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Agricultural Commercialization of Smallholder Farmers in Ethiopia: A Review

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Abstract
Smallholder farmers have high contribution for Ethiopian GDP. However, majority of these smallholder farmers have limited participation in market. Market participation of smallholder farmers is the main path way to shift from subsistent oriented agriculture to market oriented agriculture in Ethiopia. Therefore, this paper reviewed recent literatures to identify the major determinants of smallholders' Commercialization and to know the welfare impact of agricultural Commercialization in Ethiopia. According to this review, the major determinants of smallholders' Commercialization are divided into nine parts. Namely, population increase, institutional factors, transaction cost, asset holding, technology, market access, risk, policy issue and food habit. Furthermore, progress in welfare which was seen in terms of increase in, agricultural production and productivity, income, food security and poverty reduction are the main contributions of Commercialization for smallholders. In general, this review paper concluded that strengthening market participation of farmers is essential to facilitate smallholder farmers' welfare.Furthermore, policy recommendations to facilitate agricultural Commercialization in Ethiopia are forwarded in this review paper.
Keywords: Commercialization; Determinants; Smallholders; Welfare.
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1. Introduction

Agriculture in Ethiopia accounts over 40% of the national GDP, in which smallholder farmers contributes about 90% of the agricultural production (ATA, 2016).Th agricultural sector in Ethiopia is characterized by very large number of smallholders having less than 2Ha of land and very small number of commercial farmers that make up 1% of the land area. These smallholder farmers have low productivity and limited market share (MoA, 2014). The current Ethiopian Growth and Transformation Plan (GTP II), which extends from 2016-2020, provides the roadmap for over all development agenda, with a strong emphasis on agriculture putting in place efficient agricultural marketing system (ATA, 2017).

Agriculture is the main sector for Ethiopian economic growth (WB, 2015). It is largely subsistent oriented and vulnerable to climatic shock (UNDP, 2016). The transformation of Ethiopian agriculture from subsistent to market orientated (commercialized) production system forms the basis of the agricultural development strategy of the Government of Ethiopia (Diao, 2010). Market oriented agriculture is the way forward and the main pathway to change the existing subsistent type of agriculture in Ethiopia (Amdissa, 2006).

Commercialization of farmers can enhance agricultural production and ultimately improve food security (Tafesse, 2013; Ismael *et al.,* 2017). Farmers with high degree of Commercialization enjoyed better welfare outcomes (expenditure on food, education, shoes and clothes, durables and housing) and bring economic growth (Goitom, 2009; Ohen *et al.,* 2013; Afework and Endrias, 2016).

However, most smallholder farmers are not linked to the market due to low production, low farm gate price, lack of information and due to remoteness. The difficulties of eliminating such challenge hinder smallholders' agricultural development (Wiggins and Keats, 2013). Farmers -to- market linkage increase purchasing power, which, in turn, creates demand for consumer goods (Gani and Adeoti, 2011). Farmers' market participation in Ethiopia include not just the output market but also the input market (Leavy and Poulton, 2006).

The problem of commodity marketing system in Ethiopia is classified into three. The first part is the absence of integrated commodity marketing policy that addresses all the processes that involve transport, grading, storage and information facilities for the producer as well as for consumer. The second part is the absence of well equipped institutional establishment which can provide all marketing services to all market actors. The third part is the absence of private and public partnership in the commodity market (Bekele and Hailemariam, 2007; Teshome, 2009; Assegid, 2010, and Berhanu *et al.,* 2012). Therefore, the government of Ethiopia launched Ethiopian commodity exchange (ECX) so as to change the country's agricultural sector and to bring an efficient agricultural marketing system in the country (Abenet *et al*., 2017).

For the overall economy in Ethiopia, the Subsistent agricultural production share is immense. Such subsistent farmers are resource poor, use unimproved agricultural varieties, low credit access and produce for their own stomach (MoA, 2014). The Ethiopian government is designed different strategies to transform the subsistent way of livelihood and magnify the potential role of agriculture in the country (Dorosh and Reshid, 2013). However,

the government strategies didn't bring any significant change to transform subsistent agriculture to commercial agriculture. Moreover, the country's agricultural sector is still dominated by subsistent farmers in which they will not able to support the increase food demand in the country (Temesgen, 2017). Thus, this review paper focused on identifying the determinants of smallholders' Commercialization in Ethiopia and the impacts of Commercialization on smallholders' welfare.

2. Methodology

To meet the objectives of this review different research papers are reviewed.

3. Smallholder Farmer

The current definition of smallholder is seen according to the following eight indicators that are inclusive for all countries: market orientation (subsistent or commercial), landholding size, Labour input (hired or family labour), farm management strategies, income, farming system (level of technology used, rain fed or irrigation agriculture), capacity (administration of the farm; storage, processing and marketing; certification) and legal aspect (is the land registered?) (EPFL, 2013).

Chamberlin (2008, and Newsham *et al.,* 2018) smallholder farmer is the one with small land holding size, scare resource, produce for own consumption and easily vulnerable to different agricultural risks.

In Ethiopia, smallholder farmers are characterized by: low productivity, use labour intensive technology, generates 72 % of their income from crop and livestock production, have average landholding size of 0.9 hectare, and have low market access (Alemayehu *et al*., 2011, MoA, 2014, and Rapsomanikis, 2015).

4. Concept of Commercialization

Commercialization of agriculture is simply defined as the process of transforming subsistent farming to commercial farming (Tesfalem, 2008). Commercialization of agriculture often contrasts with subsistent agriculture in terms of production objectives. Commercial oriented farmers focus on profit maximization while subsistent producers produce for self sufficiency (Pingali, 2001). Commercialization of agriculture need farmers to decide on basic marketing decision ,such as place of sale, time of sale and type of buyer to increase profit, cautiously (Barret, 2008). Therefore, commercialization involves the integration of product and market (Marshal *et al.,* 2006; Wiggins, 2011).

Commercialization of smallholder farmers indicates the process in which farmers start to produce agricultural products to sell in distant markets rather than producing to fulfill their own consumption needs (Sharma *et al.,* 2016). Agricultural commercialization is the transformation of production from subsistent oriented to market oriented (Sokoni, 2007). Such transformation must be based on market demand and profit maximization principle (Leavy and Poulton, 2007).

According to Rohana (2006) Commercialization of agriculture entails market-oriented production system in which Farmers' production is aimed mainly for sales, Production system is profit oriented, production aimed at the satisfaction of different needs and interests of consumers, it should encompass agri-business management system, and it leads to entrepreneurial achievements of farmers.

5. Measurements of Agricultural Commercialization

In measuring Commercialization of farmers' two core things should be considered. First, we consider whether the farm households sell any of the farm products. Second, we consider the degree of market participation) amount of farm product sold in the market (Leavy and Poulton, 2006).

Commercialization of smallholders includes both the input and output side. In the input side, as the farmer become more commercialized the farmers purchase inputs from the market rather than use their own input. That means, the farmer purchase inputs such as, fertilizer, labour, seed, farm equipments etc… from the market and also the farm owner becomes the manager of the farm rather than doing as a farmer in his farm area or he opt to do outside tasks to get further income. On the output side, it indicates that the farmers sell most of their production in the market (Leavy and Poulton, 2006; Samuel and Ludit, 2008; Samuel *et al.,* 2016).

However, different literatures define three indices to measure the degree of Commercialization (Von Braun *et al.,* 1994): the first is: commercialization in the input side, second: commercialization in the output side and, third: degree of integration to cash economy.

In the input side, we use Pingali (1997) and Strasberg *et al*. (1999) definition in which as farms become more commercialized they tend to dependent more on market to acquire their inputs. Therefore, in the input side we define commercialization as;

$$\text{Commercialization of inputs} = \frac{\text{value of agricultural inputs purchased}}{\text{total value of agrucltural production}} * 100\%$$

In the output side, commercialization of agriculture requires that large portion of farm production is supplied to market (von Braun *et al.* 1994; Gebremedhien *et al.,* 2007). In the Commercialized agriculture farmers' production is in response to market. Therefore, farmers supply more production to market to get profit. Thus, in the output side, commercialization is defined as;

$$\text{Commercialization of outputs} = \frac{\text{value of agricultural outputs sold}}{\text{total value of agrucltural production}} * 100\%$$

Therefore, on the input and output side a commercialization index of, 0-25% indicates subsistent farmer; 25%-50% indicates transitional farmer and 50%-100% indicates commercial farmer.

The other dimension of commercialization is the degree of integration to cash economy von Braun and Kennedy (1994). This dimension implies the involvement of farmers on the off-farm and non- farm activities. Or as farmers market participation increases, then more of the households' income is derived from non agricultural activities.

$$\text{Degree of Integration to cash economy} = \frac{\text{goods and services obtained through cash transaction}}{\text{total income}}$$

6. Determinants of Smallholders' Commercialization in Ethiopia

Based on the review from different research studies done in different parts of Ethiopia, the factors that affect smallholders' Commercialization are classified into nine parts. Namely;

6.1 Population Growth

In Ethiopia, the rise in population number brought about land degradation and low farm productivity (Pender *et al.,* 2001). As the population continues to rise, smallholder farming areas will produce fewer food surpluses in the future which didn't feed the rising population (Muyanga and Jayne, 2012).

The research study on rural population density effect on agricultural intensification and productivity found that increase in population density results in a decline in farm size however there is increase in demand for their product (Hassen, 2012; Leigh, 2013; Leigh *et al.,* 2014).

Rapid Urbanization due to population increase open opportunity for farmers to have market access and increase in farm income (Satterthwaite *et al.,* 2010; Leigh, 2013, and Masters *et al.,* 2013). The study on pluralistic livestock service delivery system for the commercialization of smallholder livestock agriculture in Ethiopia revealed that, population increase is a demand driven factor which increase market integration and increase farmers' output price (Anteneh *et al.,* 2008). But, in Ethiopia population increase becomes a serious headache since it caused farmers to loss their farm land and do other nonfarm activity (Berhanu and Hoekstra, 2008; Dorosh and Thurlow, 2014).Therefore, in Ethiopia increase in population number has a negative effect for commercialization of farmers.

6.2 Institutional Factor

Institutions such as cooperatives can play a significant role in promoting smallholders' market participation through improving the economies of scale in collection, storage, transportation, and marketing of farm products and farm inputs. It also overcome market imperfections (Rashid and Asfaw, 2011; Gashaw *et al.,* 2013; Zekarias and Haeseb, 2016; Abebe, 2017). The finding on Haricot Bean Market Participation in Hadiya zone, Ethiopia confirms the positive role of cooperatives for farmers' in terms of increasing productivity and bargaining power (Shewaye *et al.,* 2016).

The Ethiopian commodity exchange (ECX) has a major impact in improving the quality of the information with regard to completeness, relevance, timely and appropriateness which has a significant advantage in connecting farmers to the market (Assegid, 2010). Moreover the research studies done in Tigrai and Siltie, Ethiopia signified that strengthening market extension (linking farmers with markets, building marketing capacity of farmers, etc.) has a positive effect on commercialization of farmers (Rehima and Dawit, 2012; Embaye, 2015).

The availability of credit service gives financial power for the farmers to purchase farm inputs and to boost their farm products (Auma and Ahen, 2014; Abafita *et al.,* 2016; Efa *et al*., 2016). The research study on Commercialization of Smallholder Farming in Tigrai, Ethiopia depicted that credit access have positive effect on market participation (Goitom, 2009). But smallholder farmers in Ethiopia are constrained to use credit due to risk factors (such as, fear of debt) and transaction cost (such as, distance from the credit institutions), lack of collateral and awareness problem (Mukasa *et al.,* 2017).

6.3 Transaction Cost

Transaction cost is cost that is incurred as the transaction is conducted between two parties (Hobbs, 1995). Transaction cost in agricultural system is farm specific, location specific and crop specific (Pingali, et al., 2005).

In Ethiopia, the existence of the prevailing marketing problems such as lack of competitiveness, price fluctuations, inadequate price information and weak bargaining power of producers increase the transaction cost of the farmers (Amare, 2013; Rapsomanikis, 2015). Reliable information on production and market condition assist farmers to form better price expectations and to improve their production decisions (Mekbib et al., 2015).

Evidence from northern Ethiopia depicted that rural smallholder farmers deterred from market participation due to limited accesses to road at large **(** Aman et al., 2013; Abdu et al., 2016; Embaye, 2015; Arethun and Bhatta, 2016, and Efa et al., 2016). Similarly, the study on market participation of dairy farming in Ethiopia shows that transaction cost shows negative effect on market participation **(**Bultossa and Adeba, 2016).

6.4 Asset Holding

Assets such as, farm land holding, human capital, financial capital, livestock holding and owning of farm implements are essential for smallholders farm production increase.

The study on determinants of smallholder commercialization of food crops in Ethiopia depicted that land, livestock holding and farm equipment are key to increase smallholder production and market participation (Pender and Dawit, 2007). Furthermore, Ethui *et al.* (2003), Geremew (2013) and Alelign *et al.* (2017) depicted that landholding size, farm experience, family labour and livestock holding (donkey, oxen) and financial capital (crop income and non-farm income) affect market participation positively

Livestock, Which are the source of organic fertilizer (manure), give financial liquidity to the farmers and also used for track power, are ingredients to increase production and market participation of famers (Aman *et al.*, 2013; Yassin *et al.,* 2016; Zekarias, 2017; Alelign *et al.,* 2017). Ownership of pack animals (mules, donkeys, horses, and camels) is critical to transporting people to the market and commodities purchased from the market to the home (Efa *et al.,* 2016).

The finding of Samuel *et al.* (2016) and Getahun *et al.* (2017) on coffee and banana commercialization respectively signified the positive association between land size and commercialization. Furthermore, family size, land size, land fragmentation, non-farm income, access to irrigation, income education level and number of cattle affects market participation positively (Yodit, 2013; Gabriel, 2014; Bultossa and Adeba, 2016; Kumilachew, 2016).

6.5 Agricultural Technology

Technology adoption and market participation has positive linkage (Solomon *et al.,* 2010). For example, in Oromia region, Ethiopia depicted that adoption of improved agricultural varieties increases farm productivity. The increase in production induces farmers to participate in the output market to generating income and in improving their lives (Abadi, 2014).

In Ethiopia, adoption of high yielding varieties is found to increase surplus production by 7.4 percent, whereas inorganic fertilizer use contributed for marketed surplus of 2.3 percent. When farmers implement the two technologies jointly, they increase the volume of sale by 6 percent. This indicates targeting intensification towards new agricultural technologies can have far reaching poverty reduction implication especially in rural areas where farming is the major source of income and food production (Tigist, 2017). Moreover, Hailemariam, (2016) Ethiopia signified that there is complementarily between cross breeding technology adoption and milk marketing in Ethiopia. Moreover the study which is conducted in Ethiopia shows that Adoption of improved chickpea varieties have a potential to increase production and market (Paul, 2017).

Moreover, Different technologies have different impact in different places (OECD, 2000). The research study on risk implications of farm technology adoption in Ethiopian highlands found that fertilizer adoption reduced yield variability, but increased the risk of crop failure whereas, on the contrary, adopting soil and water conservation technology has no impact on yield variability, but reduces the downside risk of crop failure. Therefore, every farm technology is profitable if appropriate technologies, which are feasible in the area, are selected (Mahmud *et al.,* 2009).

6.6 Market Access

In developing countries infrastructural problem, institutional constraints and trade barriers are major problems for market access of rural societies. Eliminating such constraints is essential to improve market access of rural societies (Rashid and Asfaw, 2011, and Akkoyunlu, 2013).

The study on structure and functioning of chickpea markets in Ethiopia signifies that improved market integration decrease the marketing cost. Reduced marketing costs in turn increase farm-gate prices and reduce consumer prices (Bekele and Hailemariam, 2007). In addition, Kay (2010); Birhanu and Azage (2012); Stifel and Minten (2016) showed that market access has a positive impact on market participation through its effect on agricultural production

6.7 Policy Issue

Policy intervention is helpful to connect the farmers with market. This can be implemented through investing in

infrastructure (road, electricity), providing market information system, improving extension service, promoting contract farming, promoting cooperative behavior and investing in market institutions (grading and standard measures to develop high value agri-marketing) (Minot and Vargas, 2007; Shiferaw *et al.*, 2014).

The government of Ethiopia is facilitating infrastructures (rural road, rural electrification, rural network…), institutions (ECX) and rapid urbanization which are aimed to bring rural development and increase their market participation (Dorosh and Rashid, 2013). Furthermore, Market based risk sharing or risk transfer tools should be used to manage diverse risks (natural hazards and market risks including price risk). These include crop and livestock insurance, farm contracting and use of innovative market institutions such as the ECX and the warehouse system which underpins its delivery system (Onumah, 2016). Shifting extension system from production oriented to market oriented is also mandatory to develop the agricultural marketing system of smallholders (Berhanu *et al.,* 2012).

6.8 Risk

Constraints such as; *high marketing cost*: due to poor transportation networks, and lack of market information: *production risk*: due to vulnerability to weather and pests: and *market risk:* due to output price volatility are the common problems in Ethiopia (Belaineh, 2003; Minot and Vargas, 2007; Onumah, 2016). Furthermore, High transaction costs and lack of collateral; undeveloped financial, commodity trading, and warehousing systems; nonstandard quality; and a dearth of reliable and up -to- date information about price, production, demand, and stock trends are risks that poor and small scale farmers encounter (Schneider, 2010).

Climatic variability and price volatility are the major problems in developing countries ((Rashid and Asfaw, 2011) and (Hansen,2018). In Ethiopia, most of the risk management instruments are not in place or are not fully developed (Antonaci *et al.*, 2014).

6.9 Food Habit

Agricultural production in Ethiopia is determined by natural, religious and cultural factors (Temesgen, 2017). In Ethiopia, the feeding habit is determined by attitude, beliefs, religion and culture of societies (Semeneh *et al.,* 2013). Example, the effect of Religion on meat consumption of societies is widely seen in Ethiopia. That is, in holiday meat consumption becomes high (Janet *et al.,* 2013). Therefore the market for livestock and livestock products is seasonal in Ethiopia (Borowski, 2007).

Ethiopian farmers' production is mostly aimed at satisfaction of their own demand. Therefore, even if there is market for some commodities, which may be unwanted in the community, farmers cannot produce that commodity owing to cultural and religious constraints (Moti *et al.,* 2009). Feeding habit plays a great role for agricultural production: ducks, pigs, stork, ostrich and birds, elephants etc are edible in other countries but in Ethiopia they are unacceptable due to *food habit (*Paolo and Wossene, 2008).

7. Impacts of Commercialization on Smallholder Farmers' Welfare

In this paper the welfare impact of smallholders' Commercialization is seen in terms of the effect on improving production and productivity, income, food security and poverty reduction.

Smallholders' Commercialization in Ethiopia has an effect in improving income and employment opportunities for farmers which in turn have a direct effect on nutrition and health aspects of farmers (Moti *et al*., 2009; Amelia *et al.,* 2015). The study on Child Nutrition Outcomes of Market Participation of Smallholder Farmers in Central Ethiopia shows that households who have high degree of market participation are better-off in child nutrition outcomes than those with low degree of participation (Leykun and Jemma, 2017).

The study on smallholder milk market participation effect on young children nutritional status in Ethiopia signifies that smallholder market participation improve food security and nutritional status of farm households in rural Ethiopia this is because households use the additional income generated from selling milk to boost their dietary quality and improve the nutritional status of their family members (Birhanu *et al*., 2016). Moreover, the research study on impact of commercialization on rural households' food security in coffee growing areas of South West Ethiopia signifies that high market participation is associated with high food security status (Ismael *et al.,* 2017; Getahun *et al.,* 2017).

Furthermore, the finding on analysis of commercialization of smallholder agriculture in selected teff-growing areas of Ethiopia depicted that market participation of farmers increase agricultural production, expenditure on education and health care as compared to market non participants (Samuel and sharp, 2008). It enhances farm productivity since it helps farmers to have access to and use technologies (Rios et al., 2009). It is also essential to increase wealth and food security for farmers (Pender *et al.,* 2001; Wondmagegn, 2013).

The study on welfare outcome of commercialization in Tigrai, Ethiopia depicted that high level of commercialization results in high annual expenditure on shoes and clothes, education, durable goods, and housing (Goitom, 2009). Similarly, the finding on Crop commercialization and smallholder farmers` livelihood in Tigray region shows that crop commercialization had a positive and significant impact on smallholder livelihoods through

improved income and asset holdings (Gebreslassie *et al.,* 2015).

8. Conclusions

Based on the reviewed literatures, it is concluded that smallholders' commercialization in Ethiopia is the main path way to escape from subsistent agriculture and to improve the livelihood of the farmers. Improvement in welfare of poor farmers is the main role Commercialization provides for farmers. In Ethiopia, increase in population, different agricultural risks, problem of effective institutional system, high transaction cost, cultural and religious constraints, lack of well designed policy, lack of market access and limited agricultural technology access and utilization are the main handicaps to commercialize agricultural.

9. Recommendations

Subsistent farmers in Ethiopia have small land size and didn't use agricultural technologies. Therefore, there should have intensive agriculture to boost their productivity per small plot of land. Such agricultural intensification can be attained through providing high yielding varieties (crops or livestock), through giving capacity building training (includes training on production methods), by enabling them to use mechanized agriculture and through follow- up and provide advisory service on their production methods.

Since in Ethiopia the farmers are far from market access, infrastructures such as, rural road and telecom service should be expanded. Such infrastructures are essential for farmers to have physical market access and to alleviate cost related to, searching for buyers, screening, negotiation, monitoring and enforcing; hence transaction cost reduction. Furthermore, provision of appropriate production and market information through ICTs or through DAs is essential to link farmers with the market and to follow market oriented farming system.

Avoiding farmers financial constraints through provision of credit service, particularly for marginal farmers, and providing awareness on credit utilization is critical to make resource poor farmers surplus producer. Moreover, expansion of cooperative, both primary cooperatives (at *kebele* level) and cooperatives union (at *woreda* level), and also making smallholders cooperative participant is essential to link them both in the inputs and output markets. Therefore, strengthening cooperatives have paramount importance in commercializing farmers.

Regarding policy aspect, there should have viable agricultural policy that is feasible for the farming community and should bring rapid change on smallholder farmers' livelihood. This policy should target on smallholder farmers commercialization. Strengthening cooperatives, extension services, credit institutions and rural infrastructure are some issues that the policy should consider to shift smallholders toward commercialization agriculture.

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