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Value chain and local economic development in the shai-Osudo district assembly of Ghana: The experience of the Asutuare rice farming project
Akpeko Agbevade
Review

Value chain and local economic development in the Shai-Osudoku district assembly of Ghana: The experience of the Asutuare rice farming project

Akpeko Agbevade
Department of Political Science, School of Social Sciences, University of Ghana, Legon Boundary, Accra, Ghana.

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The article sought to discuss the impact of value chain development and local economic development among rice farmers in Asutuare in the Shai-Osudoku District Assembly of Ghana. The study specifically examined the actors in the rice value chain development process, their roles and how their roles shaped the final output for the consumer and the extent to which the value chain development and local economic development resulted in job opportunity creation, income generation, and poverty reduction in the area. Using the mixed method, the study found that the actors in the value chain process could be grouped into four. They are pre-production actors, which is made up of actors involved in activities such as land preparation, tilling, bonding and spraying; production actors who are mainly made up of the actual rice farmers; post production actors who include those involved in harvesting, threshing milling among others; and financing system actors, which involves financial institutions and individual financiers (sponsors). The study opines that rice value chain and local economic development resulted in both direct and indirect employment and income generation for the rice farmers and the “agrigators”. However, there was a mixed outcome in poverty reduction in that 5.3% of the actors sampled for the study were below the poverty line, while the remaining 94.7% were above the poverty line. Challenges such as lack of access to finance, absence of sufficient rice processing factories, poor road networks, and lack of modern agriculture equipment were hindrances to effective rice value chain and local economic development promotion. Based on the findings and challenges, the following were recommended: the establishment of a rice processing factory in the Asutuare area as part of the One District One Factory policy, consistent fiscal policy aimed at supporting rice farmers in the locality, and the provision of modern equipment to modernize rice production.

Key words: Local economic development, value chain, value chain development, poverty reduction.

INTRODUCTION

Agriculture has predominantly dominated the economy of sub-Saharan Africa (SSA) countries. This is because it

E-mail: aagbevade@gmail.com.

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contributes an average of 50% to gross domestic product (GDP) and 70% to employment and it constitutes the sector that employs majority of the labour force. The main producers of agricultural commodities are smallholders who depend strongly on the sector for incomes, food security and employment. These goods reach final consumers through multilevel processes and marketing systems. This makes the incorporation of value chain development in agriculture in sub-Saharan Africa countries a necessity. Value chain development assists in the coordination of the activities of the various actors in the agricultural value chain thereby generating income, creating employment opportunities and ultimately reducing poverty among the poor smallholder farmers (Bokelmann and Adamseged, 2016:1). Since most agriculture activities are done in the peripheries, it is believe that if these activities are linked to value chain development and local economic development, it will contribute significantly to employment creation, income generation and poverty reduction which are the key reasons for local economic development and value chain development (UNIDO, 2011:1).

Against this backdrop, this article sets out to discuss the impact of value chain development and local economic development among the rice farmers in Asutuare in the Shai-Osudoku District Assembly of Ghana. The study specifically examines the actors in the value chain development process, their roles and how their roles shaped the final output for the consumer and the extent to which the value chain development and local economic development resulted in job opportunity creation, income generation and poverty reduction in the area.

The rest of the article is structured as follows: statement of the problem, objectives and research questions, justification and significance of the study, literature review on both local economic development and value chain development, methodology of the study, findings and discussions, challenges and recommendations.

Statement of the problem

A review of the literature showed that there exists a plethora of studies on both local economic development, value chain and value chain development. Most of the studies on local economic development focused on the strategies, policy and institutional frameworks, the actors and the beneficent outcomes. On value chain and value chain development, the studies were on the definitions, the challenges, the actors among others. Limited studies have explored the linkage between local economic development and value chain and they used the nation state as the unit of analysis. This article therefore fills the literature gap by examining the connection between local economic development and value chain and how it affect the level of poverty among actors in rice farming in Asutuare.

Justification and significance of the study

The Asutuare area of the Shai-Osudoku District Assembly has a poverty level of 23.2 and 30.8% of unemployment. As a result, the Kpong Irrigation Scheme was identified for the promotion of rice farming as a local economic development initiative. The implementation of this initiative and its effect on income generation and poverty reduction in the area provides enough justification for this study.

The study is significant from a policy perspective because it shows that poverty reduction at the local level especially is still a big governance issue and problem in developing countries like Ghana and that there are emerging initiatives and interventions such as local economic development and value chain development that can be used to address it, notwithstanding their limitations.

LITERATURE REVIEW

The meaning and features of Local Economic Development

Several observers indicated local economic development as a concept is both elusive and contestable; hence have numerous definitions (Trah, 2004; Pike et al., 2007). For instance, Manitoba Agriculture, Food and Rural Development defined local economic development as a community driven process where communities identify and initiate their own solutions to economic, social and environmental issues in order to build an healthy and economically viable communities. In their view, local economic development contains principles and goals based on grassroots approach to development, where communities deliberately choose actions to influence the local economy and improve the quality of life. The World Bank sees LED as a process by which public, business and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation (World Bank, 2003:1). The International Labor Organization (ILO) defines local economic development as a participatory development process that encourages partnership arrangements between the main private and public stakeholders of a defined territory. This will enable the joint design and implementation of a common development strategy by making use of the local resources and competitive advantage in a global context with the final objective of creating decent jobs and stimulating economic activity (ILO, 2006:2).

The UN HABITAT (2005:2) posited that local economic development is aimed at improving the future quality of life of all people within a given geographical area with emphasis on the poor and marginalized and it is self-
sustaining. Ghana’s Ministry of Local Government and Rural Development defined local economic development as “the process by which local governments, local businesses and other actors outside the locality join forces and resources to enter into new partnership arrangements with each other or other stakeholders to create new jobs and stimulate economic activities in municipalities, towns and villages” (Republic of Ghana, 2013). Local economic development is therefore a bottom-up process that is driven by local actors using local resources to develop the economic capacity of localities to improve the economic status and the quality of life of indigens for poverty reduction in the Metropolitan, Municipal and District Assemblies. Individual scholars such as Rogerson and Rogerson, (2001) also defined local economic development as an integrated multi-disciplinary approach aimed at poverty alleviation through pro-poor economic growth. Blakely (1994) extended the definition by adding that the partners in local economic development utilizes available local resources (human, natural materials and institutions) as well as formulating endogenous policies to create new employment opportunities for the local citizens (Blakely, 1994:49). From these definitions, it can be seen that local economic development is a bottom-up approach to development that is participatory in nature and futuristic using all available local resources to create new employment opportunities, generate income with the ultimate aim of reducing poverty. The following can be said to be the features of local economic development:

1. It is an ongoing process that involves several actors or stakeholders sometimes with competing and conflicting interests. Some of the notable actors include the public and private sectors, local government units, civil society organizations, community-based organizations, farm-based organizations, and individuals among others.
2. It is participatory in nature with the involvement of all actors. However, the extent of an actor’s involvement is contingent on its strength and resources it commands.
3. It is territorial in approach. Thus, it focuses on localities and not sectors.
4. It uses the available resources of a locality to drive the development of the area.
5. It is bottom-up in nature rather than the widely accepted top-down model of development.
6. It is aimed at improving the quality of life of people within a locality through the economic stimulation with its resultant creation of decent jobs, income generation and poverty reduction.

General theoretical studies on local economic development cover the origin, definitions, meaning, strategies, interventions, programmes, components (Capkova, 2005; Nel et al., 2002; World Bank, 2003; Pieterse, 2006; Blakely, 1994), success indicators benefits (Goonerante and Mbilinyi, 1992; Binns and Nel, 1999) and challenge. Studies have identified both positive and negative relationships between decentralization and economic growth. Proponents of the former include Lin and Liu (2000), Stansel (2005).

Scholars such as Davoodi and Zou (1998), Xie et al. (1999), and Zhang and Zou (1998) also found a negative relationship between decentralization and local economic growth and development. The differences in the relationship are mostly attributed to important differences in the cultural and institutional issues of the nations studied (Stansel, 2005: 56).

Studies by Hammond and Tuson (2009), the World Bank (2003:2), Rusu (2014), Bateman (2013), and Ofreneo (2007) examined the different roles of local government units in the promotion and implementation of local economic development. Hammond and Tuson (2009) examined the relevance of government organizations for local economic growth in analyzing the impact of fiscal decentralization on United State county population. Rusu (2014) indicated that local government units should provide the necessary conditions such as basic infrastructure and urban development services for the private sector to effectively function. Bateman (2013) advocated local state ownership of key enterprises and assets that would produce and ensure revenue flow in the city. The World Bank (2003) intimated that local government units should actively interrogate their economic base, understand local obstacles to economic growth and investment and pursue strategically planned programs and projects. Cabigas (2007) broadened the literature on the role of actors by underscoring the importance of public-private partnerships in local economic development.

On local economic development financing, Rusu (2014) indicated that the success of local economic development is dependent on financial stability. Bateman (2013) extended the literature on financing local economic development by examining the local financial system, financial institutions and how they had in the past and might better in the future play a role in the promotion of the local enterprise sector, and in the growth and sustainable development of the local economy.

Ortiz (2007) and Guiza (2007) in their respective studies identified employment generation and economic development, which resulted in the reduction of poverty as some beneficent outcomes of local economic development in local government units in the Philippines. They identified effective leadership, good governance practices and readiness to use local resources as success factors.

Studies by Encina (2007), Aumenttado (2007) and Ibrahim (2007), showed that the gains from local economic development were beyond those identified by Ortiz (2007) and Guiza (2007), by highlighting the importance of local economic development in nurturing peace and security. They also identified good governance practices as success factors in reducing tension in communities prone to conflict and bridging the gap.
between conflicting parties. Local economic development outcomes such as poverty reduction, employment generation and economic stimulation also made local economies to be economically viable.

Bond (2003) identified two conflicting approaches in local economic development, namely: Orthodox and Developmental local economic development. He argued that both approaches create jobs but the Orthodox local economic development is very capital intensive and that the claims for sustainable new jobs appear highly exaggerated. This is because, the more incentives are used to attract the investments, the more companies relocate mainly to chase the incentives; hence creating employment in one locality leads to unemployment where they relocated from.

Evolution of local economic development in the developed countries

It is generally agreed that the implementation of local economic development had its root from the global North during the late 1960s and the early 1970s (Blakely, 1994). Local economic development adoption as a development strategy was due to reasons such as development impasse, the failure of hitherto development approaches and the unsatisfactory outcome of structural development adjustment programs (Nel, 2001: 1004). In the words of Geddes (2004), local economic development gained currency in the United Kingdom and the European Union in the 1980s because of the rising problems of unemployment caused by economic restructuring and the slump in industrial activities.

Evolution of local economic development in sub-saharaafrica (SSA)

The African studies on local economic development indicated some factors that led to the emergence of interest in the approach. They include, among others, economic challenges, changes in the national and international economic environment, forced structural adjustment programmes, natural and political shocks and their outcomes namely, poverty, unemployment, a fall in industrial activities, debt crisis, colossal currency devaluation and the inability of governments to intervene at the local level (Nel, 2001:1004; Rodriguez-Pose and Tijmstra, 2005:3; Municipal Services Project, 2001).

Yatta (2015) on his part attributed its emergence to the economic crisis of 2008 and the stagnation that African countries experienced during the two decades preceding the crisis. He also identified other factors such as population growth and rapid urbanization on one hand and globalization on the other hand as factors that also contributed to the adoption of LED as a development strategy in Africa. Yatta mentioned the new context of economic development, which emphasizes the involvement of local areas across the nations of Africa in the development process and the logic of global firms locating to local territories where they can have comparative advantage as globalization factors that influenced the adoption and implementation of local economic development.

Mensah et al. (2013:146) intimated that though similar factors necessitated the adoption of local economic development in both the developed and developing countries, their responses were sharply different. Whereas, the response of the former took the form of heavy investment, big business support and large project development undertaken by well-resourced local agencies that later took the form of community-based initiatives; utilizing indigenous skills and seeking primarily to ensure survival, rather than participation in the global economy.

Evolution of local economic development in Ghana

Successive governments in Ghana since independence have made frantic efforts at promoting local economic development through various polices. Notable among them are: the Seven Year Development Plan, 1963-1970; the Economic Recovery Programme (ERP), 1983; which resulted in the Structural Adjustment Programme (SAP), 1987; the Ghana Regional Appropriate Technology Industrial Service (GRATIS) project, 1987; National Action Plan for Poverty Reduction, 1995; Vision 2020, 1996 to 2020, the Millennium Development Goals (MDGs), 2000; Heavily Indebted Poor Countries (HIPC), 2001. Also included are President’s Special Initiatives (PSIs) on garment and textiles and agriculture (Cassava and oil palm), 2001-2007; Ghana Poverty Reduction Strategy (GPRS 1), 2003 to 2005; Growth and Poverty Reduction Strategy (GPRS 2), 2006-2009; Livelihood Empowerment Against Poverty (LEAP), 2008. The Ghana Shared Growth and Development Agenda (GSGDA I), 2010-2013; GSGDA II, 2014-2017; One District One Factory (1D1F), 2017; etc. are also part of it

At the policy level, frameworks have been designed to promote local economic development in Ghana. Policy frameworks such as the 1992 Constitution; the Local Governance Act, 2016 (Act 936); the National LED policy, 2013; the Ministry of Local Government and Rural Development’s Operational Manual on local economic development for District Assemblies in Ghana, March, 2014; the National Policy on Public Private Partnerships, 2011.

Institutions such as the National Development Planning Commission, Metropolitan, Municipal and District Assemblies, and non-governmental organizations were established to play pivotal roles in promoting local economic development (Mensah et al. 2013: 166). The Ministry of Local Government and Rural Development...
Definitions of value chain, value chain analysis and value chain development

Value Chain has been defined severally. Some of these definitions are considered below:

1. Value chain as a set of activities. Here, value chain describes the full range of value adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs.

2. Value chain as a set of actors. The UNIDO (2011: 3) defines a value chain as "actors connected along a chain producing, transforming, and bringing goods and services to end-consumers through a sequenced set of activities" and

3. Value chain as a strategic network. In this case, value chains do not simply exist in a particular space, but are built for responding better to consumer demand. In the words of the Germany Technical Cooperation (GTZ), value chain is the full range of parties involved, who perform functions of producers, processors, dealers, distributors, wholesalers, retailers of a given product. These chain stakeholders are linked by a series of trade relations, which ensure the movement of the product from the primary producers to the final consumers. This point of view gives precedence to the sequence of functions and the respective stakeholders.

Value chain in agriculture identifies the set of actors and activities that bring a basic agricultural product from production in the field to final consumption, where at each stage value is added to the product. A value chain can be a vertical linking or a network between various independent business organizations and can involve processing, packaging, storage, transport and distribution (FAO and ILO, 2010).

Rice value chain describes the roles and relationships of the various actors within and along the chain, and how they are linked to existing market system. It describes the flow of the rice commodity and value –adding activities between the different actors of value chain to the end users. The Ghana’s rice value chain initiative emphasizes the creation and strengthening of both horizontal and vertical linkages of the chain. The government believes that the development of rice value chain will increase competitiveness, increase production, contribute to food security and address what past initiatives failed to acknowledge - end markets and private sector actors (Addison et al., 2015: 230-231).

The study adopts the stakeholder perspective definition of value chain because the concept operates in a system consisting of various supporting functions, rules and actors (Nutz and Sievers, 2015:3). In addition, the study operationalizes value chain in the context of agriculture and conceptualizes the term as series of actors involved in sequential activities starting from the pre-production process through to the production and post-production stage until the produce gets to the final consumer.

Related to value chain is value chain analysis, which is considered as the study of the structure and dynamics of the value chain with a view to drawing up a strategy or an approach to the value chain (European Commission, 2011). Value chain analysis also refers to the evaluation of findings of the value chain research out of which a strategy for value chain development and specific interventions evolve (Nutz and Sievers, 2015:3). In addition, it also examines the various components of the value chain process in order to recommend interventions for effective value chain system. Value chain analysis is therefore, an exercise, which draws up a diagnosis for an agricultural produce, the relationship between the actors, makes interventions and recommends ways for maintaining the interventions in the chain.

Value chain development like value chain defies a common accepted definition. Scholars have defined it from various contexts based on what they intend to use it for. Donovan et al. (2015) intimated that value chain development can be defined from two angles, namely: an actor or chain type that focuses on strengthening certain actors and improving relations between smallholders and other actors in a chain, and a business-environment type that focuses on improving the business environment in which chain actors operate. From these two perspectives, it can be deduced that the two definitions concentrate on both strengthening and improving the actors involved in the value chain.

The UNIDO (2011:1) on its part defined the concept as "a positive or desirable change in a value chain to extend or improve production operations and generate social benefits such as poverty reduction, income and employment generation, economic growth, environmental performance, gender equity and other development goals". This definition by UNIDO (2011) was preoccupied with the improvement of the entire value chain process for the benefit of the entire society.

Studies have identified two forms of value chain. These are global and local. The former refers to value chains that are cross boundary like cars, computers whilst the later focuses on value chains that are localized in an area like fish production (Nutz and Sievers, 2015:2). The study will use the local form of value chain to examine the value chain of rice production in the Shai-Osudoku District.
Assembly.

Study by Nutz and Sievers (2015:3) also identified system efficiency, product quality, product differentiation, social and environmental standards and enabling business environment as factors that prompted the development of value chain.

Studies have identified linkage between value chain and poverty reduction among smallholder farmers, however, the smallholder farmers can only reap the benefits if they participate in the process (Saarelainen and Sievers, 2011:4). Bokelmann and Adamseged (2016:1) echoed the importance of value chain in agriculture to smallholder farmers when they posited that the fights to achieve food and nutrition security as well as prosperity for sub-Saharan Africa countries will be won or lost by the way agricultural value chains are coordinated.

In the same study, Bokelmann and Adamseged (2016:1) discussed the dynamics in value chain and how they brought changes to the activities and actors in value chain. They mentioned changes in consumer demands, climate change, water scarcity, stringent market standards, including food safety, production and processing technologies to minimize post-harvest losses, information and communication technologies and emerging markets as some factors that shaped the behaviour of the actors in the process. This study complements that of Saarelainen and Sievers (2011) and Bokelmann and Adamseged by not only discussing how the value chain process in Asutuare rice farming resulted in poverty reduction among the actors in the process but also the extent of participation of the actors in the process.

Studies have dealt with the impediments to value chain analysis and development. The European Commission (2011) and Bokelmann and Adamseged (2016:2-3) for instance, separately identified some impediments to both concepts. They are as follows: scattered farms, market failures, asymmetry that includes arbitrary fixing of prices by distributors, distorted competition (unlawful agreements between large-scale producers; subsidization of their competitors on the export markets). It also includes difficult access or use of ill-adapted infrastructure, low quality products, poor development of processing and other value addition activities in the chain and smallholders paying levies, which are, sometimes illegal that affects the meagre profits they may realize. Similarly, The IFAD, FAO and ILO (2010) zoomed in on the challenges faced by smallholder farmers in value chain development and identified inequalities in modern agricultural value chains. Also, women farmers and entrepreneurs face high entry barriers than men in modern value chains; women farmers and entrepreneurs involved only in traditional value chains and lack of support for women to participate in value chain development as some of the challenges.

To overcome these challenges, the IFAD, FAO and ILO (2010) proposed three main overarching policies:

1. The creation of appropriate enabling environment to promote agricultural value chains with a focus on the poor.
2. Promotion of good practices such as support for private sector initiatives, supporting non-governmental organisations and public actions concerning the working conditions and remuneration of small producers especially women in poor countries, research information dissemination among others.
3. Fostering of women’s participation in producer and worker organisations and decision-making processes.

In addition, the IFAD, FAO and ILO (2010) recommended the following specific four-fold policy measures to assist in improving the gender disparity in value chain development:

1. Reduction in gender inequalities in modern agricultural value chains;
2. Reduction in entry barriers for women farmers and entrepreneurs in modern value chains;
3. Improvement in women’s returns in traditional value chains; and
4. Reinforcement in agricultural transformation with social strategies.

The studies of the IFAD, FAO and ILO (2010), European Commission (2011) and Bokelmann and Adamseged, (2016) were not based on specific agricultural or farming project and were also not done using the Ghanaian context. This article will therefore fill these literature gaps by examining the rice farming project in Asutuare in the Shai-Osudoku District Assembly to unravel the impediments to value chain development.

The European Commission (2011) identified sectoral policy in agriculture, local planning, local economic development, integration of producer organisations, research and donor support for development as some of the importance of value chain analysis development to agriculture smallholders. This study complements the European Commission’s (2011) study by examining the degree to which value chain development culminated into gains for smallholder rice farmers in the Asutuare area of the SODA.

The UNIDO (2011) and McKague and Saddiquee, (2014) attributed lack of coordination efforts along the value chain as the reason for the failure regarding the integration of value chain development in the poverty reduction strategy of developing countries could not be effective. This article will add up to the UNIDO (2011) as well as McKague and Saddiquee (2014) studies by examining the factors that promoted or hindered the effectiveness of value chain development and poverty reduction strategy in the Asutuare rice farming project.

In Ghana, Addison et al. (2015) identified input suppliers, producers, millers, wholesalers, traders, retailers and consumers as the stakeholders in the rice
value chain in the AhafoAno North District Assembly. Incoherent governmental agricultural sector and national trade policies, lack of proper coordination of rice value chain, inadequate rice value chain facilitators, weak agricultural extension services, land tenure system, lack of cooperation among value chain actors were identified as some of the challenges in rice value chain in the AhafoAno North District.

Djokoto and Obeng-Sarkodie (2014) examined the level of profitability among rice farmers at the Kpong Irrigation Project using the method of harvesting and found that there was no significant difference between farmers who used mechanized harvesting and those who used manual method. They however, opined that the mechanized harvesting method should be promoted. This study will extend Djokoto and Obeng-Sarkodie’s study (2014) by analyzing the degree to which the profitability impacted the level of poverty among the rice farmers at the Kpong Irrigation Scheme.

Studies have established the nexus between the value chain development and local economic development. Some of these are reviewed below:

Value chain development and local economic development approaches can reinforce each other. Both approaches address the “how to” of private sector development and that can be designed to include the poor in the resultant benefits. Value chain development seeks to enhance the functioning of the marketing system by analyzing it and devising interventions to overcome bottlenecks and constraints in the chain. Local economic development strategies identify the economic potential of a specific territory and empower local economic actors to collaborate with each other for economic growth and job creation. By combining the approaches, possible shortcomings of each single way of doing things can be avoided (Saarelainen and Sievers, 2011:2).

Value chain approach by nature are not limited to one particular area, but rather, they cross both local and national boundaries. Value chain practitioners however, may not always give the needed attention to local conditions such as cultural norms and local red tape and local constraints to infrastructure development hence, Value chain interventions may be impinged given a non-enabling local environment or misperceived local conditions. The focus of local economic development on specific localized area enables tailor-made solutions, and thus combining the two approaches can help find solutions adapted to the local contest and owned by local populations. In addition, the linkage of local economic development to local governance and development planning enhances the cross-sectoral dimension of value chain development. In fine, a better understanding of local contexts as provided by a local economic development approach can help avoid some of the shortcomings of value chain development.

Value chain development is concerned with the cooperation between actors for products to get to the final consumer. This therefore calls for effective cooperation, communication and responsiveness among the actors. The needed dialogue among the stakeholders can be enhanced by local economic development approaches that focuses on participation and social dialogue. Local economic development therefore enhances knowledge flow along the value chain thereby making it more effective and inclusive. Local economic development also provides an avenue to support local innovations that can enhance value chain development efficiency (Saarelainen and Sievers, 2011: 2-3).

In spite of the two approaches blending well for job creation, income generation and poverty reduction, Saarelainen and Sievers (2011:4) espoused that they are plagued with some weaknesses. First, though local economic development focus on participation and dialogue can enhance value chain development, participation is not always enough for effective intervention. Finding agreement can be slow and consultation with actors can produce more questions than answers.

Second, local economic development practitioners might also fail to take into account the importance of value chain players outside the local territory. Local producers need to be connected to national and global buyers.

Third, if value chain are not fully understood, local actors might not be aware of the importance and specific nature of final demand. This could lead to an underestimation of the importance of the factors that are “pulling” the rest of the chain, end market demand.

Fourth, there is the potential of undermining the important role of large buyers in many value chains.

From the above review of the literature, it can be stated that no explicit study have been done on the connection between value chain development and local economic development using the Asutuare rice farming project. This study will therefore fill this lacuna.

**METHODOLOGY OF THE STUDY**

The study adopted the Mixed method of research. The Mixed method deals with the combination of both the qualitative and quantitative research methods. A sample size of 166 respondents was drawn from the 2,480 rice farmers working on the Kpong Irrigation Scheme. Twenty respondents were also drawn from actors involved in the post-harvesting activities in the value chain. The formula used in calculating the sample size was:

\[
\frac{N}{1 + N(e^2)}
\]

Where, N refers to the population of the MMDA and e^2 refers to the margin of error which was 0.075^2

The error term of 0.075^2 was used because it is commonly used in renowned studies and will give a sample size that will be representative of the population.

Poverty among the respondents was measured using the World Bank US$ 1.00 per day approach which is calculated as: (GHC equivalence of US$ 1 * 30 days) * Average number per household.
Where the GH¢ equivalence of US$ 1 was GH¢ 4.78. The Average number per household is determined by the total number of people residing in households divided by the total number of households in the MMDA. The SODA has 4.4 as the Average per household. The approach was used because it is scientific and internationally acclaimed for poverty measurement around the globe.

Data for the study was collected between January and July, 2018. To address the main objective of the study, thus; how local economic development and value chain development impacted poverty reduction among the actors in the rice production value chain, primary data was collected through the administration of a questionnaire to elicit both qualitative and quantitative data. The data was analyzed using the Statistical Package for the Social Sciences. Some of the questions posed to the respondents were:

(i) What is your role in the rice value chain?
(ii) How has rice farming process being beneficial to you?
(iii) Please indicate the areas of benefit.
(iv) Please indicate the amount you earn monthly as an actor in the rice farming value chain.
(v) What challenges do you face as an actor in the rice value chain process?

Overview of the Asutuare rice farming project

The Kpong Irrigation Scheme (KIS) located at Asutuare is the largest rice production scheme in Ghana with a potential development area of 3,028 hectares. The actual construction of the Kpong Irrigation Scheme commenced in 1995 but it was not until 1997 when the first phase was completed. The Scheme was an initiative of the Government of Ghana to cushion farmers displaced by the construction of the Kpong Dam between 1977 and 1982, and also to boost agricultural production to grow the country’s economy. The introduction of the Scheme was not initially meant for rice production but to boost agricultural production in general. However, in the course of time, the potential for rice production was identified. This discovery of prospects for rice cultivation was reinforced by an earlier experiment by an American company known as ASTADEY that operated a pilot project in the Lubuse area covering 421.36 hectares between 1966 and 1967. Gradually, rice production was taken up by most of the farmers following the folding up of the Asutsuare Sugar Factory which rendered a lot of the factory hands idle (Shai- Osudoku District Assembly, Department of Agriculture, November, 2017). The Schems’ area comprises of Sectors “A”, “B” and “C”. A total acreage of 4,054 out of which about 3,872 were currently under cultivation in Sectors “A” and some portions of “B” respectively for rice production (Fieldwork, January, 2018).

FINDINGS OF THE STUDY

The findings of the study is categorized along the following lines:

(i) The actors in the rice value chain and their roles;
(ii) The beneficent outcomes of the rice value chain and local economic development in employment creation, income generation and poverty reduction; and
(iii) The challenges faced by the actors in the rice value chain and local economic development.

The actors in the rice VC and their roles

The actors in the rice value chain in the Kpong Irrigation Scheme Asutuare rice farming project may be classified into four categories, namely: pre-production actors, production actors, postproduction actors and financing actors.

The pre-production actors

This consists of actors in the pre-rice cultivation process. Their activities precede the actual rice farming. It involves actors such as farm hands and labourers who undertake activities such as land preparation, spraying and bonding for the land to hold water. A farmer is employed per each stage of the value chain process.

Input suppliers

The local rice value chain begins with input suppliers. These input suppliers include seedling producers and agrochemical dealers. Most of the inputs, such as chemical fertilizers and pesticides, required for the production of local rice are imported. The actors in the Kpong Irrigation Scheme project are shown in Table 1.

Production actors

This category is made of the producers. The Scheme has 2,480 registered smallholder rice farmers who each cultivate between 2 and 10 hectares of land. The producers usually engage the services of the pre-production actors and in situations where the producers have the time they do their own land preparation. The producers mostly either sell their rice in the paddy or milled state to either the wholesalers or their sponsors (investors who finance rice farming).

The post-production actors

The actors at this chain are made up of the harvesters, threshers, and millers. The Scheme rice farmers used two main methods of harvesting. These are the manual and the mechanized. The manual method involves cutting the dry rice stalk with either cutlasses or sickles and threshing. The threshing consists of hitting the grain-bearing stalk on the inside of wooden basins. This is followed by winnowing the threshed grains by raising the grains in bowls and allowing them to fall by gravity. This results in the wind blowing away the chaff. In the case of the mechanized harvesting method, a combine harvester performs these multiple activities as well as bagging of paddy rice. The study found that the manual method was more expensive than the mechanized method in that it costs a farmer GH¢ 1,300 for using the mechanized method whilst GH¢ 2000 is spent on the manual method.
Table 1. Input suppliers in the Kpong Irrigation Scheme Rice Farming Project, Asutuare.

<table>
<thead>
<tr>
<th>Number</th>
<th>Institution</th>
<th>Kind of support</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hopeline Institute</td>
<td>Machinery services</td>
</tr>
<tr>
<td>2</td>
<td>Wienco/ Copa Connet</td>
<td>Inputs / credit, marketing of produce and extension service.</td>
</tr>
<tr>
<td>3</td>
<td>Milling Houses e.g. ABIANS</td>
<td>Input credit and marketing of produce</td>
</tr>
<tr>
<td>4</td>
<td>Ghana Rice Inter-Professional Body (GRIB)</td>
<td>Input credit and machinery</td>
</tr>
<tr>
<td>5</td>
<td>International Water management Institute</td>
<td>Field Trial and Demonstration on Mixed Organic fertilizer (Fortifier Compost)</td>
</tr>
<tr>
<td>7</td>
<td>Sustainable Farming Group</td>
<td>Input support, Marketing, Machinery Hire and Extension Services</td>
</tr>
<tr>
<td>8</td>
<td>University Research Center</td>
<td>Field trial on nutrient management</td>
</tr>
</tbody>
</table>


Table 2. Direct and indirect employment generated at the KIS Rice Farming Project, Asutuare.

<table>
<thead>
<tr>
<th>Activities of indirect employment</th>
<th>Number employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice Farmers</td>
<td>2,480</td>
</tr>
<tr>
<td>Land preparation labourer</td>
<td>3,872</td>
</tr>
<tr>
<td>“Agrigators”</td>
<td>1,500</td>
</tr>
<tr>
<td>Total</td>
<td>7,852</td>
</tr>
</tbody>
</table>


**Millers**

Rice Millers are the main actors in the processor group. They either milled paddy rice at a fee or purchase paddy rice from farmers, processed and sold them to either wholesalers or local traders or retailers. Generally, millers were quite few compared to the number of rice producers. The main actor is ABIANS Ltd.

**The marketing systems actors**

These actors comprise of wholesalers, traders and retailers. The main actors are ABIANS Ltd, Wienco/ Copa Connet and Sustainable Farming Group.

**Wholesalers**

These were traders in rice running big shops, selling mostly in large quantities of 5, 25 or 50 kg bags. Their operations are mostly in the economic hub of metropolitan, municipal and district assemblies and functioned as intermediaries between millers/importers and traders.

**Traders**

They purchased milled rice either from producers after processing at the milling centers or from the millers.

**Retailers**

Retailers sold rice directly to consumers in smaller quantities after buying same from either traders or farmers or millers. They sold rice in bags same as the wholesalers as well as in bowls and tins based on the economic status of the consumer.

**Consumers**

The consumers constitute the end users of the polished rice in the value chain. The consumers bought rice from retailers in the local markets. The quantity they purchased was determined by their economic status. For instance, those in high-income bracket usually bought in bags of 25 and 50kg; whilst the middle-income group bought between 5 and 25 kg and the lower income group bought in bowls and tins.

**Financial systems actors**

These actors include financial institutions that extended credit facilities to the rice farmers. However, this credit facility ceased because of the failure of the farmers to repay the credit facility. The Shai Rural and Dangbe Rural Banks were the two financial institutions, which gave out the facilities. In addition, the study distilled that there are individuals with financial capacity who sponsor rice farmers without financial ability. There are referred to
The beneficent outcomes

Table 3. Beneficent outcome to rice farmers in Asutuare.

<table>
<thead>
<tr>
<th>Name of actor</th>
<th>Intervention</th>
<th>Before the intervention</th>
<th>After the intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIS</td>
<td>Grouping of rice farmers into association</td>
<td>Rice farmers were operating as individuals</td>
<td>Rallied rice farmers into group and gave them voice</td>
</tr>
<tr>
<td>KIS</td>
<td>Supply of water through irrigation</td>
<td>Farmers relied on rainfall</td>
<td>Farmers no longer relied on rainfall for rice farming. Did all year rice farming</td>
</tr>
<tr>
<td>GRIB</td>
<td>Supply of agro-chemicals at subsidized price</td>
<td>Bought one bag of NPK fertilizer at GHC 57.50</td>
<td>Now bought one bag of NPK fertilizer at GHC 56.50</td>
</tr>
<tr>
<td>GRIB</td>
<td>Provision of mechanized services at subsidized price</td>
<td>GHC 600.00 per hectare</td>
<td>GHC 550.00 per hectare</td>
</tr>
<tr>
<td>GRIB</td>
<td>Agro-business and support services</td>
<td>All rice farmers concentrated on only rice farming</td>
<td>One rice farmer switched from rice cultivating to rice marketing</td>
</tr>
</tbody>
</table>


as sponsors. These sponsors usually agree with the rice farmers on terms such as the sponsor provide all the financial resources required from pre-planting to harvesting. The rice farmer then sells the paddy rice to the sponsor at the prevailing price within the Asutuare area and the excess from the sale is retained by the farmer as his/her benefit. The sponsor then processes the rice and looks for market elsewhere.

The Kpong irrigation scheme

The involvement of Scheme have assisted farmers to undertake rice farming all year round due to the regular supply of water by the scheme hence rice production in the area is not rainfall dependent. Through the Scheme’s training to the rice farmers, they have been able to improve their farming practices, yield and ultimately income and reduction in poverty. The existence of the Scheme have also served as a rallying point for the rice farmers and provided direct employment to 2,480 of them.

The Ghana rice inter-professional body (GRIB): Ghana rice inter-professional body (GRIB)

The GRIB is a value chain organisation that was created by the Ministry of Food and Agriculture of Ghana aimed at promoting self-sufficiency in rice production. The body have put in place four measures to achieving the self-sufficiency objective. These are as follows:

1. Input supply services,
2. Mechanization services,
3. Market price negotiation, and
4. Agro-business support services.

Employment creation

Measurement of poverty

To establish the degree to which LED and value chain development resulted in poverty reduction among the respondents, the respondents were asked to indicate their monthly earnings as rice farmers and “aggrigators” in the value chain process. The details of their responses are discussed in Table 4 and Figure 1.

From Table 4 and Figure 1 below, the study found that 5.3% (10) of the respondents on the rice production value chain were below the poverty line whilst 94.7% (177) respondents are above the poverty line. This implies that majority of the actors in the rice production value chain at Asutuare on the Kpong Irrigation Scheme were above the poverty line. The study further revealed that the 5.3% below the poverty line were actors involved in the land preparation activities and threshers and those above the poverty line were the actual rice farmers and sponsors.

Challenges faced in the VCD and LED process

First, lack of finance was hindering the ability of the smallholder farmers to purchase inputs and chemicals for their farming activities. The financial challenge was partly due to the failure of the farmers to pay loans given them by the Shai and Dangbe Rural Banks. As a result, the banks discontinued the extension of credit facilities to the farmers. The rice farmers also intimated that they pay GHC 260.00 per hectare of land used to the Scheme. To
them, this was having a negative impact on their finances. Secondly, lack of a processing factory and thirdly, inadequate modern equipment/machinery for land preparation and harvesting. This problem was confirmed by the GRIB which provided mechanization services to the farmers. The GRIB currently have one transplanter, three power tillers and one thresher which serves 2,480 registered rice farmers in the Asutuare catchment area. The absence of machines compelled the farmers to rely on labour which is expensive. For instance a harvester performs multiple functions such as harvesting and the bagging of the paddy rice (rice with husk) before sending them to the platform for threshing, however, with labour, the farmers have to get labour for harvesting and bagging. A harvester charged between GHs 1,300 and GHs 1,400; however, the farmers incurred a cost of GH¢ 2,000 when using labour. This implies additional expenditure of GH¢ 700.00.

Fourthly, related to the above is the absence of harvesters leading to labour shortage during harvesting time. This negatively impacted on the farmers because harvesting will have to be done within a certain time frame to get quality yields. If not done on time the rice “lodges” which may result in broken rice, low quality and difficulty in packaging.

Fifthly, dredging of main drains and the irrigation canals. The farmers indicated that the GH¢ 260.00 per hectare that they paid to the management of the Scheme as irrigation service charges were to be used in maintaining the irrigation system. Due to non-maintenance, the farmers together with other users of the irrigation system such as the Golden Exotics Company Ltd frequently organised cleaning of the canals. However, these exercises have not been effective because machines were required for the cleaning and not manual cleaning.

Table 4. Poverty levels.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Valid</td>
<td>177</td>
<td>94.7</td>
<td>94.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>187</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>


Figure 1. Measurement of Poverty Levels among Rice Production Value Chain Actors
Sixthly, deplorable state of access roads due to lack of machinery or equipment.

Seventhly, influx of low quality (low nutritional value) and cheap rice brought in by middlemen from other rice growing areas which were secretly blended with the Kpong Irrigation Scheme rice leading to the degrading of the original brand from the Scheme.

Eighthly, the disagreement between the rice farmers and their sponsors. The sponsors’ pre finance the farmers and have a pre-determined price of how much a bag of rice is sold in the Asutuare area. On finishing, the farmer hands over the paddy rice to the sponsor who later sold and gave the difference between the total cost and total sale to the farmer. However, the sponsors were not obliged to sell their rice automatically at Asutuare hence they look for a better price at other places, which were always higher than the agreed price between the farmers and the sponsors.

**Recommendation**

Based on the findings, the following recommendations are suggested:

1. As part of the current New Patriotic Party’s rural industrialization programme of One District One Factory (1D1F), the government together with the private sector should establish a rice-processing factory in the Asutuare area. This will assist in the local processing of the rice yields from the farms.

2. There should be a consistent fiscal policy such as the ear marking of a certain percentage of the Shai-Osudoku District Assembly’s share of the District Assembly Common Fund (DACF) dedicated to supporting rice farmers in the locality. This initiative will help boost rice production and reduce rice importation.

3. Since most of the rice farmers are still using manual methods of farming with its associated challenges such as low production and high cost, the study recommends that rice farming should be modernized or mechanized through the provision of modern equipment. This can be done through a public-private partnership.

**Conclusion**

In conclusion, the study found that there were four sets of actors in the rice production value chain and they are: pre-production actors, production actors, post production actors and financing actors who were engaged in both direct and indirect activities. The involvement of these actors in the rice farming value chain activities provided employment and income generation opportunities to them. There was a mixed result in poverty reduction because some of the actors were above the poverty line, while others were below. The reduction in poverty was high among the rice farmers as actors and those involved in indirect rice production especially land preparation activities were below the poverty line.

**CONFLICT OF INTERESTS**

The author has not declared any conflict of interests.

**REFERENCES**


