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# Qualitative analysis of Factors Affecting Agricultural Production in Africa

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## Abstract

*For every country in the world, agriculture is an indispensable sector that accelerates economic growth and development. Likewise, agriculture is the dominant sector and main stay of the worlds' population especially, in developing countries. Moreover, African agriculture is seriously inhibited by the political or institutional factors, lack of agricultural technologies, ago-ecological factors, poor investment in research and development. Smallholder farmers and smallholder agricultural production are pertinent to meet Millennium Development Goals (MDGs) particularly reducing hunger and poverty. The major factors which African agriculture depends on are gender, education level, Off-farm Participation, credit, Extension Workers (EWs) or Development Agents (DAs) and agricultural cooperatives. Therefore, it is recommended to make avail this institutional factors and training of farmers on improved agricultural technologies like mechanization of subsistent farming, commercialization of farms, promotion of market-oriented farming to boost the production and productivity in Africa. By this poverty and food insecurity can be reduced by significant amount.*

Key words: Africa, Factors, food security, Poverty Production

## INTRODUCTION

### 1.1. Background of the Study

It is indubitable that, for every country in the world, agriculture is an indispensable sector that accelerates economic growth and development (Enu &Attah-Obeng, 2013). Likewise, agriculture is the dominant sector and main stay of the worlds' population especially, in developing countries (Bechdol et al., 2010; Arega, 2010 & Kaya et al., 2008). To feed the rapidly growing population, therefore, smallholder farmers

need to be productive using the existing limited land acreage by employing agricultural inputs. Indeed, more than any other developing region, Africa's economic development highly relies on agriculture and agro-industry sectors; and determined by the production potential of the land under cultivation (Mugera & Ojede, 2011). As an important breakthrough, under the umbrella of New Partnership for Africa's Development (NEPAD) Despite these reforms, agricultural production and its contribution in reducing poverty is still insignificant and sluggish (Olajide, 2011 & WB, 2008). According to Shimelles (2008), high population growth rate and lack of technological change coupled with different internal and external factors has had aggravated the stagnation and gloominess of agricultural production in Africa.

Moreover, African agriculture is seriously inhibited by the political or institutional factors, lack of agricultural technologies, agro-ecological factors, poor investment in research and development and global trade reforms that Africa's production and productivity could not cope up with the rapidly shrinking world (Arega, 2010 & Nin-Pratt & Yu, 2008); land insecurity and conflicts (IFPRI, 2011). More particularly, in Sub-Saharan Africa (SSA), smallholder agriculture is an input for poverty reduction and food security (FAO, 2009); source of foreign exchange and engine of development (Shimelles et al, 2009); income and employment (Olajide, 2011) and rural regeneration (Bosshaq et al., 2012). Stemming from its immense contribution, if there is to be a developed agricultural sector and transformed smallholder agriculture, farming at any scale should be considered as a business and farmers as entrepreneurs (Nwanze, 2011); portfolio entrepreneurs (Shimelles, 2008); and entrepreneurs through diversification (WB, 2008). If so is done, the linkage between production, processing, marketing and finally with consumption will be invigorated and agriculture will be well developed (Nwanze, 2011). Contrary to what has to be done, in the region, worse than the continent at large, agriculture is too murky; as a result, food production, security and undernourishment are serious challenges (Shimelles, 2008); 72.9 % of the population live on less than US$2 per day, 27.5 % consume inadequate calories, and 23.6 % of children under five are underweight (IFPRI, 2011). These challenges are the result of different backbreaking bottlenecks. These include slow development of input and output markets and associated market services, slow progress in regional integration, governance and institutional shortcomings and conflicts (FAO, 2009); global market price (Shimelles, 2008); climate and trade policy (Odhiambo et al., 2004); poor market facilities and road transportation (Salami et al., 2010) and limited credit facilities and inefficient use of resources (Olujenyo, 2008); application of fertilizer lower than the world average (Asenso-Okyere & Samson,2012; Bationo et al., 2006; Ariga et al., 2006 & Crawford et., 2005) and declining soil fertility. As part

of developing countries in general and SSA in particular, Ethiopia will never be an exception and predominantly relied on agriculture.

According to Tesfaye et al. (2012) since 1990s as a national strategy, Ethiopia has espoused Agricultural Development-Led Industrialization (ADLI) which predominantly advocates smallholder agriculture and their transformation in to market-oriented production. Supporting this, MoARD (2010) inferred that majority of the country's total production is produced by smallholder farmers. Besides, Meseret (2012) and WB (2010) posited that, agriculture contributes 90% of the foreign earnings and 70% of the raw materials for industry.

The country has designed and implemented different poverty reduction papers including SDPRP, PASDEP and GTP. Increasing agricultural production, therefore, is vital for ensuring food security, providing inputs for industrial sector, invigorating export earnings, GDP and then getting better the income and living condition of the people.

Despite these policy interventions, due to the insufficient rate of production and productivity, according to Meseret (2012) and Askal (2010) persistent poverty and poor nutritional status are common. This is due to different production paralyzing factors like absence of new agriculture issues like finance, logistics, storage, transportation and value chains (Asenso-Okyere & Samson, 2012); lack of an integrated climate data base (Thomson et al., 2011); delays in procurement and distribution of inputs (Salami et al., 2010); lowest land share per household, 0.5 hectare (Dercon & Zeitlin, 2009).

The Northernmost tip of Ethiopia, Tigray region, is generally regarded as the most degraded part of the country; with erratic and insufficient rainfall, poor soil quality; low availability of infrastructure like inputs and markets (Fetien et al., 2009). Albeit this, recently in the region, yield has been increased as a result of composting water and soil conservation activities, agro-forestry and crop diversification (Kumasi & Asenso-Okyere, 2011). Due to evident topographical variation of the region, Southern Tigray particularly Raya-Azebo and Raya-Alamata districts have fertile soil, agriculture conducive though no remarkable production has yet been registered.

## 2.1. Overview of Smallholder Agriculture Nexus Poverty Reduction

As per the Rio + 20 conferences, smallholder farmers and smallholder agricultural production are pertinent to meet Millennium Development Goals (MDGs) particularly reducing hunger and

poverty (Vargas-Lundius, 2012). In the same line of reference, production and productivity increment, therefore, will increase or at least bring a positive change in the income of smallholder farmers; increase linkages between rural and urban production requirements and reduce poverty. Schneider and Gugerty (2011) conceive that real income changes, employment generation, rural non-farm multiplier and food price effects are some of the significant changes that increased agricultural production and thereby reduce poverty. Besides, Byerlee et al. (2005) posited that if there is higher agricultural production and growth per worker where there is abundant labor force, poverty reduction rate would be high. Similarly, the finding by Jayne et al. (2010) in Kenya, Malawi, Zambia, and Mozambique tell that, abundant maize production has had increased the income of smallholder farmers and poverty has been reduced.

Asenso-Okyere and Samson (2012) posited that despite the presence of 60% of world's total uncultivated land, Africa is incurring a cost of $30-$50 billion per year for food imports where giving priority for smallholder agriculture can reduce food shortage problems and then poverty. Hence, CAADP has dictated countries to invest at least 10% of their total budget on agriculture with the expected 6% annual agricultural growth. Similarly, Hazell et al. (2007) posited that, due to their overall plot and environmental knowledge, smallholders' production is pivotal for poverty reduction. Furthermore, in SSA, of the total of 5.6 % poverty reduction, 3.7 % was achieved by agricultural production and productivity using the already unexploited potential of the region (Ivanic & Martin, 2010). According to Kende-Robb (2013) in Kenya; Diao and Pratt (2007) and Samuel (2006) in Ethiopia purport that, agriculture has reduced poverty twice as fast as other sectors

## 2.2. Factors Affecting Crop Production and Farm Income

### 2.2.1. Farm Operators' Household Characteristics

Gender is one of the significant determinants of agricultural production since male-headed and female-headed households (HH) could not have the same capability and endurance in enhancing agricultural production; where the former is stronger (Nyanga et al., 2012); in Kenya, Ekbom et al. (2012) found that female-headed HHs are inefficient and unproductive compared with their counter parts. According to Malek and Usami (2010) male-headed HHs expend more on external inputs at their HH farm enterprises; male-headed HHs are better off to get agricultural information and to take risks (Abay and Assefa, 2004). According to Adebiyi and Okunlola (2013), in Nigeria, unlike their counter parts, females do more engage in off-farm activities like

in selling agricultural products, storing and packing them out. This indicates that, male did pay attention for their farm work and do better adopt farm rehabilitation techniques, inputs for sufficient production. In Tanzania, Lugandu (2013) found that male-headed HHs has had adopted conservation agricultural technologies as compared with female-headed HHs. This does not mean that female-headed HHs is reluctant to adopt agricultural technologies, but their decision is being challenged or influenced by their family members or beyond. Similarly, Uwagboe et al. (2012) posited that different social and institutional factors did hold back female-headed HHs in employing IPM technologies where their effort in agricultural production is being compromised. In Ethiopia, work division culture makes female-headed HHs less effective in production; like taking perishable products to the market unlike males' chat and animals (Berihun et al., 2009).

Age is the most decisive factor that determines the productive potential of a certain HH that can be seen differently. According to Adebiyi and Okunlola (2013); Shumet (2011); Anyanwu (2009) and Abay and Assefa (2004) age can be related with farm experience and as age increases farm experience increases and then input adoption as well as production will increase up to a certain age limit. Shumet (2011) in Ethiopia and Amaza et al. (2006) in Nigeria reasoned out that, as agriculture in developing countries is more of labor intensive, after a certain age limit, where farmers' physical strength decreases and their conservativeness increases, production will finally decrease. In Nigeria, Adebiyi and Okunlola (2013) found that people who are not in their productive age group are less prospected and reluctant to adopt cocoa farm rehabilitation techniques. Besides, Uwagboe et al. (2012) in Nigeria and Shumet (2011) in Ethiopia found that, middle aged farmers (41-60 years) tend to adopt agricultural inputs than younger and older farmers. Contrary to this, younger and older farmers (Lugandu, 2013); and older farmers (Chiputwa et al., 2011) could better adopt conservation agriculture than the middle age farmers; relatively younger farmers are risk takers for what they adopt and for yield uncertainties (Abay and Assefa, 2004). Whatever other reasons might be, in Kenya, Ekbom et al. (2012) found that older farmers with better accumulated experience are more efficient than younger farmers.

Education is the key factor that determines agricultural production in adopting inputs in general and management demanding practices in particular (Uwagboe et al., 2012). According to Ekbom et al. (2012); Shumet (2011); Chiputwa et al. (2011); Askal (2010); Anyanwu (2009) and Abay and Assefa (2004) educated HH farmers have a better access for agricultural information that is pertinent for decision making on what and when to produce; to adopt and use inputs efficiently

thereby increase production. In Nigeria, Amaza et al. (2006) put forward as education is the principal factor that seriously determines food crop production where educated farmers are committed to go to the peripheral areas of the country and exploit the potential reservations. Adebiyi and Okunlola (2013) and Abay and Assefa (2004) put forward that adopting new inputs by itself could never be a guarantee for increasing agricultural production. The rationale is that, properly utilizing and exploiting the opportunity is the most difficult thing that illiterate farmers are facing. Hence, education is a vaccination that needs to be encouraged so as to adopt and properly utilize agricultural technologies thereby increase agricultural production. Moreover, Thierfelder and Wall (2011) inferred that education as a source of knowledge has had resulted in a brain wash for farmers to reject the traditional agricultural system and adopt the new technique; knowledgeable farmers are keen enough to adopt techniques that control weed, enhance residue management, encourages crop rotation and fertilizer adoption.

Beyond the shadow of doubt labor is an indispensable input of agricultural production that developing countries are being utilizing. In Madegaskar, a finding by Abugamea (2008) revealed that a 100% increase in labor will result with 38.1% increase in agricultural production. Consequently, Amaza et al. (2006) concluded that HHs with large family size could have a chance of using family labor if their intention is to ensuring food security.

### 2.2.2. Physical Environment Nexus Agricultural Production

In this review physical environment includes the most determining factors of production including soil quality, amount of rainfall and insects. Hence, as a natural factor, soil is the most reputable production determinants that determine the overall aspects of agricultural production. Different researchers' findings reveal that, African soil is of poor quality with limited organic matter and incapability of water retention which is aggravated by the continents' high temperature. Moreover, according to Asenso-Okyere and Samson (2012) Africa constitutes 25% of the world's degraded land; where 65% of the land is degraded due to water and soil erosion as well as chemical and physical degradation. According to Thierfelder and Wall (2011) and Kumasi and Asenso-Okyere (2011) conservation agriculture can be taken as a vaccination of soil conservation; since tillage can reduce soil erosion due to minimal disturbance of the soil and used for environmental management and improved water and soil quality; and it can also be used in nearer plot distance (Minale et al., 2012). Besides, Lugandu (2013) and Giller et al. (2009) posited that, through conservation agriculture, soil properties can be improved and then become suitable for agricultural production by keeping the soil covered from the sun, rain water runoff

and wind; through minimum soil disturbance and crop rotation. In Zambia, Umar et al. (2011) found that as one modus operandi of soil fertility preservation, conservation agriculture is primarily important in providing stable crop production and food security. In Ethiopia, Shumet (2011) found that soil fertility is the one that best describes agricultural production and technical efficiency of farmers where those with fertile land are endowed with ample agricultural production. It is conclusive that Africa in general and SSA in particular depends on rain fed agriculture with its erratic nature. According to Asenso-Okyere and Samson (2012) average annual rainfall in dry semi-arid areas of SSA are less than 700 millimeters; and this makes soils poor in nitrogen and phosphorus. Besides, Yanggen et al. (1998) put forward that, SSA is being characterized by low and highly unpredictable levels of rainfall and high temperatures; and these features would ultimately erode the soil organic matter and would result in poor soil quality and low agricultural production.

Furthermore, Woldeamlak (2009) put forward that, there is intra-regional rainfall variability or fluctuation with in a country and among regions that adversely affects crop production. As far as correlation between cereal products and rainfall variability is concerned, it varies from one crop to another depending on their water intake requirement and their preference either in spring or autumn season.

Inter-annual and seasonal fluctuations of rainfall as well as temporal distribution of rainfall within a sub-monthly time scale are causes for seasonal fluctuation of crop production and the resultant poor yield. Pests or insects are natural inhibiting factors that paralyze the production potential of farm land as well as smallholder farmers.

According to Olujide and Adeogun (2006), in Nigeria, production has been determined by weeds, pests, diseases and parasites. These diseases, in Nigeria, according to Uwagboe et al. (2012) includes the black pod borer and mired; and in Ethiopia, late blight, early blight, bacterial wilt and potato tuber moth Eshetu et al. (2005). To trim down the challenge, according to Olujide and Adeogun (2006), cocoa farmers in Nigeria, has had employed chemicals, pruning, removal of diseased pods and mistletoe and breaking of pods off-farm; and in part farm hygiene and management technique; and in Ethiopia prefer to grow disease tolerant products (Eshetu et al., 2005). Besides, in Turkey, to decrease pest presence in crops, Saysel et al. (2002) purport that farm rotation practices coupled with irrigation intensification can eliminate pests and would increase production.

### 2.2.3. Agricultural Technologies, Agronomic Practices Nexus Crop Production

Sasakawa Global 2000 (SG-2000) program has intended to work with smallholder farmers and their respective agriculture ministry's so as to increase agricultural production by employing different agricultural inputs that could even keep soil fertility. The program, therefore, put farmers as the forerunners and drivers in adopting agricultural technologies and promotion of agricultural intensification. According to Galiba et al. (1999 and Gakou et al. (1995) as cited in Nubukpo and Galiba (1999); and Crawford et al. (2005) when soil degradation become rampant, the program, SG- 2000 has obliged to use organic, mineral fertilizer and the natural phosphate; all to be backed by technological package options. It is believed that chemical fertilizer, if soil organic matter is not depleted, is an ingredient that feed roots with sufficient nutrients in the nutrient poor soils; and enables to adopt HYV and thereby increase agricultural production.

Besides, simultaneously with chemical fertilizer, according to Yanggen et al. (1998), organic fertilizer like crop residues and manure needs to be used since it adds organic matter to the soil and increases the soil structure like soil porosity and friability that increases water infiltration and retention capacity of the soil. In a certain country, chemical fertilizer adoption can be determined by economic, social, physical and technical aspects of farming (Abay and Assefa, 2004); and these aspects influence the type of crops to be grown and the production method to be used (Sassenrath et al., 2012). Excessive use of fertilizer and intensive production system could result in fertilizer contamination; and thereby environment and production potential of the land and soil would further be harmed.

According to Yanggen et al. (1998), in Africa in general and SSA in particular, fertilizer use capacity is being determined by human capital (education, extension and health/nutrition); financial capital (income, credit and assets); basic services (infrastructure, quality controls and contract enforcement, information and government policies); yield response (biophysical environment, technology and extension) and input/output prices (structure conduct & performance of subsector, competition efficiency and equity). In Madagascar, according to Minten et al. (2006) chemical fertilizer adoption is pertinent for subsistence production but smallholders are not keen enough to pay the estimated value of inputs; as a result, inputs are being disseminated through credit and contractual agreement.

In Ethiopia, Peasant Agricultural Development Extension Program (PADEP) has been replaced by Participatory Agricultural Demonstration Training Extension System (PADETES) that merges training and visit agricultural extension system with agricultural technologies. It is aimed

at improving agricultural output using HYV, fertilizer, improving farm practices and credit supply and serious follow up of farmers. Similar with the findings of Solomon et al. (2011) in Malawi and Minten et al. (2006) in Madagascar, in Ethiopia, Samuel (2006) found that farmers are too reluctant to use fertilizer as they believe it will damage the crop due to the erratic nature of rainfall.

### 2.2.4. Institutional Factors Vis-à-vis Crop Production

Beyond the shadow of doubt, institutional factors are crucial to get access for agricultural inputs and thereby increasing agricultural production. These could include credit, Extension Workers (EWs) or Development Agents (DAs) and agricultural cooperatives. To start with credit, it enables smallholder farmers to purchase agricultural inputs and even to hire labor during the weeding and harvesting times. In line with this, Adebiyi and Okunlola (2013); Shumet (2011) and Chiputwa et al. (2011) put forward that credit is worth enough for farmers in such a way that credit availability turns off the cash limitation and allow farmers to purchase inputs on time and produce stable production.

Smallholder farmers, according to Anyanwu (2011) are lacking agricultural production techniques and inputs due to credit rationing or liquidity constraint; as a result, agricultural production become liable to dwindle. Though banks could subsidize credit, unlike Asian banks, African banks are hesitant to lend smallholder farmers due to the erratic nature of agriculture and the resultant risk of repayment, uncoordinated agricultural value chains, poor infrastructure in the rural areas and unwillingness of farmers' to be coordinated (Asenso-Okyere and Samson, 2012). In some instances, however, according to Yanggen et al. (1998), those who are better in non-farm incomes and employment earnings and in better agro climates have better credit access that let them to purchase inputs. If farmers first adopt agricultural technologies and then produce a remarkable output, they further need to adopt different inputs that still need to be backed by credit and market linkage Hazell et al. (2007). Moreover, in Rwanda, a finding by Mpawenimana (2005) infers that since majority of banana producers were unable to afford fertilizer price, credit facility had enabled them to purchase all the required inputs and thereby increase production.

More than any other stakeholders, extension service being activated by DAs is paramount importance for enhancing agricultural production. DAs are too nearer to farmers; key role players in instigating farmers to use agricultural inputs; disseminate the required information. Adebiyi and Okunlola (2013); Genius et al. (2013) and Chiputwa et al. (2011) and Anderson and Feeder (2004) infer that the role of DAs is transferring information from the global and local

knowledge base to farmers and thereby shaping their activities. Due largely to this, in developing countries, investing on DAs is pertinent in increasing farmers' income, livelihood status; guiding on how, where and when to use inputs. In addition, Genius et al. (2013) also allege that extension services and farmer-farmer contact are basic points that determine technology adoption and diffusion; and both are mutually supportive. Likewise, according to Wondimagegn et al. (2011) as a risk aversion mechanism, more extension visited farmers are more probable for production specialization. In line with this, according to Adesina and Baidu-Forson (1995), one challenge of agricultural technology adoption in developing countries is poor contact between EWs and farmers; where farmer-farmer contact is serving as source of information and agents of technology transfer. Worse than this, Idrisa et al. (2008) and Anderson and Feder (2004) purport that EWs tend to select farmers with large farm size, better income and socially privileged with the assumption that these people could better adopt inputs and could also subsidize them with some incentives. According to Hu et al. (2012); Tewodaj et al. (2009) and Ozor et al. (2007) unsatisfactory contact between EWs and farmers is due to unstable source of financing agricultural inputs; where cost-sharing financing EWs is advocated by Ozor and Madukwe (2004) cited in Ozor et al. (2007).

Farmers' associations or agricultural cooperatives are pertinent to stood on the side of smallholders and ensure their needs; provide inputs in an affordable price and disseminate all the necessary information that need to be used in agricultural activities. Accordingly, Bernard et al. (2013) surmised that in Tigray majority of farmers got their fertilizer from cooperatives; but not commercialization of outputs which is better in Southern Nations Nationalities and Peoples Region (SNNPR).

## 2.3. Effect of Off-farm Participation on Agricultural Production

As engine of economic growth and poverty reduction, in developing countries, agriculture should be integrated with sectors that have direct or indirect linkages. Off-farm is one among the activities that could affect agricultural production positively or negatively. According to Rios et al. (2008) a higher the off-farm income is the larger will be the capital endowments and thereby high will be production and productivity. Conversely, as the income from off-farm increases, HHs may not give time for agriculture that minimizes crop yield.

The impact of agriculture on Off-Farm Enterprises (OFEs), according to Haggblade et al. (2010), can be seen as opportunity and challenge. As an opportunity, modern agricultural inputs in general can result with ample production and productivity of marketable commodities that results

with trade linkage; the requirement of agricultural inputs and marketing facilities by itself induces OFEs. As a challenge, those who live in arid areas where production is sluggish, tend to participate in OFEs and diversify their income sources. Similarly, in Burkina Faso, Zahonogo (2011) purport that the decline in farm income and farm production let farmers to participate in Non-Farm Enterprises (NFEs); and increment in farm production and income do the opposite.

According to Asenso-Okyere and Samson (2012) and Diao and Nin Pratt (2007) as form of income diversification, in Africa, nonfarm economic activities are very much indispensable for improving the livelihood of rural poor HHs. Besides, it can serve as source of input supply for agricultural production and employment opportunity for those who did not have arable land and do not further want to rely on agriculture. Despite its vitality, in Africa OFEs participation is low; and according to Haggblade et al. (2007) as cited in Merima and Peerlings (2012), 37% of the rural HHs' income is really extracted from non-farm activities where surprisingly not more than 20% of the labor force is being participated.

Coming to Ethiopia, Merima and Peerlings (2012) had purported that, for the past eight years not more than 25% of the rural HHs had engaged in NEFs which is minimal compared with 42% of the SSA average. Consequently, in Ethiopia, its contribution for employment creation is 1.14%.



## 2.4. Factors Affecting Agricultural Marketing and thereby Production

Indeed, agricultural transformation in general and smallholders in particular are issues that deserve much attention by policy makers and governments of different countries, economists and agricultural economists (Barrett, 2007). In Africa, Berhanu and Jaleta (2012) posited that agricultural transformation is not yet been realized since it is influenced more by the sluggish and static market-oriented production and the resultant poor market participation. Downsizing the constraints, subsistence production, market access and the overall production determinants and yield quantity are sought to be the worth mentioning bottlenecks. It is beyond doubt that, agricultural marketing is an important part of agricultural production where it will be intensified if there is ample agricultural production and vice versa. As a result of this complementary relationship, in Guatemala, Tanzania and Vietnam a finding by Rios et al. (2008) asserted that improving one of them undoubtedly will improve the other and thereby living conditions of the poor will be improved.

According to Onoja et al. (2012) and Jagwe et al. (2010) if there is a need to ensure agricultural development led economic growth and increasing rural income, the poor majority need to be

integrated with market and making them accessible for market is a must. According to Diao and Nin Pratt (2007) agricultural production need to be supported by well-structured infrastructural development as well as by a market structure that stood to serve smallholder farmers by minimizing transportation and transaction costs and increasing price of products. Farmers' production motive can highly be determined by favorable market access in such a way that farmers who are nearer to the market and all-weather roads are more probable to produce marketable products unlike their counter parts who produce for consumption alone (Onoja et al., 2012). According to Abdoulaye and Sanders (2006) and Tabo et al. (2005), farmers in developing countries are seriously challenging by the price fall of agricultural products immediately after harvest. Price fall coupled with the intention of merchants to purchase agricultural products at harvest time and then store to sell later aggravated the improbability for farmers' profitableness. These problems can be solved through the provision of storage and inventory credit.

Coming to market orientation, it is simply the consciousness of HHs to produce for market and allocating their time, fixed asset and capital accordingly (Berhanu and Jaleta, 2012). It can be determined by HH size, labor supply, presence of pack animals, extension services, rain fall and altitude (Berhanu and Jaleta, 2012); on time information flow, bargaining power (Jagwe et al., 2010) and by factors of production (Omiti et al., 2009; Rios et al., 2008 and Barrett, 2007).



## Conclusion

Agriculture is subsistent and encountered different backbreaking challenges. To feed the rapidly growing population, smallholder farmers need to be productive using the existing limited land acreage by employing agricultural inputs. African agriculture is characterized by dominancy of small holder farmers, low technology, traditional farming practice, dependence on rain etc. The major factors which African agriculture depends on are gender, education level, Off-farm Participation, institutional factors are crucial to get access for agricultural inputs and thereby increasing agricultural production. These could include credit, Extension Workers (EWs) or Development Agents (DAs) and agricultural cooperatives.

In Africa agricultural transformation is not yet been realized since it is influenced more by the sluggish and static market-oriented production and the resultant poor market participation. Downsizing the constraints, subsistence production, market access and the overall production determinants and yield quantity are sought to be the worth mentioning bottlenecks.

## REFERENCE

Bechdol, Elizabeth, Allan W. Gray, and Brent A. Gloy. "Forces affecting change in crop production agriculture." *Choices*25.316-2016-7504 (2010): 1-6.

Akinola, Adebayo A., et al. "Economic impacts of soil fertility management research in West Africa." *African Journal of Agricultural and Resource Economics* 3.311-2016-5501 (2009): 159-175.

Mugera, Amin W., and Andrew Ojede. *Agricultural Productivity Growth in Africa: Is Efficiency Catching-up or Lagging Behind?*. No. 422-2016-26881. 2011.

Olajide, R., et al. "Effect of processing on energy values, nutrient and anti-nutrient components of wild cocoyam (Colocasia esculenta (L.) Schott) corm." *Pakistan journal of nutrition* 10.1 (2011): 29-34.

World Bank. *World development report 2008: Agriculture for development*. The World Bank, 2007.

Nkonya, Ephraim, et al. "Economics of land degradation." *IFPRI issue brief* 68 (2011).

FAO, WHO. "Principles and methods for the risk assessment of chemicals in food." *Environmental Health Criteria* 240 (2009).

Vossah, Akouvi Gloria Nella. "Insegurança alimentar no Chifre da África: dimensões internas e externas: o caso da Etiópia." (2017).

Bosshaq, M. R., F. Afzalinia, and H. Moradi. "Measuring indicators and determining factors affecting sustainable agricultural development in rural areas-a case study of Ravansar, Iran." *International Journal of AgriScience* 2.6 (2012): 550-557.

Olujenyo, Fasoranti Olayiwola. "The determinants of agricultural production and profitability in Akoko Land, Ondo-State, Nigeria." *Journal of social Sciences* 4.1 (2008): 37-41.

Tesfaye, Solomon, and Dinesh Selvarajah. "Advances in the epidemiology, pathogenesis and management of diabetic peripheral neuropathy." *Diabetes/metabolism research and reviews* 28 (2012): 8-14.

Salami, Payman, Hojat Ahmadi, and Alireza Keyhani. "Estimating the energy indices and profitability of strawberry production in Kamyaran zone of Iran." *Energy* 1.1 (2010).

Dercon, Stefan, and Ruth Vargas Hill. "Growth from agriculture in Ethiopia: Identifying key constraints." *IFPRI's ESSP-II policy conference'Accelerating agricultural development, economic growth and poverty reduction in Ethiopia', Hilton Hotel, Addis Ababa*. 2009.

Feiten, Wendelin, et al. "6d pose uncertainty in robotic perception." *Advances in Robotics Research*. Springer, Berlin, Heidelberg, 2009. 89-98.

Gollin, Douglas, Michael Morris, and Derek Byerlee. "Technology adoption in intensive post-green revolution systems." *American Journal of Agricultural Economics* 87.5 (2005): 1310-1316.

Schneider, Kate, and Mary Kay Gugerty. "Agricultural productivity and poverty reduction: Linkages and pathways." *Libraries Test Journal* 1.1 (2011): 56-74.

Asenso-Okyere, Kwadwo, and Samson Jemaneh. *Increasing agricultural productivity and enhancing food security in Africa: new challenges and opportunities*. Intl Food Policy Res Inst, 2012.

Byerlee, Derek, Thomas S. Jayne, and Robert J. Myers. "Managing food price risks and instability in a liberalizing market environment: Overview and policy options." *Food Policy* 31.4 (2006): 275-287.

Jayne, Thomas S., David Mather, and Elliot Mghenyi. "Principal challenges confronting smallholder agriculture in sub-Saharan Africa." *World development* 38.10 (2010): 1384-1398.

Asenso-Okyere, Kwadwo, and Samson Jemaneh. *Increasing agricultural productivity and enhancing food security in Africa: new challenges and opportunities*. Intl Food Policy Res Inst, 2012.

Hazell, Peter BR, et al. *The future of small farms for poverty reduction and growth*. Vol. 42. Intl Food Policy Res Inst, 2007.

Apata, Temidayo Gabriel, K. D. Samuel, and A. O. Adeola. *Analysis of Climate Change Perception and Adaptation among Arable Food Crop Farmers in South Western Nigeria*. No. 1005-2016-79140. 2009.

Nyanga, Progress H. "Factors influencing adoption and area under conservation agriculture: A mixed methods approach." *Sustainable Agriculture Research* 1.526-2016-37812 (2012).

Okunlola, Adenike, and Oluwatomi Akingbala. "Characterization and evaluation of acid-modified starch of Dioscorea oppositifolia (Chinese yam) as a binder in chloroquine phosphate tablets." *Brazilian Journal of Pharmaceutical Sciences* 49.4 (2013): 699-708.

Lugandu, S. "Factors influencing the adoption of conservation agriculture by smallholder farmers in Karatu and Kongwa districts of Tanzania." *REPOA's18thannual research workshop held at the Kunduchi Beach Hotel, Dar es Salaam, Tanzania*. 2013.

Uwagboe, E. O., L. A. Akinbile, and O. O. Oduwole. "Socio-economic factors and integrated pest management utilization among cocoa farmers in Edo state." *Academic Journal of Plant Sciences* 5.1 (2012): 07-11.

Berihun, Kassa. *Assessment of Factors Affecting Agricultural Production: Evidence from Smallholder Farmers of Southern Tigray, Northern Ethiopia*. Diss. Mekelle University, 2014.