaires differed depending on the role of the respondent in the food supply chain (farmer, middlemen and consumer).

Second part of the questionnaires for the group of farmer focused on the basic characteristics of the farm such as size of the farm, location, cultivated crops or animals, number of employees, who work on the farm or middlemen, who cooperate with it. Market activities and financial situation of the farmer and its household were reviewed in the third part.

To find out more about the role of middlemen in the supply chain of the area we focused the second part of their questionnaire on business practices, e.g. how and from

whom the product of sale is purchased and the way it is delivered to the final stage of the chain – the consumer.

With the consumers, we studied their shopping preference on the market or farm. How much money they spend on the market and what kind of good are they looking for to purchase. We inquired their opinion on the quality of the purchased product and its price evaluation.

Interviews with all the respondents of the research were carried out by the author with the assistance of local interpreter.

4.4. Data collection

Data collection of this study was covered by questionnaires and additional semi-structured interviews with three groups of respondents.

Sample for collection of the data was chosen by random and non-random sampling. Firstly, we visited houses in the chosen areas of Kwahu district based on suggestions from our local contact and we looked for farmers, middlemen or consumers of local food and crops. After the interview, we asked our respondents to suggest and direct us to the next farmer, consumer or middleman in the area – snowball method. Later, we also visited local markets, where we interviewed randomly selected candidates and finished part of the research there.

4.5. Sample

Together in the area we visited and talked to farmers in 60 households. On the markets and small trading areas we spoke to 55 middlemen. To complete analysis and find solution for improvement of the supply chain in the area 75 consumers were interviewed.

Even though final sample is not fully representative in terms of size and distribution, it involves the main types of actors and market context, thus we believe it provides

sufficient basis for describing situation and results of this research can be used as a basis to analyze situation in the area and to draw recommendations for marketing influence and future research.

4.6. Data Analysis

The collected data were organized and analyzed in MS Excel office 2013.With the use of cross tables (for two categorical variables) and Chi-square test we could test the first 2 hypotheses on the association between farm characteristics and marketing behavior defined at the beginning of this study During the calculation we found out that Chi-square distribution approximation of the test statistic cannot be used, due to expected frequencies less than 5 in some cells. Instead we had to use Fisher's exact test (exact distribution of the test statistic). These calculations (testing) was done in STATA 14.

We will consider raised hypotheses in broader terms as research questions and we look for the answers and solutions also in qualitative terms. Particularly, Hypothesis 3 is assessed qualitatively by using SWOT analysis to identify farmers' and Kwahu areas' strengths, weakness, opportunities and threats. With this analytical framework, we will look for challenges and new opportunities for the future development of these local supply chains and their actors, such as possibility for farmers to supply bigger urban centers in the nearby regions. We use quantitative and qualitative findings concerning farmers, their production and their participation in the local markets as inputs in assessing the internal factors marked as strengths and weakness. For the assessment of external factors i.e. opportunities to supply large city markets, and threats or bottlenecks of the development out of the control of Kwahu farmers and entrepreneurs. This part is based on authors observation and personal experiences gained when conducting the field research – the interviews with food supply chain stakeholders as well as from completing the mission on the establishment of the library and an education center on behalf of the charity Nhoma in 2015.

5. Results

5.1. Farmer

Main group of respondents, very important for this research, were farmers. We visited and interviewed farmers in 60 households. Role of the farmer was mainly represented by the head of the family, person who brings the major part of the financial resources to the household. 65 % of respondents were men and 35 % women and both mainly in the age of 27 – 38 (25 %) or older than 51 years (42%).

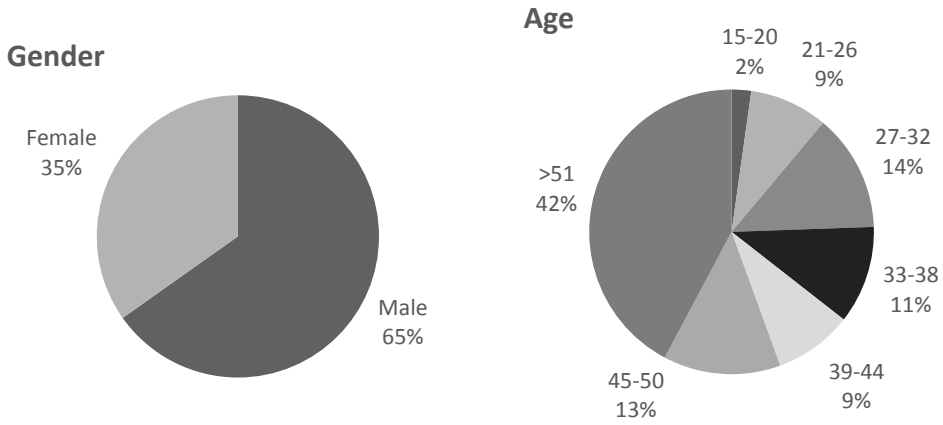


Figure 1: Gender and Age of the sample - farmer (source: research results)

Household was in majority of the cases represented by more than 10 household members (30 %). Only in 9 %, less than 3 members lived in the house and households with 4-6 members were represented by 27 % of the sample. Together in groups of 7- 9 people lived 22 % of the respondents. Results are shown in Table 1.

Table 1: No. of household members (source: research results)

No. of household members	% of the respondents (n=60)
1-3	9 %
4-6	27 %
7-9	22 %
10 and more	30 %

Table 2 shows farmers' level of education. More than half of the respondents (51.7 %) have finished secondary level of education - Junior or Senior High School. 20 % of the respondents have finished only primary school and 18 % has never attended any school institute and has no education at all. Vocational or other technical schools were finished by 6.7 % of the farmers with major in teaching. This farmers also identified teaching as their off – farm activity and second job income for the household. Respondents with university level of education, received degree in agriculture.

Table 2: Education level of farmer (source: research results)

Type of Education	**% of the respondents (n=60)**
Primary Education	20 %
Secondary Education – JHS/SHS	51.7 %
Vocational / Technical school	6.7 %
University	3.3 %
No Education	18.3 %

As mentioned before, average size of the farm in Kwahu west and south is about 1.8 hectares (see paragraph 2.2). As it is shown in Table 3, most of the farms in the sample, owned or rented by farmers, were on average between 0 – 2 hectares (88 %), but couple of the farmers also cultivate land of more than 11 hectares' size (9 %).

Table 3: Size of the farms in the area (source: research results)

Size of the farm (ha)	**% of the respondents (n=60)**
0 - 1	55 %
1,1 – 2	33 %
2 - 11	3 %
More than 11	9 %

More than 65 % of the farms grow crops such as maize, cassava, cocoyam or plantain as a main crop on the largest part of cultivated land. From the animals mainly chicken or goat are bred (33 %) for future sale.

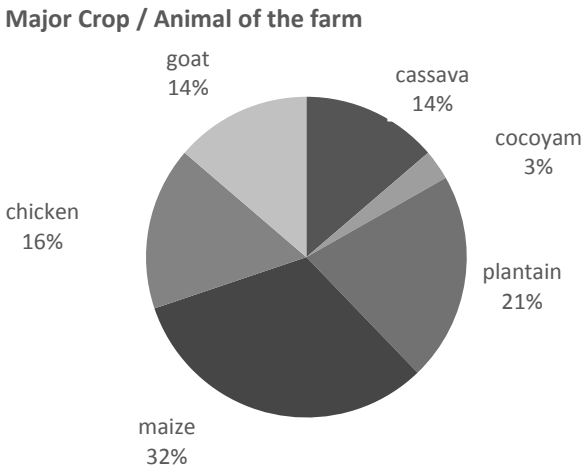


Figure 2:Major Crop/ Animal of the farm (source: research results)

Farmers have their plots either in personal ownership (63.3 %) or they rent it for a year fee (36,7 %), which depends on the size of the cultivated land. These plots are located either at the same land as a house of the farmer (6%), less than 5km (63 %) away from famers' household or place of sale, which farmer considers as a distance easily overcome by walking, or more than 12 km (24 %) from the household. In these cases, farmers use taxi as a main type of transportation from farm to the household or to the closest market.

Everyday maintenance of the farm is either carried by family members or employees of the farm. More than 68 % of the farms do not employ any workers. Farmer himself or other family members help with all necessary tasks given to keep the farm profitable. Rest of the farmers (32 %) employs on average 1 - 3 regular employees or up to 10 workers a year, mainly through the harvest season.

While looking at the financial side of the household we focused our questions on average month income from farm or from other off – farm activities. As an off- farm income we consider money coming to the household budget from second job of the farmer or other household member. To cover all family expenses farmers also carried out other job (38 %), e.g. taxi driver, fisherman or carpenter. From the farm activities in the half of the household's income is less than 300 GhC. Rest of the respondents has income in the rage from 300 to 500 GhC a month – 23 %. Income higher than 800 GhC a month was beheld only in 20 percent of the households. Big influence on these records has not only size of the farm but also market activities of the owner.

Harvested crops are sold or traded. 50 % of the farmers confessed to sell 80 % of their production to the markets or through the middlemen. Remaining 20 % of the production is enough for household use with combination of other ingredients purchased on the markets such as oil, rice, etc… 21.6 % of the farmer use harvested crops only for personal use and do not sell them further.

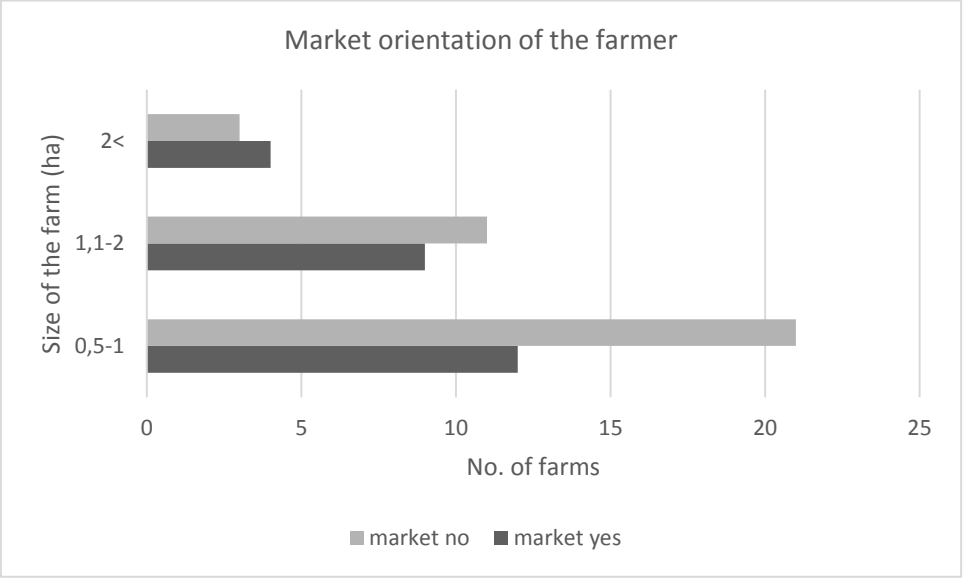


Figure 3: Market orientation of the farmer based size of the farm (source: research results)

Figure 3 shows findings of the study in question of the size of the farm and its influence on farmer's decision to market their production or not. This research outputs were analyzed by Chi-square test to be able to test raised hypothesis no. 2 at the beginning of this study. Based on calculations, available in appendix 1, p-value equals 0.20. During the calculation, we found out that Chi-square distribution approximation cannot be used, due to less than 5 expected frequencies in some cells. Instead we used Fisher's exact test with P-value equals 0.112. It implies that size of the farm and decision of the farmer to market his/her production are not in that strong association (the statistical hypothesis of independence of these variables cannot be rejected at the significance level α=0.05. Based only on size of plot we cannot predict farmers marketing behavior strategy

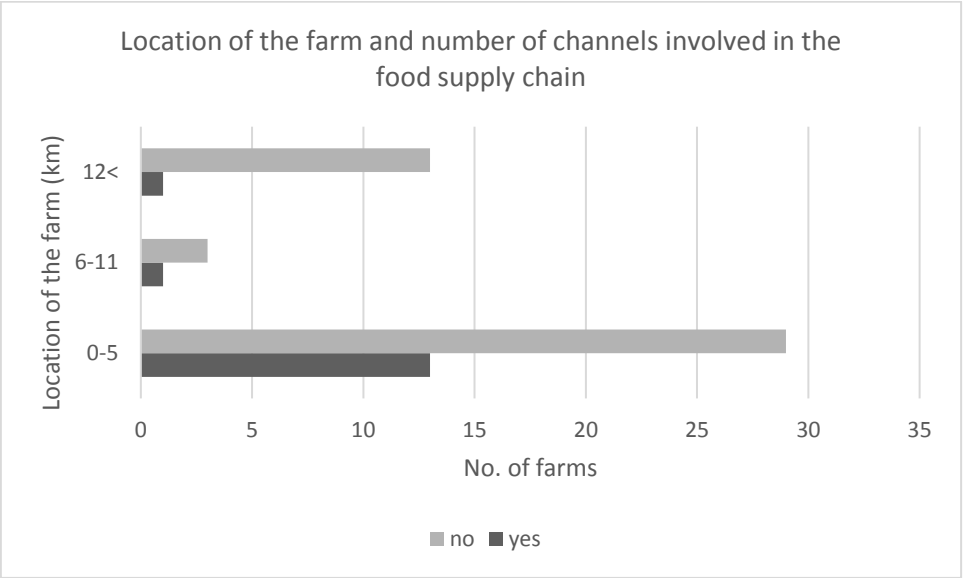


Figure 4: Engagement of the middlemen in the farm's supply chain based on the location of the farm and place of sale (source: research results)

It is shown in the figure 4 decision of the farmer to embrace middlemen in his market activities or not. Location of the farm from the market place can be significant for the farmer to cooperate with the middleman to be able to bring their production to the market. This research outputs were analyzed by Chi-square test to be able to test

raised hypothesis no. 1 at the beginning of this study. Based on calculations, available in appendix 2, p-value equals 0.10. Also in this case we had expected frequencies less than 5 in some cells. Thus we used Fisher's exact test with P-value equals 0.275. It means that variables, location of the farm and number of channels to reach customers do not exhibit any statistical significant link (association). We cannot reject the hypothesis, due to no association between variables.

Markets the farmer sells his/her products to, were identified by the 56 % of the respondents as local markets located in the area of living or in the village / town situated 1 – 2 km from the farm. 42 % of the farms sell their product directly from the farm to the consumer or middlemen, who afterwards distribute to the further markets or locations of sale. Only 3 % of the farmers distribute production to the larger cities or companies.

If famer sells on the market and not only trade, contribution from farming activities (standard size of the cultivated area smaller 1.8 hectares) was on average from 70 to 300 GhC per month (50%). To fully satisfy needs of the household and cover all the expenses farmers maintain second jobs, e.g. taxi driver, fisherman or carpenter, average income to the household is up to 300 GhC a month – 35 %. It would be expected that if the family is in the bad financial shape, credit they take from the bank will be used to cover basic needs such as clothing or food, but it is, In most of the cases, 80 %, used for farm improvements.

To maintain good condition of the farm and have profit in sales on the market, farmer tries to gain more skills and knowledge in the trainings organized by non-profit organizations or associations of farmers they are members of. Only 35 % of the respondents were member of some local association. They find it very useful and have more advantages than other farmers who are not in any association. Even though there are trainings organized, they would still prefer if there was more of them, mainly with focus on marketing and economic skills. In the past they took part in trainings on crop

treatment, harvesting or usage of fertilizers and use gained knowledge on everyday basis.

Farmer's satisfaction and benefits of farms' performance were discussed through couple of additional questions at the end of the questionnaire. It was difficult to obtain accurate numbers on farms produce for previous harvested season, because farmers do not take record of produce regularly, or at all. Their opinion on benefiting from the farm was only interpreted by their overall satisfaction or disappointment with performance in comparison to previous seasons.

5.2. Middleman

Second, specific and important group of respondents for the research were middlemen. As we found out through the research completion, role of the middlemen in the process of getting goods to the final link in the chain is represented by seller on the market, trader. According to the answers to our questionnaires, farmer sells his/her produce to between 1 to 5 middlemen. These middlemen, in most of the cases, are not selling it further to other middlemen, they sell it directly to the final consumer.

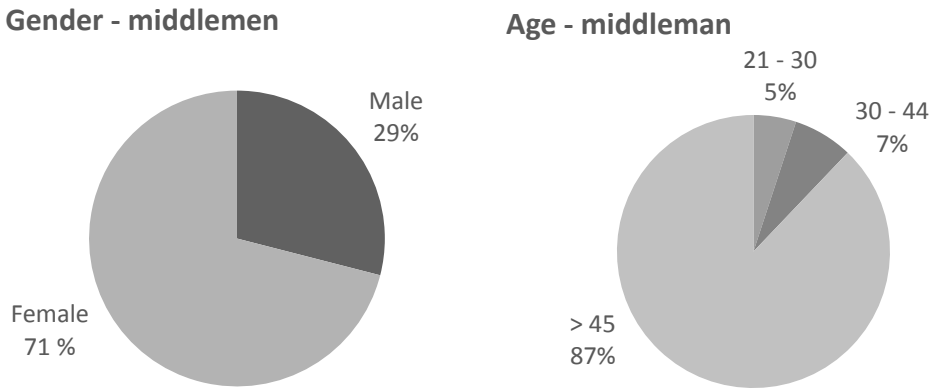


Figure 5: Gender and Age of the sample – middlemen (source: research results)

Role of the trader was in 71 % represented by woman and in 29 % of the cases by men, both of them in majority older than 45 years (87 %). Finished Level of education was, with 70% of the traders, primary school, 12 % finished JHS or SHS and 18 % never attended any school. All of them has currently only one job as a trader on the market and do not bring to the household any additional income from second-job activity.

Table 4: Type of traded goods by middlemen (source: research results)

Type of traded goods	% of the respondents (n=55)
fresh vegetable	68 %
meat	23 %
Durable food	6 %
other	2 %

Varity of crops or goods they sell is wide. From basic vegetable (68 %), such as onion or pepper to meat (23 %), dairy products or canned goods (8 %). Each selling place is mainly focused only on one type of goods – fresh or durable food, for instance oil, rice, sauces, seasoning, etc. …

Traders collect crops they sale either directly from the farmer on the farm, if it is close the market they sell it on, or farmer brings the crop or animal produce to the markets' place and sell it to them before the markets start. Trader cooperates with maximum of 4 farmers, which mainly depends on the variety of goods they offer to sell in their stand.

5.3. Consumer

Last, but not least, third group of the research were the consumers. They represent a last link in the supply chain – final receiver of the good. We focused on the consumer preference shopping on the market or farm. How much money they spend on the market and what kind of goods they are looking for to purchase.

Table 4 shows demographic characteristics of the interviewed consumers. In majority is sample represented by women (67 %) older than 51 years old. Level of education was in 49 % represented by graduates from Junior or Secondary high schools.

Table 5: Sample characteristics - consumer (source: research results)

	% of the respondents (n=75)
Gender	
male	33 %
female	67 %
Age	
15-26	22 %
27-38	26 %
39-50	16 %
51 and more	32 %
Education	
Primary school	11 %
Secondary school / JHS/SHS	49 %
University degree	20 %
Vocational / technical certificate	4 %
no education	15 %

Things of everyday use, e.g. vegetable in small amounts, locals buy at the small stands and shops along the streets. It is possible to purchase all range of products, from fresh bread to canned goods.

Table 6: Type of purchased good - consumer (source: research results)

Type of purchased good	% of the respondents (n=75)
fresh vegetable	57 %
Meat / dairy products	23 %
Durable food	13%
other	7 %

Consumer visits these stands 3 – 5 times a week to always find fresh products for immediate consumption. On the bigger market, once a week in the closest town, either walking distance or by taxi from their household, essential food such as rice, potatoes or oil are bought for more affordable price.

We wanted to find out, what opinion consumers have on the quality of the product when they buy it directly from the farmer on the farms and if there is a difference if it is purchased on the market.

Market, as a main source of food, was identified by the 86 % of the respondents. The rest, 14 %, obtain most of the food from the farms. With deeper discussion to this question, buyers found both, market and the farm, very important in their shopping habits. There is variety of products they can grow or breed on their own, but some of the essentials (e.g. rice) for cooking are only possible to buy on the local market or at the closest shop.

Even though most of the week purchases comes from the market place, quality of these crops is not satisfying to the consumer. They prefer quality of the product bought directly from the farmer and the farm more than from the middlemen on the market. Even though negotiation of the final price for the purchase is basic cultural habit when shopping on the market, 71 % of the respondents still consider price not adequate to quality and rather expensive.

6. Discussion

Aim of this thesis was to analyze rural supply chain in the Kwahu district, Ghana. We focused this study on food supply chain in the area and look closer on the relationships of the actors involved in these chains – farmer, middleman and consumer.

Food supply chain and its elements play very important role in the delivery of the final product to the consumer in the area of Kwahu district. French Ministry of Agriculture defined short supply chain as a marketing model for agricultural products either through direct sales from producers to consumers or indirect sales, provided that there is only one middleman (Ogier et. al, 2013). Based on this definition, done research and interviews we identified rural food supply chain in the Kwahu area as a short supply chain. We specified 3 basic types of short supply chain applicable to the shopping habits in the area. As it is shown on the Figure 5, first two chains end up with goods in hands of payable consumers. They purchase goods and products directly from the farmer on his/her farm or on the market from the hands of middleman (trader). Third type of the food supply chain was identified based farmer's decision not to market their production.

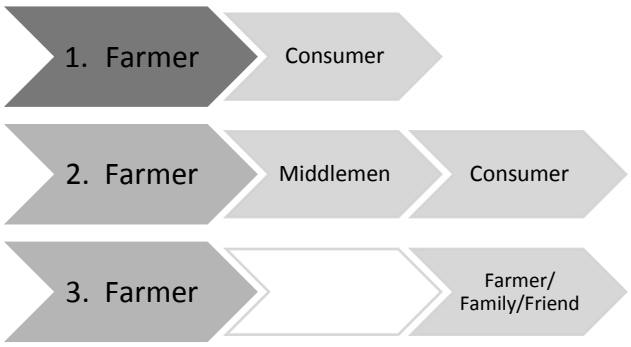


Figure 6: Direct and indirect types of food supply chains in Kwahu area (source: research results)

First two examples of supply chain occur, if farmer decides to sell their products either on the market or directly from his/her farm. Last type of the supply chain represents farmer's decision not to sell produce from the farm but give part/surplus of it further to close family or friends, or trade it with the other farmers for the crops

he/she is not able to cultivate. This was understood from deeper conversation with the farmers on what happens to the rest of the harvested production if it is not sold further.

There are not many groups of participants involved in this purchase process, which means final product keeps its higher quality to satisfy consumer needs**.** Wilding and Humphries (2006) said that the fullest benefits of supply chains and their management can only be achieved by very close collaborative relationships of the participants**.** This is easy to achieve, because relationships are created on the local markets. Here locals shop, based on the study findings, 3 to 5 times a week, which is enough time to build close relationships with the farmers and traders. Also because all the actors of these chains are located on a restricted area their proximity allows them to facilitate collaborations and establish quality long term relationships (Ogier et al., 2003).

Role of the farmer was mainly represented by the head of the family (man in 65 % of the cases) and defined as a person who brings the majority of the financial resources to the household. Most of the households were included by more than 10 people (Table 1). It is normal in Kwahu region for more generations of the family live under one roof or share the house with other close relatives and friends. To cover all household expenses farmers also carried out other off-farm jobs (38 %), e.g. taxi driver, fisherman or carpenter.

To minimize cases where farmer is forced to pick up second job, it is needed to extend farm size and to bring the produce to the market. This brings us to the research question raised at the beginning of the study if size of the farm has an impact on farmers' market activities. After first look on the figure 3 it can be intuitively seen that farmers with the smaller size put their production on the market and bigger sized farmers only used production for their own use and decide not to sell on the market. Based on the p-value, which equals 0.275, we can interpret these relationships as not relevant. There is no significant statistical evidence why farmers with the smaller plots decide to market their production.

Everyday maintenance of the farm is either on family members or employees. Close family or other household members are very often only employees, who help farmer to take care of his/her plot. Extra help outside of the circle of relatives is hired mainly for harvest period. This is also confirmed by the fact that 68 % of the farmers do not employ any full time workers. It can be caused by the size of the farm (in average 0.5 – 2 ha) and market orientation of the farmer. If the farm is smaller there is no need to hire any extra help if it is possible to satisfy everyday care of the land by any of the family members. On the other hand, in the time of harvest, famer can use extra help.

Size of the farm could be influenced by the type of ownership of the farm. If the cultivated land is owned by farmer it is hard to make predictions why farm is as big as it is, but with the rented farms it is easier to confirm that bigger the farm higher the year rent fee. Investigated area is quite poor and it is hard for the farmers in this area to earn enough money to be able to afford expanding the farm. Not all the owners of the farms sell their production, but only use the produce for own consumption and barter – to feed him/herself and other members of the household.

If harvested crops are being sold they go to the closest market. Bigger local markets are organized once or twice a week at specific place at village, adjusted for this occasion. Variety of crops or goods for everyday use are possible to buy from small stands along the streets every day. Sometimes farmers also trade between each other one type of crop for another if there is lack of it on either of the farms.

If the production finds its way to the market, trade between the producers (farmers) and the consumers is secured in many cases by the role of intermediary - middlemen (Oguama et al., 2010). These middlemen, also identified by locals as traders, collect crops either directly from the farmer on the farm or farmer brings the crop or animal produce to the market's place. They buy it from him/her before the markets start and then sell it to the consumers. We tested if the decision of the farmer to embrace cooperation with the middlemen, to be able to market their production, is based on the location of the farm from the place of sale or final consumer (figure 3). P-value of 0.112

represents no significant statistical dependency between these two variables. It shows that even if the farmer is closer to the place of sale or further, in most of the cases farmer do not identify closer cooperation with the middlemen. It can be affected by capability of the farmer to sell and bring the production to the market by his/her own or some member of the family sell the production on the market and this person is not recognized by the farmer as middlemen. Secondly it is possible that farmer through direct sale to the consumer on the farm is not aware of the intention of the consumer to sell purchased product further and identify its self as trader. We cannot reject the hypothesis, due to no association between variables.

Consumers in developing countries purchase their food, perishables such as fruits, vegetables, fish and meat from open air markets, street stalls and corner shops (Cadilhon et al., 2006; Figuié and Moustier, 2009; Goldman et al., 2002; Jayne, 2008). Consumers in Kwahu district area identified in 86% that their main source of feeding market place. Only 14 % of the sample purchases all of their food consumption on the farm directly from the farmer. This finding can be affected by the better access of the consumer to the local markets and also wider variety of the products on these markets. It is possible to purchase everything necessary for the household on the one place and with less effort to travel from farmer to famer to purchase all types of vegetable or meat. However, products purchased from the markets place are considered to be in worse condition and not in adequate price than for those purchased directly from the farmer. It can be affected by improper handle of the crops while transportation or storage before bringing to the market.

6.1. SWOT analysis

Strengths	Weaknesses
o Local production o Sufficient produce o Experience with middlemen	o Lack of transportation means o Poor local transport infrastructure (regional perspective) o Lack of training / knowledge
Opportunities	**Threats**
o Big market relatively close (150 -200) o Functional farmer´s association	o Climate change o Financial crisis

Figure 7: SWOT analysis of food supply chain in area of Kwahu district, Ghana (source: research results)

To test H_3 hypothesis, rather considered as research question, if capacity of the region to supply food to the capital city and other coastal areas, SWOT analysis was used. As very important strengths of the food supply chains in the Kwahu area we consider locally sufficient production. Majority of the fresh food on the market is from local farmers and in more than sufficient quantity. Based on the research results these chains were identified as short, it means not many different groups of the channels are involved in the process of getting the product to the final consumer and transparency of the production is easy to maintain. All the actors of these chains are located on a restricted area where proximity allows facilitating close collaborations and establishing quality relationships. Farmers' work experience with middlemen, including them to bring produce to the market and to final consumer can play important role once farmers decide to expand and supply bigger markets in surrounding area.

The most significant weakness is lack of transportation means and poor infrastructure. Roads, connections to the surrounding areas are in poor conditions and farmers do not own motor vehicles. Most of the farmers bring the produce from the farm to the market by walking. By this not big amount of produce can be offered to the consumer and damage of the good can be easily caused by improper handling or

packaging while transportation. Most of the farmers also admit lack of training and knowledge. They require more information on how to cultivate the land to gain the highest utilization, proper use of the fertilizers and training on finance or marketing skills. Improvement of these factors can simplify expansion.

Solution for the farmer to gain more knowledge can be by joining the farmers' associations. Farmers support each other, share knowledge and organize trainings. It is also possible for bigger groups to have better access to credit and help their farms on financial basis. These associations work not only on local levels in Kwahu area but also in bigger cities closer to capital city and coastal areas. Cooperation with bigger associations can open more possibilities to access the bigger markets.

It is important to be aware of the threats which can participants of the supply chain face, mainly farmers and middlemen. Weather conditions particularly in association with climate change can make a strong cut in final production. Long lasting droughts or rainy seasons can affect produce and jeopardize possibility of the farmer to bring product to the market. If there is no product to sell it also influences role of the middlemen in the process. This can have huge impact on financial situation of the supply chains' participants and force them to look for the other possibilities how to earn income and support household activities. Lack of public finances also badly affected lasting depression of crude oil prices provide little perspective for improving the transport infrastructure between the Kwahu region and urban centers in the south.

In spite of the obvious need and government interest in improving food supply to growing urban centers in the coastal areas and the sufficient production capacity of farmers in Kwahu, the way to utilize the opportunity will be long process. Farmers have proven, that with their work experience and capacity to satisfy demand, they are able to take this opportunity of expansion and to find their place on bigger markets outside of Kwahu region.

6.2. Study limitations

Results of this research should be understood and evaluated with some limitations. Area of the research was not well known at the time of interview questions preparation. There have been done some slight changes to the questions based on the current situation in the area. Secondly, even we cooperate with the local interpreter and he was familiar with the research concept and had high level of both, local and English language, while interviewing translation to local language could not have been understood well by the local people. Some of the information provided from the respondents were not complete and could not be used for results analysis. There were higher expectations on the number of respondents in each type of the questionnaires. Situation in reality was much different.

Even though final sample is not fully representative in terms of size and distribution, it involves the main types of actors and market context, thus we believe it provides sufficient basis for describing situation and results of this research can be used as a basis to analyze situation in the area and to draw recommendations for marketing influence and future research.

7. Conclusion

Aim of this thesis was to analyze rural food supply chain in urbanizing country, area of Kwahu district in Ghana, Africa. Finding of this research showed that for the correct and smooth food distribution in the area, formation of strong relationships between the all involved channels, such as farmer, middleman and consumer is very important.

Kwahu's farmers shape the structure of these food supply chains. On their decision to market or trade their production further, depends all channels involved in the distribution. Middlemen help them to connect and bring consumer closer to demanded product. Local markets and places of sales helps to form not only these chains, but also relationships in the area within communities of studied villages and smaller towns. From closer understanding of capabilities and capacities of Kwahu region produce, there is possibility to expand operations to the bigger cities and support thus the urban centers.

However, we cannot reject raised hypotheses and research questions, due to no statistical association between variables and final sample is not fully representative in terms of size and distribution, results of this research can provide basic foundation for future researches. Study involves the main types of actors and market context, thus we believe it provides sufficient basis for describing situation and results of this research can be used as a basis to analyze situation in the area and to draw recommendations for marketing influence and future research.

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9. Appendices

Appendix 1: Testing of Hypothesis

Table 7: Testing of hypothesis no. 1

H_1: Location of the farm has an impact on the number of channels involved in food supply chain				
Location of the farm // Usage of Middlemen	**0 – 5 km**	**6 – 11 km**	**12 < X km**	**Total**
Yes	13	1	1	15
No	29	3	13	45
Total	42	4	14	60

Table 8: Testing of hypothesis no. 1

H_1 - Expected Frequencies				
Location of the farm // Usage of Middlemen	**0 – 5 km**	**6 – 11 km**	**12 < X km**	**Total**
Yes	11	1	4	15
No	32	3	11	45
Total	42	4	14	60

Table 9: Testing of hypothesis no. 1

H_1 - To the test statistics	
chi2stat	3.1746031746
df	2.00
alpha	0.05
crit.v.0.05	5.99
P-value	0.20447663
Fisher's exact test	
P-value	**0.112**

H_1 hypothesis cannot be rejected, due to no association between variables.

Table 10: Testing of hypothesis no. 2

H_2: Size of the farm has an impact on farmer´s market activities				
Size of the farm // Market of Production	**0,5-1 ha**	**1-2 ha**	**2 < X ha**	**Total**
sell on the market	12	9	4	25
do not sell on the market	21	11	3	35
Total	33	20	7	60

Table 11: Testing of hypothesis no. 2

H_2 - Expected Frequencies				
Size of the farm // Market of Production	**0,5-1 ha**	**1-2 ha**	**2 < X ha**	**Total**
Yes	14	8	3	25
No	19	12	4	35
Total	33	20	7	60

Table 12: Testing of hypothesis no. 2

H_2 - To the test statistics	
chi2stat	1.1630426716
Df	2.00
alpha	0.05
crit.v.0.05	5.991464547
P-value	0.100
Fisher's exact test	
P-value	**0.275**

H_2 hypothesis cannot be rejected, due to no association between variables.

Appendix 2 - Structure of questions for the respondents - Farmer

Q. number:_____Date:_____Place:_____

QUESTIONNAIRE - FARMER

Rural Supply Chain in Urbanizing Country: the Case of Kwahu Area, Ghana

author: Barbora Zajacova

Dear Sir/Madam,

My name is Barbora Zajacová and I am a student of Czech University of Life Sciences in Prague, major International Development and Agriculture Economics. I am writing my diploma thesis on topic of Rural supply chain in urbanizing country, the case of Kwahu Area, Ghana. I would like to analyze rural food supply chain in the urbanizing country on the example of Ghana, Africa. Thesis analyzes the current performance of the farms. It analyses management, structure, productivity, employment and benefits of the farms and its supply chain for farmers and the community.

Questionnaire will take about 20 minutes.
Thank you in advance for your cooperation.
Best Regards,
Barbora Zajacová

PART A: Respondent Information

Name of the respondent: _____

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 15-20 ☐ 21-26 ☐ 27-32 ☐ 33-38 ☐ 39-44 ☐ 45-50 ☐ 51-more
3. Education: ☐ primary studies ☐ secondary studies ☐ vocational/ technical certificate ☐ university diploma

   3 a. Field of study: _____
4. Current Job: _____

PART B: Household Information

5. Is your house located at the farm? ☐ Yes ☐ No

5 a. If No: where is your farm located?:

☐ 0-5 km ☐ 6-11 km ☐ ☐ 12-17km more than 18 km

Please complete the table about your household:

HH members	Age	Gender	Education	Work farm	Work off-farm (if yes: Where)

6. Please complete the table about your farm:

Crop / Animal	Area	Harvest/year	Yield (1) (amount)	Home consumption	Sales (amount or %)	Price at market
Rice						
Maize						
Cassava						
Chicken						
Goat						
Turkey						
Sheep						
Other:						

7. Which crop/animal is the major product of your farm? _____
8. What is the total size of your farm? _____
9. How many employees do you have? _____
10. How many middlemen are you dealing with? _____
11. Is the farm producing during the whole year? ☐ Yes ☐ No
12. If No, in which month do you harvest your products? Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec.

13. Please draw a scheme of your farm and the distributions of crops / animals – on the back of this paper.

14. What is the regime of your farm? ☐ Ownership ☐ Rented

Other:_____

15. Have you ever received a bank loan? ☐ Yes If yes, which quantity (CEDIS):

☐ No

16. What were the purposes of the loan?

☐ Farm improvements ☐ Food ☐ Family issues

☐ Health ☐ Education ☐ Other

17. What is the average farm income of your household in one month? (CEDIS)

☐ less than 300 ☐ 301-400 ☐ 401-500 ☐ 501-600

☐ 601-700 ☐ 701-800 ☐ 801-900 ☐ 901-1000 ☐ more than 1001

18. What is the average income of your household from off-farm activities in one month? (CEDIS)

☐ less than 300 301-400 ☐ 401-500 ☐ ☐ 501-600

☐ 601-700 ☐ 701-800 ☐ ☐ 801-900

☐ 901-1000 more than 1001

TRAININGS

19. Have you ever participated in trainings of agriculture? ☐ Yes If yes, which topics: ☐ No

20. Was it useful the contents of the training courses? Mostly Yes ☐ Rather Yes ☐

Normal ☐ Rather No ☐ Mostly No ☐

21. Are you applying some of the knowledge learned at trainings?

☐ Always ☐ Frequently ☐ Sometimes ☐ Rarely ☐ Never

22. What are your preferences at trainings?

☐ Crop protection ☐ Fertility soil ☐ Marketing ☐ Post-harvest

☐ Irrigation ☐ Economics ☐ Management

☐ Other:_____

23. Do you buy food at the market? ☐ Yes ☐ No

24. If yes, with what frequency? ☐ 1 x a week ☐ 3x a week ☐ 5x a week
25. Which is your main source of feeding? Market ☐ ☐ farm ☐ Other:
26. What is the main food you acquire at the market?

27. What portion of your production is for your own use and for selling at the market?

    _____

28. Are you part of farmer's association? ☐ No ☐ Yes Name of the association:
29. Is it useful for you?

☐ Totally Yes ☐ Rather yes ☐ Yes ☐ Rather No ☐ Totally No

30. Are you interested in introducing a new crop/animal in your farm?

    ☐ No ☐ Yes Name of the crop/animal:

31. Are you interested in increase the size of your farm? ☐ No ☐ Yes
32. Do you have livestock/crop at the farm? ☐ No ☐ Yes, specify:
33. What is the main utility of the livestock?

☐ Food (eggs/meat) ☐ Farm work ☐ Transport ☐ Sale ☐ Other: _____

34. What kind of market do you sell your products to?

☐ Local markets ☐ Communal markets ☐ Companies ☐ Intermediaries ☐ Other: _____

35. How far is the market from your farm?
36. What means of transportation do you use to get your products to the market?

☐ By animal traction ☐ Buyer pick up at farm ☐ By truck ☐ Other:

37. Do you sell the products on the market ☐ by yourself or ☐ by ☐ employees?

38. Who buys your production? Consumers ☐ Agent ☐ ☐ Company ☐ Cooperative ☐ Other: ☐

Appendix 3 - Structure of questions for the respondents - Middleman

Q. number:_____Date:_____Place:__

QUESTIONNAIRE – MIDDLEMAN

Rural Food Supply Chain in Urbanizing Country: the Case of Kwahu Area, Ghana

author: Barbora Zajacová

PART A: Respondent Information

Name of the respondent:_____

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 15-20 ☐ 21-26 ☐ 27-32 ☐ 33-38 ☐ 39-44 ☐ 45-50 ☐ 51-more
3. Education: ☐ primary ☐ secondary studies ☐ university diploma ☐ vocational/ technical certificate

   3 a. Field of study: _____
4. Current Job: _____
5. Please complete the table about your household:

HH members	Age	Gender	Education	Work farm	Work off-farm (if yes: Where)

6. Please complete the table about the farm/farms you take products from:

Crop / Animal	Area	Harvest/year	Yield (1) (amount)	Home consumption	Sales (amount or %)	Price at market
Rice						
Maize						
Cassava						
Chicken						
Goat						
Turkey						
Sheep						
Other:						

7. From how many farms do you buy products? 1 ☐ 2-4 ☐ 5 -7 ☐ > 7 ☐
8. Which crop/animal is the major product you buy? _____
9. Is the farm producing during the whole year? ☐ Yes No ☐
10. Have you ever received a bank loan? Yes ☐ No ☐

    If yes, which quantity (CEDIS):
11. What were the purposes of the loan?

    ☐ Farm improvements ☐ Food ☐ Family issues

    ☐ ☐ Health ☐ Education Other
12. What is the average farm income of your household in one month? (CEDIS)

    ☐ less than 300 ☐ 301-400 ☐ ☐ 401-500

    ☐ 501-600 ☐ ☐ 601-700 ☐ ☐ 701-800

    801-900 901-1000 > 1001
13. What is the average income of your household from other activities in one month? (CEDIS)

    ☐ less than 300 ☐ 301-400 ☐ 401-500 ☐

    ☐ 501-600 ☐ 601-700 ☐ ☐ 701-800 ☐ 801-900

    901-1000 > 1001

    Specify the activity:
14. Do you buy food at the market? Yes ☐ No ☐
15. If yes, with what frequency? ☐ 1 x a week ☐ 3x a week ☐ 5x a week
16. What is your main source of feeding? ☐ Market ☐ farm Other: ☐
17. What is the main food you acquire at the market?
18. Are you part of farmer's association? ☐ No ☐ Yes

    Name of the association:
19. Is it useful for you?

☐ Totally Yes ☐ Rather yes ☐ Yes ☐ Rather No ☐ Totally No

20. What kind of market do you sell/buy production to ?

☐ Local markets ☐ Communal markets ☐ Companies

☐ Intermediaries ☐ Other: _____

21. How far is the market from farm?
22. Do you sell the products on the market

    ☐ by yourself or ☐ by employees?
23. How many employees do you have? _____

24. What kind of transportation do you use to get your products to the market?

☐ By animal traction ☐ Buyer pick up at farm ☐ by truck ☐ other:

25. Do you transport product ☐ Fresh or ☐ Frozen?

26. Do you storage the product before the transportation to the market?

☐ No ☐ Yes; specify:

Appendix 4 - Structure of questions for the respondents - Consumer

Q. number:_____Date:_____Place:_____

QUESTIONNAIRE - CONSUMER

Rural Food Supply Chain in Urbanizing Country: the Case of Kwahu Area, Ghana

author: Barbora Zajacová

PART A: Respondent Information

Name of the respondent: _____

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 15-20 ☐ 21-26 ☐ 27-32 ☐ 33-38 ☐ 39-44 ☐ 45-50 ☐ 51-more
3. Education: ☐ primary ☐ secondary studies ☐ university diploma ☐ vocational / technical certificate

   3 a. Field of study: _____
4. Current Job: _____

Please complete the table about your household:

HH members	Age	Gender	Education	Work farm	Work off-farm (if yes: Where)

5. What is the average farm income of your household in one month? (CEDIS)

   ☐ < 300 ☐ 301-400 ☐ ☐ 401-500 ☐ 501-600 ☐ 601-700 ☐ ☐ 701-800 ☐ 801-900 901-1000 > 1001
6. Do you buy food at the market? ☐ Yes ☐ No
7. If yes, with what frequency? ☐ 1 x a week ☐ 3x a week ☐ 5x a week
8. Which is your main source of feeding? ☐ Market ☐ farm Other: ☐
9. What is the main food you acquire at the market?
10. How far is the market from your house?
11. What kind of transportation do you use to the market?

☐ By animal traction ☐ Buyer pick up at farm ☐ By truck ☐ Other:

12. Are you satisfied with quality of the food bought on the market?

☐ Totally Yes ☐ Rather yes ☐ Yes ☐ Rather No

☐ Totally No

13. Is the food bought directly from the farm better quality than from the market?

☐ Yes ☐ No. it is the same ☐ No, they are similar

14. What do you think about the price of the products on the market?

☐ Cheap ☐ Adequate ☐ Expensive

15. What do you think about the price of the products on the farm?

☐ Cheap ☐ Adequate ☐ Expensive