Commercialization of smallholder producers and its impacts with special reference to Ethiopia: A review

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ABSTRACT

In Ethiopia, smallholder farming dominates the agricultural landscape, accounting for over 96% of agricultural land and serving as the primary driver of rural livelihoods and national Gross Domestic Product [GDP]. This review examines the determinants of smallholder commercialization, explores its socioeconomic and environmental impacts, identifies key challenges, and suggests policy options for Ethiopia. This review is based on a systematic search and thematic synthesis of literature addressing smallholder agricultural commercialization, its determinants, socioeconomic impacts, and associated constraints, with a specific focus on Ethiopia. This research was anchored in Agricultural Household Models (AHM), Market Non-Separability, New Institutional Economics (NIE) and Transaction Cost Theories. Literature published between (1995–2020) The literature cited in this review in between a 25-year period, representing the evolution of agricultural commercialization from a broad structural adjustment concept to a localized, multi-dimensional development strategy. The review reveals that smallholder commercialization is shaped by a combination of internal household-specific factors (such as asset endowments, land size, education, and labor) and external institutional factors (including market infrastructure, policies, transaction costs, and agro-climatic conditions). While the transition to commercialized farming generally enhances household income, welfare, and food security, it also introduces complex challenges regarding gender equity, health risks, and environmental sustainability. Furthermore, the efficacy of the commercialization process remains constrained by poor rural infrastructure, climate variability, and limited access to credit and modern inputs. To overcome these barriers, this review paper highlights the need for targeted policy interventions, including upgrading rural infrastructure, expanding cluster-based farming, enhancing access to market information, facilitating agricultural credit, and promoting gender-sensitive technologies to ensure inclusive and sustainable market integration. This review recommends an improvement for smallholder farmers to access institutional facilities like upgrading rural infrastructure, expanding cluster-based farming, enhancing access to market information, facilitating agricultural credit, and promoting gender-sensitive technologies.

Keywords: Agricultural Commercialization, Agricultural Policy, Food Security, Market Integration, Smallholder Farmers

I. INTRODUCTION

Ethiopia's agricultural sector is crucial to its economy, producing 96% of agricultural output and supporting 85% of the population for their livelihoods. It contributes about 43% of Gross Domestic Product [GDP], generates 90% of export value, and supplies 70% of raw materials for domestic industries (National Bank of Ethiopia [NBE], 2020). Over 96% of the entire agricultural land is controlled by smallholder farming in this sector. Ethiopia has been implementing several policies and strategies to bring structural transformation in the productivity of the smallholder agriculture and to move towards market-orientated business. Accordingly, the whole growth and development strategy which the country has practiced so far in the agricultural sector gives a strong emphasis to the intensification and commercialization of smallholder agriculture as a means to achieve poverty reduction and food security (Mohammed et al., 2016).

Smallholder farmers' commercialization is a component of a process of agricultural transformation whereby individual farms go from a largely subsistence-orientated production to a more specialized production that targets markets for both the delivery of their produce and the acquisition of their inputs (Jaleta et al., 2009). Although Ethiopia has a lot of potential for commercial agriculture, it often takes a while to change from subsistence to commercial agriculture (Pingali & Rosegrant 1995 cited in Mohammed et al., 2016).

The agricultural sector in Ethiopia is primarily characterized by poor productivity and small-scale subsistence farming (Girma, 2017). Therefore, Ethiopia's poverty-reduction policy aims to increase growth by further commercializing smallholder agriculture. Ethiopia's current Growth and Transformation Plan (GTP) aim to address this by boosting crop productivity with sound agricultural techniques, which will improve the output of major crops (Girma,

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2017). Finally, the efficacy of the smallholder commercialization sector is being limited by a number of obstacles and difficulties. Additionally, little is known about the procedures and marketing practices of the parties involved in the government's policy choice to commercialize subsistence farming and encourage commercial farming. Research on agricultural commercialization is not current and lacks concentration. Effective policymaking rarely involves agroecology or proposals tailored to a particular niche. Insufficient data exists to serve as a standard for initiating research and/or development initiatives inside the nation (Bekele & Alemu, 2015).

1.1 Statement of the Problem

Agriculture remains the cornerstone of the Ethiopian economy, contributing over 30% of the Gross Domestic Product (GDP), generating more than 70% of foreign exchange earnings, and sustaining the livelihoods of nearly three-quarters of the population. Over 90% of agricultural output is generated by roughly 16 million resource-poor smallholder households. Consequently, transforming this sector from a subsistence-oriented, low-input/low-output system into a dynamic, market-driven commercial system has been the central pillar of national development strategies—spanning the Agricultural Development Led Industrialization (ADLI), the Growth and Transformation Plans (GTP I & II), the Ten-Year Development Plan (2021–2030), and the Agricultural Commercialization Clusters (ACC) initiative.

Despite a vast volume of empirical research conducted across Ethiopia over the past two decades, the existing evidence base remains highly fragmented, methodologically disparate, and geographically compartmentalized. Most available studies are localized, micro-level cross-sectional assessments focusing on single woredas or single cash crops (e.g., teff in East Shewa, coffee in Jimma, or sesame in Metema). Consequently, there is a lack of comprehensive evidence syntheses that: Systematically reconcile the contradictory findings on how commercialization impacts household welfare, food security, and child nutrition; Contrast input-side versus output-side commercialization dynamics; Evaluate how diverse agro-ecological zones, land tenure arrangements (e.g., Second-Level Land Certification), and market access tiers mediate these impacts.

1.2 Research Objective

This review examines the commercialization of smallholders and the associated benefits and drawbacks.

II. LITERATURE REVIEW

2.1 Theoretical Review

Theoretical evidence from Ethiopia demonstrates that commercialization produces bifurcated and often paradoxical outcomes. Understanding these divergent trajectories requires grounding empirical findings in established economic, institutional, and sociological theories.

2.1.1 Agricultural Household Models (AHM) & Market Non-Separability

Formalized by Singh, Squire, and Strauss (1986) and extended by de Janvry, Fafchamps, and Sadoulet (1991), the AHM recognizes that smallholders operate simultaneously as production units (allocating land, labor, and capital) and consumption units (allocating food for household utility). Under perfect markets, production and consumption decisions are separable. However, pervasive market failures render decisions non-separable.

2.1.2 New Institutional Economics (NIE) & Transaction Cost Theory

Grounded in Coase (1937), North (1990), and Key, Sadoulet, and de Janvry (2000), NIE posits that market participation is constrained by Proportional Transaction Costs (PTCs) (e.g., transport, handling) and Fixed Transaction Costs (FTCs) (e.g., price search, buyer screening, contract enforcement). High FTCs create a wide "inactivity price band," keeping smallholders trapped in subsistence.

2.2 Empirical Review

2.1.1 Concept of Smallholders farmers and Agricultural Commercialization

The definition of smallholder farmers varies widely among researchers. African smallholder farming systems are exceptionally diverse, driven by the continent's heterogeneous landscapes, agro-ecological zones, socioeconomic conditions, and demographic patterns. Consequently, the defining characteristics and descriptions of smallholder systems vary depending on geographical and institutional contexts (Chamberlin, 2008; Calcaterra, 2013; Kamara et al., 2019). There is no universally accepted definition of a smallholder, and terms such as 'smallholder,' 'family farmer,' 'small-scale,' 'resource-poor,' 'subsistence,' and 'low-income' are frequently used interchangeably in the literature. Most existing definitions focus on shared attributes, including family labor reliance, low market orientation, limited resource endowments, simple capital technologies, small landholding size, and insecure land access (Kamara et al., 2019). Ethiopia’s agro-ecological classification—traditionally categorized into Bereha (hot arid lowlands, <500 m), Kolla

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(warm semi-arid lowlands, 500–1,500 m), Weyna Dega (tepid sub-humid mid-highlands, 1,500–2,300 m), Dega (cool humid highlands, 2,300–3,200 m), and Wurch (cold alpine highlands, >3,200 m)—drives distinct production models (Ghebru & Holden, 2015).

Hagos and Geta (2016) define a smallholder as a crop or livestock producer practicing a combination of subsistence and commercial farming, where the farm serves as the primary source of household income and the family provides the bulk of the labor force. Other scholars, such as (Girma, 2017), distinguish smallholders from other agricultural producers based on four core criteria: landholding size, household wealth, market orientation, and level of risk exposure. Under this framework, smallholders are typically characterized by limited land availability, poor resource endowments, subsistence production objectives, and high vulnerability to shocks. However, a smallholder may not necessarily exhibit all these constraints simultaneously. Furthermore, definitions often rely on numerical thresholds; some studies define small farms as those managing less than two hectares of cropland, while others define them conceptually by their restricted access to capital, land, specialized skills, and external labor.

Agricultural Commercialization; A substantial body of literature defines agricultural commercialization as the increased engagement of small family farms with markets on the input side, the output side, or both. Input-side commercialization refers to the degree to which smallholder farm households' transition away from traditional, non-monetized, or farm-saved inputs (e.g., self-saved landrace seeds, animal manure, traditional wooden plows, and unremunerated family labor) toward the acquisition of market-purchased modern technologies and commercial services (Gebremedhin & Tegegne, 2012). The core premise of commercialization as a rural development strategy is that markets offer avenues for raising household income by enabling farmers to maximize returns on land and labor. The income generated from specialized market-oriented production can then be used to purchase consumption goods more efficiently than producing them under subsistence conditions (Gebremedhin & Tegegne, 2012).

Commercial agricultural production differs fundamentally from subsistence production in terms of both the surrounding food system and the producer's objectives. Commercially oriented farmers aim to maximize profits, rely on purchased agricultural inputs and market-acquired household food, and specialize in crops that complement one another in terms of land rotation, machinery utilization, and marketing seasons (Food and Agriculture Organization [FAO], 2014). Commercialization or market participation is most frequently measured by the volume or value of commodity sales, although this measure represents only one decision point within a broader commercial strategy. True commercial behavior also encompasses strategic decisions regarding when and through which marketing channels to sell to optimize profits (Barrett, 2010; Alene et al., 2008; FAO, 2014). The dominant theoretical framework explains why and when smallholders participate in markets focuses on transaction costs. Structural factors, including household asset endowments, the quality of rural roads and transport links, prevailing social norms, legal frameworks, and technological capabilities, collectively determine the transaction costs of market entry. Households choose to buy or sell on the market only when the transaction costs of doing so are lower than the price differential between self-sufficiency and market-clearing prices (FAO, 2014). Various scholars have conceptualized commercialization in different terms.

Abate et al. (2019) defines the commercialization of smallholder production as the structural transformation from household subsistence-oriented production to market-driven production. While many definitions focus strictly on the degree of output market participation and cash income generation, others argue that a profit-maximization motive is an integral part of agricultural commercialization. From this perspective, a household's decisions regarding both input selection and output marketing must be driven by profit-maximization principles rather than simple surplus disposal (Abate et al., 2019). Additionally, Hagos and Geta (2016) note that the commercialization of subsistence agriculture takes multiple forms. It can occur on the output side through increased marketed surpluses, or on the input side through a greater reliance on purchased commercial inputs. Consequently, agricultural commercialization involves both the marketing of high-value cash crops (such as pulses, oilseeds, and horticultural products) and primary food staples (such as teff, wheat, and barley).

2.1.2 Concepts and Measures on Agricultural Commercialization

Modes of Agricultural Production: According to Hagos and Geta (2016), three distinct modes of agricultural production coexist and interact within developing economies: 1. Small-scale farmers: This group is sub-divided into two categories. The first consists of small-scale, 'non-commercial' farmers (Type A), who are primarily subsistence-oriented but may occasionally sell surplus output, though they do not rely entirely on agricultural income for their livelihoods. The second group comprises small-scale 'commercial' farmers (Type B), who are well-integrated into markets, produce for both household consumption and sale, and actively attempt to specialize in high-value commodities.

Small-investor farmers (emerging commercial farmers): These producers are fully engaged in market-oriented agriculture despite operating on a relatively modest scale. These individuals are often educated, urban-based, and highly responsive to commercial opportunities (Samuel Gebreselassie & Sharp, 2007), cited in Hagos & Geta, 2016). 3. Large-scale business farming: This category represents highly capital-intensive, large-scale enterprises that are either privately

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owned or state operated. These three categories represent distinct structural settings that guide governments in formulating targeted policies to help smallholders increase their incomes and escape rural poverty (Hagos & Geta, 2016).

Process of Agricultural Commercialization: Smallholder commercialization is an integral component of the broader agricultural transformation process, characterized by a structural shift from highly subsistence-oriented farming toward specialized, market-targeted production. This transition involves active market participation on both the input procurement and output supply sides. However, the exact pathway for guiding this process remains a subject of ongoing academic and policy debate. One central point of contention is whether smallholder commercialization strategies should prioritize increasing the productivity and marketed surplus of traditional staple food crops or, alternatively, focus on newly introduced, high-value commercial crops. A secondary debate concerns whether target commodities should be developed primarily for domestic consumption or for competitive export markets (Mengistu, 2017).

Beyond the fundamental socioeconomic realities governing smallholder livelihoods, the selection of target commodities for commercialization is strongly influenced by local agro-ecological conditions, the technical capacity of farmers, and household risk tolerance. While transitioning to high-value, non-traditional crops can generate higher returns per unit of land and labor, it also exposes households to elevated production and market price volatility. To mitigate these vulnerabilities, institutional arrangements such as out-grower schemes and contract farming are widely recommended as effective risk-sharing mechanisms that reliably link smallholders to broader markets (Habtewold & Challa,, 2019). When targeting export markets, smallholders must meet rigorous international standards, particularly regarding product quality, sanitary and phytosanitary (SPS) regulations, supply volume, and delivery consistency (Jaleta *et al*., 2009). Although securing export markets aligns with national macroeconomic interests through foreign currency generation, these demanding regulatory requirements can expose smallholders to substantial income and compliance risks, which may ultimately hinder the sustainability of the commercialization process. Table 1 outlines the structural characteristics associated with different agricultural commercialization pathways:

Table 1

Processes in agricultural commercialization Characteristics of food production systems with increasing commercialization

Level of market orientation	**Farmers objective**	**Source of inputs**	**Product mix**	**Household income source**	**Human nutrition**	**Soil fertility**
Subsistence system	Food self sufficiency	Household generated (non-traded)	Wide range	Pre-dominantly agriculture	Predominantly home produced	Farmyard manure (FYM)
Semi commercial system	Surplus generation	Mix of traded and nontraded inputs	Moderately specialized	Agricultural and non-agricultural	Home produced and purchased	FYM and chemical fertilizers
Commercial system	Profit Maximization	Predominantly traded inputs	Highly traded inputs specialized	Pre-dominantly non-agricultural	Predominantly purchased	chemical fertilizers

Source: Jaleta *et al.*, (2009).

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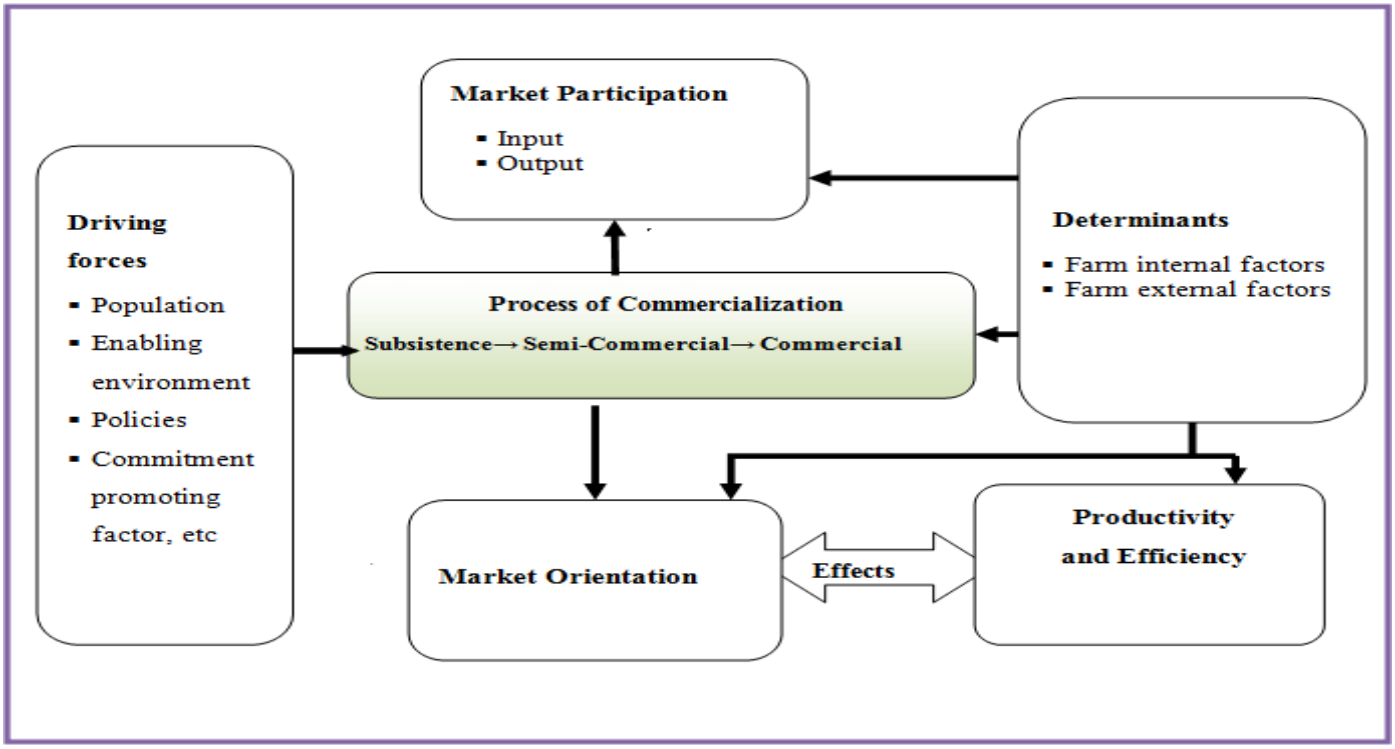


Figure 1
Process of agricultural commercialization
Source: Mengistu (2017)

Measuring agricultural commercialization**:** Commercialization can be measured along a continuum from zero (total subsistence-oriented production) to unity (100% production is sold)". Strasberg et al. (1999) suggested a measurement index called household Crop Commercialization Index (CCI) which is computed as the ratio of gross value of all crop sales over gross value of all crop production multiplied by hundred. The advantage of using this approach is that it "avoids the use of crude distinctions as commercialized and non-commercialized farms". However, this index is not without its limitations. For instance, consider the case when a farmer growing one quintal of wheat sells that all and another farmer producing ten quintals of wheat sells only two quintals. The CCI had told us that the first farmer is fully commercialized (100%) while the second is subsistence (20%). This explanation does not make sense in such circumstances. Even though this limitation of using CCI is worth noting, there is still some room to use it in practice, especially in the situation of developing countries where it is less likely to get smallholders selling all their output and very large farms selling none of their output (Strasberg et al., 1999).

Commercialization is measured as a percentage of cash crops relative to all crops grown by a household or as a percentage of the total amount of output sold by a household. The following ratios were used in the same study to quantify the extent of commercialization and integration into the cash economy at the household level, considering at least three distinct perspectives.

$$\text{(1a)}\quad \text{Commercialization of agriculture (output side)} = \frac{\text{Value of agricultural sales in markets}}{\text{Agricultural production value}}$$

$$\text{(1b)}\quad \text{Commercialization of agriculture (input side)} = \frac{\text{Value of inputs acquired from market}}{\text{Agricultural production value}}$$

$$\text{(2)}\quad \text{Commercialization of rural economy} = \frac{\text{Value of goods and services acquired through market transactions}}{\text{Total income}}$$

$$\text{(3)}\quad \text{Degree of integration into the cash economy} = \frac{\text{Value of goods and services acquired by cash transactions}}{\text{Total income}}$$

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2.1.3 Determinants of agricultural commercialization

Studies carried out in different parts of the world have revealed some of the determinants of commercialization (Barrett 2010; Gabre-Madhin et al., 2007; Davidova et al., 2009; Berhanu & Moti, 2010; Abu, 2015 cited in Kabiti et al., 2016). However, these determinants differ within and across countries due to the heterogeneous conditions faced by the smallholder farmers. A study on the commercialization of rice in Albania for example revealed that level of education, farming experience, farm size and use of modern technology as major determinants (Falola et al., 2014; Kabiti et al., 2016).

The study conducted by Ademe et al. (2017) on the most important factors influencing crop market participation of smallholder farmers in the highlands of Eastern Ethiopia. The study used Heckman two-stage and Tobit models were employed for the analysis. Heckman model of first-stage results indicated that households' decision to participate in crop output markets were influenced by factors such as sex of household head, farming experience, livestock holding, cultivated land size, off/non-farm income, fertilizer used, on farm income, market distance, and crop diversification. Moreover, the second-stage results revealed that farm households' intensity of crop output market participation was influenced by different factors such as dependency ratio, cultivated land size, education status, chemical fertilizer, and distance to market.

Abafita et al. (2016) assess the factors that influence the commercialization of smallholder livestock in Tigray, Ethiopia. The binary probit model's findings showed that factors such as family size, distance from the closest market centre, education level, and total livestock ownership were important when deciding whether to sell. According to Heckman's second-step selection estimation, the degree of commercialization measures was highly influenced by the household head's educational attainment, the extension agents' visit, the total number of cattle owned, and the area of the owned land.

It is generally accepted that the two main categories of factors influencing smallholder commercialization are internal and external. Smallholders have no control over external factors, which include demographic shifts and population growth, technological advancements and the introduction of new commodities, infrastructure development, market institutions and regulations, and institutions like land tenure and property rights; cultural and social factors that influence consumption preferences; agro-climatic conditions; the growth of the nonfarm sector and the larger economy; rising labor opportunity costs; macroeconomic, trade, and sectoral policies that impact prices; and other motivating factors. Conversely, internal determinants include household-specific characteristics such as labor, physical capital, human capital, and smallholder resource endowments, such as land and other natural capital (Abafita, et al., 2016). The next figure2 shows determinants and effect of commercialization.

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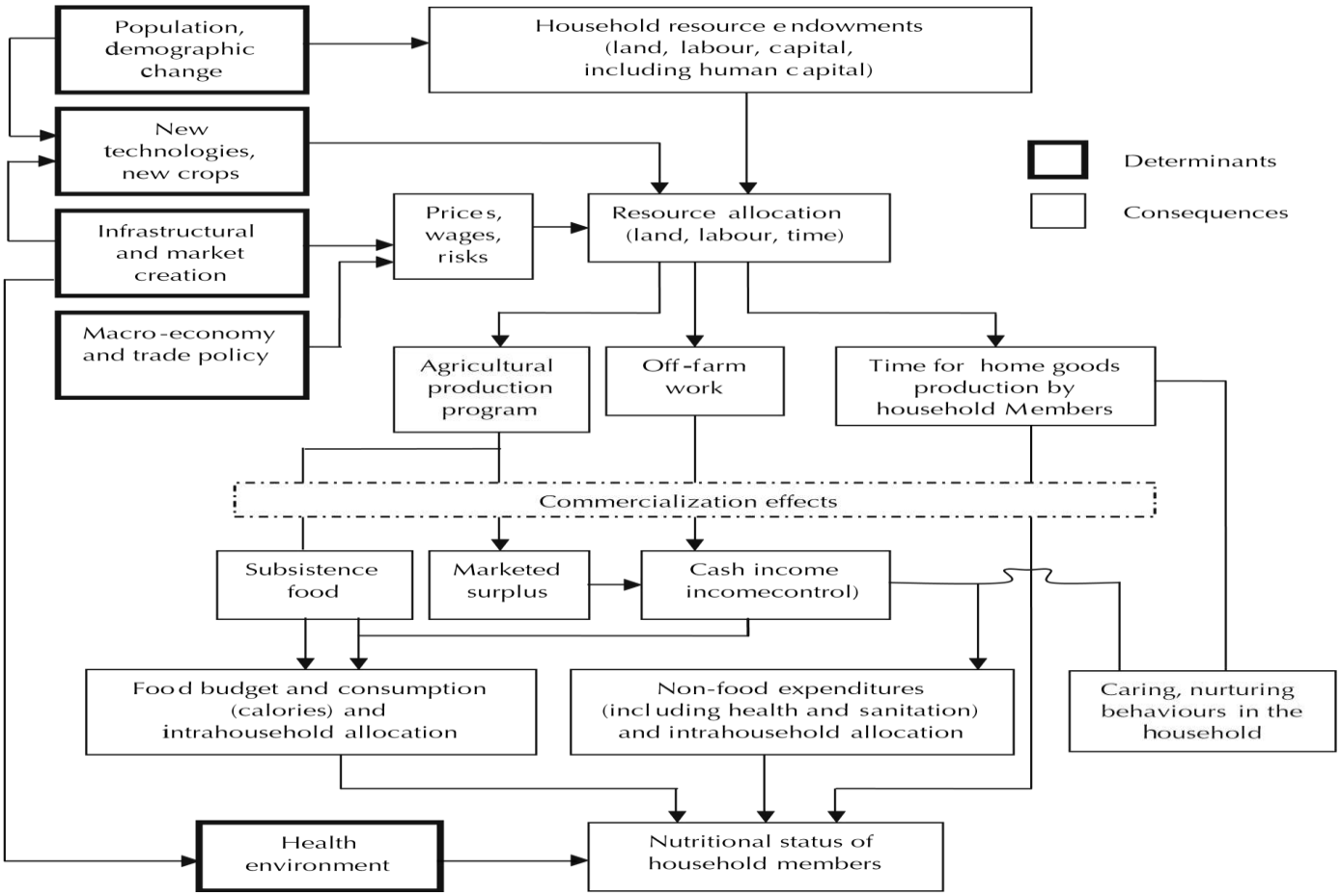


Figure 2
Determinants and consequences of smallholder commercialization
Source: Jaleta et al. (2009).

III. METHODOLOGY

3.1 Search Strategy and Selection Criteria

This review is based on a systematic search and thematic synthesis of both local and international literature addressing smallholder agricultural commercialization, its determinants, socioeconomic impacts, and associated constraints, with a specific focus on Ethiopia. A systematic approach minimizes selection and publication bias through a formalized, auditable, and replicable process of literature identification, screening, quality assessment, and data extraction. This structured approach is essential given the wide heterogeneity in agro-ecological classifications, socio-economic contexts, and methodological approaches across the existing empirical literature.

To gather relevant secondary data, comprehensive electronic searches were conducted using academic databases and search engines, including Web of Science, Scopus, Google Scholar, ResearchGate, and institutional repositories of organizations such as Ethiopian Agricultural Research Organization, the Food and Agriculture Organization (FAO), the International Food Policy Research Institute (IFPRI), and the Ethiopian Ministry of Agriculture. The search strategy utilized combinations of key terms and Boolean operators, including "smallholder commercialization", "market participation", "agricultural transformation", "determinants", and "welfare impacts". Peer-reviewed journal articles, review papers, academic book chapters, conference proceedings, and official policy reports published in English were screened for eligibility. Literature was selected for inclusion if it directly addressed the conceptualization, measurement, driving factors, socioeconomic/environmental impacts, or policy challenges of agricultural commercialization among smallholder farmers. The retrieved documents were qualitatively analyzed and synthesized to construct a cohesive conceptual framework of the subject matter. Generally, this review paper-based literature published between 1995 and 2024.

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Table 2

Summary Matrix: Inclusion vs. Exclusion Criteria

Dimension	Inclusion Criteria	Exclusion Criteria
Geographic Context	Ethiopia (or multi-country with extractable Ethiopian data)	Non-Ethiopian studies without separate country data
Target Group	Smallholders, family farms, agro-pastoralists	Commercial corporate estates, purely urban households
Core Theme	Output and/or input-side commercialization	Pure crop genetics/agronomy trials with no market link
Impact Assessed	Income, food security, child nutrition, gender, sustainability	Studies reporting only macro GDP stats without farm data
Study Design	Empirical (quantitative, qualitative, mixed methods)	Editorial essays, opinion blogs, short conference abstracts
Sources	Peer-reviewed journals, CGIAR/World Bank reports, PhD theses	Unverified non-academic grey literature, unreviewed slides

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 Impacts of Agricultural Commercialization

Impacts of Smallholder Commercialization on Food and Nutrition Security, impacts on Food Security: Empirical literature across various developing nations offers diverse conclusions regarding the relationship between smallholder commercialization and household food security. Theoretically, commercialization directly boosts household income, which in turn enhances purchasing power and increases expenditure on both food and non-food items (Tirkaso, 2013). Supporting this pathway, localized studies in Ethiopia have documented favorable outcomes. For example, Nasir *et al.* (2017) demonstrated that market integration significantly improves the food security status of rural households in major coffee-growing districts of the Jimma Zone in southwest Ethiopia. Similarly, Osmani et al. (2014) reported that active participation in crop output markets positively influences rural household food security, indicating that higher levels of commercialization correspond to improved food access for smallholder producers.

Beyond Ethiopia, international research substantiates the positive links between market integration and food security. In Kenya, Kirimi et al. (2013) evaluated household commercialization—conceptualized as active participation in both input (seeds and fertilizer) and output markets—among rural smallholders. Their findings revealed that market commercialization is strongly associated with a reduced probability of chronic food poverty, highlighting the critical role of market integration in alleviating hunger. Furthermore, Janvry et al. (1991) observed that commercially oriented farmers maintain more diverse diets compared to subsistence-focused counterparts because market-derived income allows them to purchase supplementary foods. This transition reduces the necessity for negative coping strategies during seasonal food shortages and broadens the variety of household food consumption.

Despite these favorable outcomes, some literature presents a more cautious perspective on smallholder commercialization as a sole guarantor of food security. For instance, evidence from Malawi indicates that the food security status of small-scale subsistence-oriented farmers can occasionally be less vulnerable to international price shocks than that of highly commercialized farmers, provided their dietary needs are met through home production (Tirkaso, 2013). However, other scholars counter that long-term food security depends on income growth, particularly in Sub-Saharan Africa where agriculture serves as the primary income source. Consequently, raising the level of market participation is widely seen as a necessary pathway to structurally improve food security, an evolution that inevitably involves agricultural modernization, market-driven growth, and the integration of rural credit systems (Tirkaso, 2013).

Impacts on nutrition security: Much of the recent literature on nutrition-sensitive agriculture focuses on the link between farm production diversity and farm household diets (Jones et al., 2014; Sibhatu et al., 2015; Koppmair et al., 2017; Jones, 2017 cited in Ogutu *et al.*, 2017). These studies have also pointed at the importance of markets for improving diets, yet capturing farmers' access to markets only in terms of simple proxies such as market distance. Moreover, the dietary indicators that are typically used have limitations. Most studies use household dietary diversity scores, which are suitable for measuring household food security, but not dietary quality (Kennedy et al., 2013, cited in Ogutu et al., 2017).

Different studies in agricultural commercialization look at welfare only in terms of income not nutrition (Ochieng et al., 2020). Commercialization may influence nutrition through various channels, including changes in income, the availability of own-produced foods, and gender roles within the farm household (Fischer & Qaim, 2012). Income gains can increase the economic access to food, but a substitution of purchased food for own-produced food may also change dietary quality, possibly increasing the consumption of calories but not necessarily micronutrients (Fischer & Qaim, 2012).

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The study by Kuijpers (2018) the effect of commercialization on dietary intake: based on the evidence from Ethiopia, Bangladesh and Rwanda shows the effect of commercialization on the diversity and adequacy of the farm household's diet is found to be positive, negative, or zero, depending on the country sample and measure of nutritional intake. Positive effects of commercialization on dietary diversity in Ethiopia and on nutritional adequacy in Rwanda, a negative effect on dietary diversity in Bangladesh. The results also suggest that commercialization did not affect dietary diversity in Rwanda and nutritional adequacy in Bangladesh.

Studying the mechanisms at play we also come to mixed conclusions. Only in Ethiopia is the positive relationship between commercialization and dietary intake partially explained by its positive effect on food expenditure. Commercialization in Rwanda and Bangladesh, however, has not led to increases in food expenditure. Instead in Rwanda commercialization is associated with a diversification of farm production, which in turn positively affects both dietary diversity and nutritional adequacy. The negative effect of commercialization on dietary diversity found in Bangladesh cannot be explained by either mechanism, instead we find evidence for a direct effect between commercialization and dietary diversity (Kuijpers, 2018). As explained in the figure-3 below its indicated association between agricultural commercialization and household nutrition status.

Examine how the commercialization of food crops has affected rural households' dietary diversification and agricultural income in Rwanda and the Democratic Republic of Congo. This evidence shows that commercialization has a strong and favorable significant impact on farm revenue and dietary diversification. Commercialization raises dietary diversity by 11% and household earnings by 67%. There is limited evidence on the dietary diversity of rural households, but there is strong evidence of the influence of commercialization on incomes. There is discussion of broader policy suggestions to increase smallholders' ability to produce for the market and enhance their standard of living (Ochieng et al., 2019).

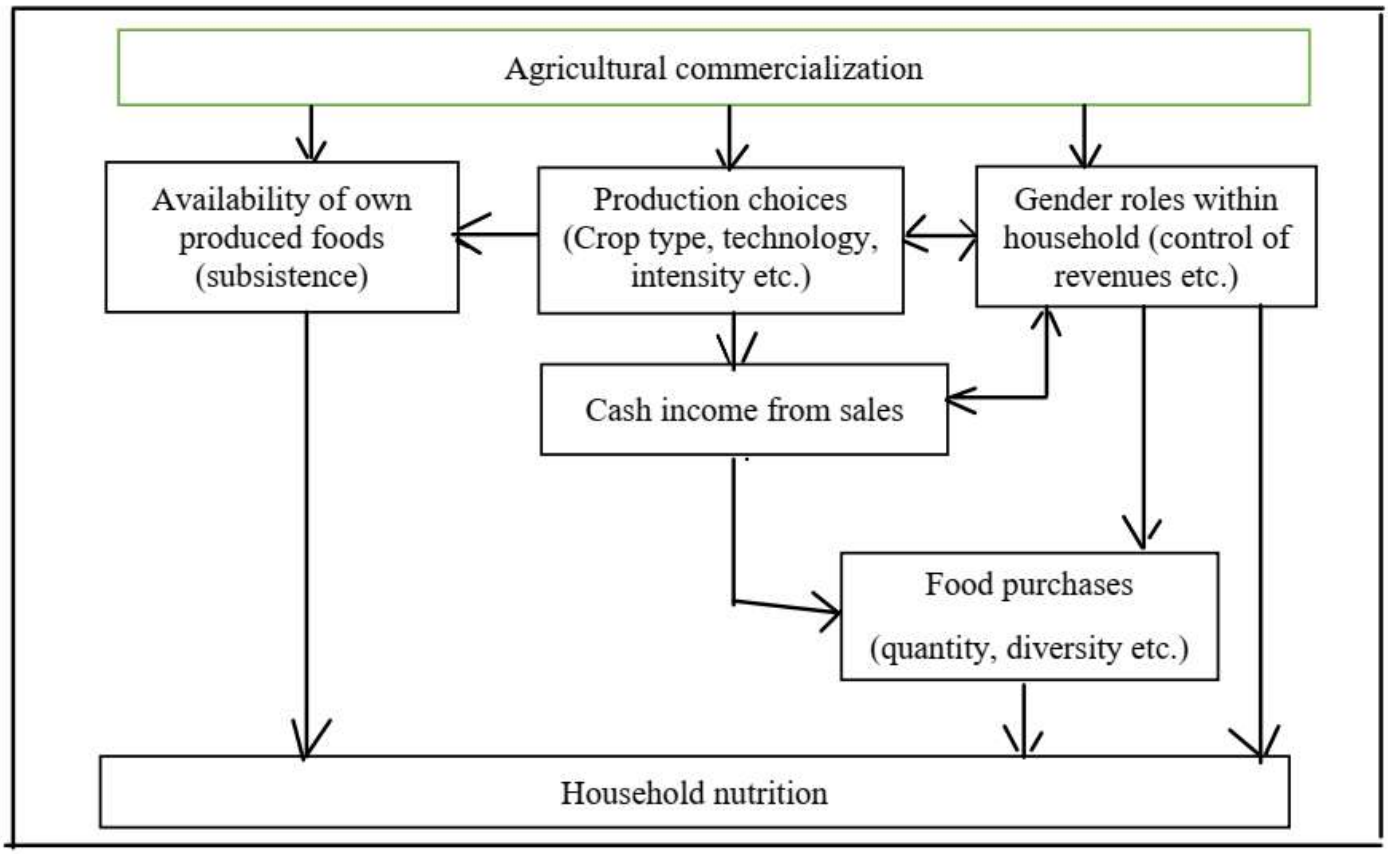


Figure 2
Agricultural Commercialization and Household Nutrition Status
Source: Adapted from Ogutu et al. (2017).

4.1.2 Impacts of Commercialization of Smallholders on Income and Employment

A study conducted by Osmani et al. (2014) Commercialization of smallholder farmers and its welfare outcomes: Evidence from Durgapur Upazila of Rajshahi District, Bangladesh indicted that the study uses household commercialization index to estimate the level of commercialization of smallholder farmers. It also applies one-way ANOVA analysis to examine the welfare outcomes among smallholder farmers working at different levels of commercialization. Household Commercialization Index implies that the average percentage level of commercialization

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of smallholder farmers in the study area is 57%, which shows the moderate level of commercialization. The analysis indicates that farm households with high degrees of commercialization enjoy better welfare outcomes such as consumption of more food and goods, and services. The commercialization of small-holder farmers contributes more to the gross domestic product and economic development.

The welfare of the farmer depends on whether the farmer participates in the rice output market. The result also indicated that rice output, off-farm income, access to credit, and income from the sale of rice were important factors influencing the welfare of the household. The participation in market can be increased by providing subsidized prices for their production, cold storage houses, vocational training, introducing new technology, increasing contact with extension agents and providing genetically modified seeds (Osmani et al., 2014).

4.1.3 Impacts of Commercialization of Smallholders on Gender and Health

Women provide 50-70% of agricultural labor in Ethiopia but own only 20-30% of land. Women in Africa as well as in Ethiopia a vital contribution to agriculture and rural livelihoods. While their access to productive resources, such as land and capital, is often constrained, women play a large role in food crop production. Especially in Africa, women also tend to control the income derived from semi-subsistence crops. However, gender relations change with changing conditions. Agricultural commercialization is often associated with a decline in women's control, because cash crops usually fall into the male domain. Commercialization is sometimes also associated with the adoption of new technologies, which may further reduce the role of women (FAO, 2014). Furthermore, it was shown that the loss of women's control may have a negative marginal effect on household nutrition, although income gains from commercialization may outweigh this negative marginal effect (Fischer & Qaim, 2012).

Authors Fischer and Qaim (2012) have found that the gender implications have hardly been examined recently. Technology adoption and agricultural commercialization may weaken the role of women and their control over production and income. This could also affect household nutrition. While higher household income through commercialization usually has positive effects on overall consumption, income controlled by women is more likely to be spent on food and other basic household goods Moreover, when men take over production, more food may be sold and the revenues may not be equitably distributed. Changes in gender roles may occur because men often take stronger control of farm production and income during the process of commercialization. And male-controlled income is often spent less on dietary quality and nutrition than female-controlled income (Fischer & Qaim, 2012).

Smallholder commercialization may have a direct impact on health then in the process of commercialization will strengthen the interactions and linkages between rural and urban populations. Newly emerging trade opportunities due to the commercialization process may also contribute to population movement and relocation. These dynamics may increase the transmission of HIV/AIDS to the rural community. On the other hand, HIV/AIDS has a direct and adverse effect on smallholder commercialization through the loss of active labour that would have been engaged in agricultural activities (Jaleta et al., 2009).

4.1.4 Environmental Impacts of Commercialization on Smallholder Production Systems

Agriculture accounts for 44% of Ethiopia's greenhouse gas emissions. The environmental impact of commercial agriculture varies based on the wide variety of agricultural practices employed. Some issues discussed involved are as follows: Climate change- Climate change is a challenge to commercial agriculture on a global scale (Mengistu, 2017). This is While global warming has significant effect on agriculture, at the same time, agriculture has been shown to produce significant effects on climate change, primarily through the production and release of greenhouse gases such as carbon dioxide, methane, and nitrous oxide, but also by altering the Earth's land cover, which can change its ability to absorb or reflect heat and light, thus contributing to radioactive forcing. Deforestation-One of the causes of deforestation is to clear land for pasture or crops. Hence, Boka (2017) mentioned that 5% of deforestation is due to cattle ranching, 19% due to over-heavy logging, 22% due to the growing sector of palm oil plantations, and 54% due to slash-and-burn farming. Though in the year 2000, the United Nations Food and Agriculture Organization (FAO) found that "the role of population dynamics in a local setting may vary from decisive to negligible," and that deforestation can result from "a combination of population pressure and stagnating economic, social and technological conditions (FAO, 2014).

Irrigation-Related Environmental Challenges: The expansion of irrigation practices, while critical for intensifying agricultural production, can lead to several severe ecological and hydrological problems if poorly managed: Aquifer Depletion: Excessive groundwater extraction (over-drafting) for agricultural use leads to the rapid depletion of underground aquifers, threatening long-term water security (Falola et al., 2014). Land Subsidence: Prolonged over-extraction of groundwater can cause structural land subsidence, requiring managed artificial groundwater recharge as an ecological mitigation and remediation technique.", Soil Salinization from Under-Irrigation: Applying insufficient water restricts the leaching of salts from the crop root zone. In arid and semi-arid regions characterized by high evaporation rates, this leads to poor salinity control and the toxic accumulation of salts on the soil surface. Water and

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Agrochemical Waste from Over-Irrigation: Poor irrigation management and low distribution uniformity result in significant water waste, the leaching of valuable plant nutrients, and the transport of dissolved agricultural chemicals into local ecosystems (Chamberlin, 2008).

Waterlogging and Secondary Salinization: Deep drainage from over-irrigation often causes local water tables to rise. In saline environments, this induces waterlogging and capillary rise of salts, necessitating expensive subsurface drainage systems to control the water table. Structural Soil Damage: Irrigating fields with saline or high-sodium water degrades soil physical properties, leading to dispersion of clay particles, loss of soil porosity, and the formation of alkaline soils. Hydrological Contamination: Irrigated agricultural runoff carrying sediments, fertilizers, and pesticide residues contaminates surface water bodies and disrupts the broader hydrological cycle (Kabiti et al., 2016). Agrochemical Pollutants. The commercialization of agriculture is often accompanied by an increased reliance on synthetic agrochemicals. Due to improper application, misuse, or lack of technical training, many of these chemicals become persistent environmental pollutants: *Pesticide Drift*: Spray drift during chemical application leads to the contamination of adjacent soils, open water bodies, groundwater resources, and the atmosphere. Persistent Chemical Residues: The usage of persistent organic pollutants, particularly organochlorine-based pesticides, results in long-term environmental toxicity due to their slow degradation rates. *Food Chain Contamination*: Chemical residues accumulate in harvested crops, posing significant health risks to consumers through dietary intake. Ecotoxicity to Non-Target Organisms: Chemical runoffs and direct exposure cause high mortality rates among beneficial insects, particularly key pollinators such as honeybees, thereby disrupting local pollination management and agricultural biodiversity.

Soil Degradation and Waste Management: *Soil Degradation*: Intensive commercial cultivation practices accelerate soil degradation, primarily through structural erosion, loss of organic matter, and chemical contamination, which ultimately leads to sedimentation in downstream aquatic habitats. *Agricultural Plastic* Waste (Plasticulture): The widespread utilization of plastic materials in modern agriculture such as mulch films, greenhouse covers, and drip irrigation pipes generates substantial quantities of non-biodegradable waste, presenting severe recycling, collection, and disposal challenges in rural areas.

4.1.5 Opportunities and Challenges to Commercialization of Smallholder Producers

Opportunities of Commercialization of smallholder producers: Ethiopia is the land of promise with great potential and a comparative advantage in agriculture. The country is endowed with large and diverse plant and animal genetic resources; great yet mostly untapped irrigation potential (Awulachew et al. ,2010 cited in Ogutu et al., 2017; and agricultural land and highly diverse agro-ecology that are suitable to produce a wide variety of crops. Commercializing smallholder agriculture is an indispensable pathway towards economic growth and development for most developing countries depend on the agricultural sector (Gashaw et al., 2015 cited in Abate et al, 2019). The government of Ethiopia implemented agricultural commercialization clusters with the primary goal of commercialization of smallholders' agriculture and agro-industrial development, offering a strategic entry point for private sector engagement. Boka (2017) defines commercialization of agricultural output as the process of agricultural modernization, specialization, and structural economic transformation towards faster and more sustainable growth (Abate et al, 2019).

Several studies were conducted that show opportunity for smallholder producers' commercialization. According to Habtewold and Challa (2019) report, "Difficulties and Opportunities for Smallholder Farmers' Participation in Teff Market in Ambo District," high market demand for *teff*, proximity to the market, the availability of a suitable climate and soil, and strong government support and encouragement were the opportunities for *teff* production in the area. The primary obstacles, however, are a lack of funding for investments, a lack of better agricultural equipment, the use of subpar harvesting techniques, limited land availability, high production costs, and low productivity.

4.1.6 Challenges to Smallholder Agricultural Commercialization

The Grain Sector and Price-Taking Constraints: Smallholder farmers are systematically constrained by multiple institutional and technical barriers, including restricted access to modern agricultural inputs, formal credit services, underdeveloped infrastructure, and inadequate extension support. A significant challenge lies in the fact that most smallholder farms primarily cultivate staple food grains. The commercialization of staple grains (such as wheat, maize, and teff in Ethiopia) requires careful policy attention because these crops constitute the primary diet for most Sub-Saharan African populations. Consequently, their market availability and retail pricing carry major socio-political implications both individually and collectively. Furthermore, because grain production is highly seasonal while consumption is continuous and daily, grain markets are frequently subjected to government and regulatory interventions. Grains are generally characterized by low unit values, high bulkiness, and low perishability, which makes sorting and quality segregation critical for effective marketing. However, because grain production is fragmented across a vast number of small-scale producers, each contributing only a nominal share to the aggregate market supply, smallholder farmers operate strictly as price takers (Boka, 2017).

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High-Value Commercial and Perishable Crop Dynamics: While a substantial portion of smallholders cultivate commercial crops, the bottlenecks within this subsector often surpass those encountered in staple grain marketing. In countries like Ethiopia, the commercial crop sector consists of two primary categories: highly perishable commodities (such as fruits, vegetables, cut flowers, milk, and eggs) and traditional cash crops (including coffee, cotton, beverages, and fiber crops). Unlike staple grains, which can be traded immediately after basic on-farm processing, commercial crops often require extensive post-harvest processing, cold storage, and specialized logistics. The highly integrated nature of these value chains tends to favor large-scale, vertically integrated operations, which can systematically marginalize or exclude resource-poor smallholders. Moreover, the markets for these commercial commodities are highly demand-driven, dictated largely by the input requirements of agro-processing industries. Consequently, the demand for these commercial and industrial crops is highly price-elastic compared to essential food staples, exposing smallholders to severe market and price volatility (Boka, 2017).

Infrastructural Bottlenecks and Post-Harvest Losses: *Inadequate rural infrastructure* specifically regarding roads, storage warehouses, electricity, telecommunications, and transport networks—critically undermines smallholders' ability to access competitive markets and negotiate fair prices. The geographic isolation of rural villages, coupled with poorly maintained road networks, increases the vulnerability of farming communities, as many primary access roads are only passable during the dry season (Mengistu, 2017). This structural isolation limits rural livelihoods, making it difficult for farmers to transport their harvest to urban markets or acquire inputs in a timely manner. Additionally, a lack of on-farm storage and processing facilities leads to high post-harvest losses. In areas where transport infrastructure is underdeveloped, input and output markets remain highly inefficient and unreliable. This lack of access often forces smallholders to sell their produce at the farm gate to local intermediaries at severely depressed prices (Kamara et al., 2019).

Vulnerability to Climate Change: Climate change represents a severe threat to smallholder commercialization efforts across Africa, as small-scale farming systems remain highly vulnerable to environmental shocks. Smallholders face significant climate-related hazards, including rising average temperatures, prolonged droughts, destructive bushfires, seasonal flooding, increasing soil salinity, and unpredictable shifts in the onset and cessation of rainy seasons. These environmental variations negatively impact crop yields, livestock productivity, household food security, and the overall economic sustainability of rural livelihoods (Kamara et al., 2019).

Quality Standards and Global Competitiveness: Meeting stringent international sanitary and phytosanitary (SPS) regulations and product quality certification standards, which are increasingly mandated by modern retail systems, presents a major barrier to smallholder participation in global value chains. To compete in international markets, smallholder groups must export products that satisfy the strict quality and food safety standards of importing nations while remaining price-competitive against large-scale commercial exporters. Without coordinated public-private partnerships, institutional support, and assistance from development agencies, navigating these complex international regulatory and certification frameworks remains difficult for smallholders in developing countries (Kamara et al., 2019).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Smallholder farmers constitute a vital economic segment in Africa, contributing significantly to rural food security, poverty alleviation, and hunger eradication. However, the characteristics of African smallholder farming systems are highly heterogeneous, and terms such as 'smallholder', 'small-scale', 'subsistence', and 'resource-poor' are often used interchangeably based on context, landholding size, labor dynamics, and resource endowments. In Ethiopia, the agricultural sector is the backbone of the economy, providing livelihoods for 85% of the population, contributing approximately 43% of the Gross Domestic Product (GDP), generating 90% of export revenues, and supplying 70% of industrial raw materials. Crucially, smallholder farming accounts for more than 96% of the country’s total agricultural land and output.

Agricultural commercialization represents a structural transition from subsistence-oriented production to market-oriented farming, characterized by increased specialization and market integration. This process can occur on the output side through increased marketing of crop surpluses, or on the input side via the adoption of purchased inputs. Commercialization applies to both high-value cash crops and primary staple food crops, such as teff, wheat, and barley. Structurally, commercialization is measured along a continuum from complete subsistence to fully market integrated. Indices such as the Crop Commercialization Index (CCI) the ratio of the gross value of crop sales to the gross value of total crop production are commonly employed, though they must be interpreted alongside household volume and market integration context. The determinants of smallholder commercialization are broadly categorized into internal and external factors. External factors, which remain outside the direct control of smallholder households, include demographic shifts, technological innovations, infrastructural quality, market regulations, property rights, macro-

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economic trade policies, and agro-climatic conditions. Conversely, internal determinants are household-specific and include resource endowments such as land availability, labor capacity, human capital (education), and physical capital.

While agricultural commercialization holds substantial potential to increase household income, improve dietary diversity, and bolster food and nutrition security, its success in Ethiopia is constrained by several systemic barriers. Addressing these challenges is vital for ensuring that the agricultural transformation process remains inclusive, particularly regarding its impacts on gender dynamics, health, and environmental sustainability. For Ethiopia to achieve the objectives of its Ten-Year Development Plan (2021–2030) and Homegrown Economic Reform Agenda, smallholder commercialization policies must transition from uniform supply-push strategies to demand-driven, regionally tailored, and institutionalized support systems that enable farmers to sustainably invest, produce, and trade in modern agricultural markets.

5.2 Recommendations

Enhance Rural Infrastructure: Invest in upgrading the quality and coverage of rural road networks to reduce transportation costs, minimize post-harvest losses, and improve access to output markets. *Strengthen Market Information Systems*: Facilitate the dissemination of timely and accurate market information through accessible communication channels, such as mobile SMS services and radio, thereby improving farmers' bargaining power and market transparency. *Promote Cluster-Based Agricultural Production*: Encourage cluster-based farming initiatives to enable smallholder producers to aggregate their output, achieve economies of scale, and specialize in high-potential crop varieties.

Expand Contract Farming Frameworks: Establish and support contract farming arrangements that link smallholders directly to agro-industrial parks and processing industries, ensuring stable market outlets. *Improve Input Supply Systems*: Distribute high-yielding, drought-tolerant, and disease-resistant crop varieties that are tailored to the distinct agro-ecological conditions of the target regions. *Facilitate Credit Access and Mechanization*: Improve access to formal financial services and microfinance institutions to enable farmers to invest in agricultural inputs and labor-saving technologies. *Secure Women's Land and Property Rights*: Strengthen and enforce secure land tenure and ownership rights for women, which not only enhances agricultural productivity but also enables female farmers to utilize land certificates as collateral for financial credit. Develop Gender-Sensitive Technologies: Support agricultural research centers in designing and releasing labor-reducing agricultural technologies that address the specific needs and daily priorities of female farmers, who constitute a large portion of the agricultural workforce. *Strengthen Agricultural Extension and Training*: Enhance agricultural extension packages to include comprehensive training on commercial production strategies, financial literacy, market dynamics, post-harvest handling, and the safe application of agrochemicals. Finally, *Public-Private Partnerships (PPPs)* have emerged as a critical institutional mechanism to bridge these divides, combining the regulatory authority, public extension networks, and land/cooperative access of the public sector with the capital, technological innovation, efficiency, and off-take capabilities of the private sector.

Declaration of Interest

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REFERENCES

Abate, T. M., Mekie, T. M., & Dessie, A. B. (2019). Determinants of market outlet choices by smallholder teff farmers in Dera district, South Gondar Zone, Amhara National Regional State, Ethiopia: A multivariate probit approach. *Journal of Economic Structures, 8*, 1–14.

Abafita, J., Atkinson, J., & Kim, C. S. (2016). Smallholder commercialization in Ethiopia: Market orientation and participation. *International Food Research Journal, 23*(4), 1797.

Ademe, A., Legesse, B., Haji, J., & Goshu, D. (2017). Smallholder farmers crop commercialization in the highlands of eastern Ethiopia. *Review of Agricultural and Applied Economics, 20*(2), 30–37.

Alene, A. D., Manyong, V. M., Omanya, G., Mignouna, H. D., Bokanga, M., & Odhiambo, G. (2008). Smallholder market participation under transactions costs: Maize supply and fertilizer demand in Kenya. *Food Policy, 33*(4), 318–328.

Barrett, C. B. (2010). Smallholder market participation: Concepts and evidence from eastern and southern Africa. In *Food security in Africa*. Edward Elgar Publishing.

Licensed Under Creative Commons Attribution (CC BY-NC)

Bekele, A., & Alemu, D. (2015). Farm-level determinants of output commercialization in haricot bean-based farming systems. *Ethiopian Journal of Agricultural Sciences, 25*(1), 61–69.

Boka, G. T. (2017). *Climate change challenges, smallholders' commercialization, and progress out of poverty in Ethiopia* (Working Paper Series No. 253).

Calcaterra, E. (2013). *Defining smallholders: Suggestions for a RSB smallholder definition*. AidEnvironment and École Polytechnique Fédérale de Lausanne.

Chamberlin, J. (2008). *It's a small world after all: Defining smallholder agriculture in Ghana* (IFPRI Discussion Paper No. 823). International Food Policy Research Institute. https://ideas.repec.org/p/fpr/ifprid/823.html

Coase, R. H. (1937). The nature of the firm. *Economica, 4*, 386–405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x

de Janvry, A., Fafchamps, M., & Sadoulet, E. (1991). Peasant household behaviour with missing markets: Some paradoxes explained. *The Economic Journal, 101*(409), 1400–1417. https://econpapers.repec.org/article/ecjeconjl/v_3a101_3ay_3a1991_3ai_3a409_3ap_3a1400-417.htm

Falola, A., Animashaun, J. O., & Olorunfemi, O. D. (2014). Determinants of commercial production of rice in rice-producing areas of Kwara State, Nigeria. *Albanian Journal of Agricultural Sciences, 13*(2), 59.

Fischer, E., & Qaim, M. (2012). Gender, agricultural commercialization, and collective action in Kenya. *Food Security, 4*, 441–453.

Food and Agriculture Organization of the United Nations. (2014). *Understanding smallholder farmer attitudes to commercialization: The case of maize in Kenya*. https://openknowledge.fao.org/handle/20.500.14283/i3717e

Gebremedhin, B., & Tegegne, A. (2012). *Market orientation and market participation of smallholders in Ethiopia: Implications for commercial transformation*. International Association of Agricultural Economists. https://ideas.repec.org/p/ags/iaae12/125847.html

Ghebru, H., & Holden, S. T. (2015). Technical efficiency and productivity differential effects of land right certification: A quasi-experimental evidence. *Quarterly Journal of International Agriculture, 54*(1), 1–31.

Girma. (2017). *Determinants of smallholders wheat commercialization: The case of Gololcha District of Bale Zone* [Master's thesis, University of Gondar].

Hagos, A., & Geta, E. (2016). Review on small holders' agriculture commercialization in Ethiopia: What are the driving factors to focused on? *Journal of Development and Agricultural Economics, 8*(4), 65–76.

Habtewold, A. B., & Challa, T. M. (2019). Challenges and opportunities for smallholder farmers' participation in teff market in Ambo District, West Shoa Zone of Oromia, Ethiopia. *International Journal of Business and Social Science, 10*(8), 42–48.

Jaleta, M., Gebremedhin, B., & Hoekstra, D. (2009). *Smallholder commercialization: Processes, determinants and impact* (Discussion Paper No. 18). Improving Productivity and Market Success of Ethiopian Farmers, International Livestock Research Institute.

Kabiti, H. M., Raidimi, N. E., Pfumayaramba, T. K., & Chauke, P. K. (2016). Determinants of agricultural commercialization among smallholder farmers in Munyati resettlement area, Chikomba district, Zimbabwe. *Journal of Human Ecology, 53*(1), 10–19.

Kamara, A., Conteh, A., Rhodes, E. R., & Cooke, R. A. (2019). The relevance of smallholder farming to African agricultural growth and development. *African Journal of Food, Agriculture, Nutrition and Development, 19*(1), 14043–14065.

Key, N., Sadoulet, E., & de Janvry, A. (2000). Transaction costs and agricultural household supply response. *American Journal of Agricultural Economics, 82*(2), 245–259.

Kirimi, L., Gitau, R., & Olunga, M. (2013, September). Household food security and commercialization among smallholder farmers in Kenya. In *Proceedings of the 4th International Conference of the African Association of Agricultural Economists* (pp. 22–25), Hammamet, Tunisia.

Kuijpers, R. (2018). The effect of agricultural commercialization on farm household dietary intake: Evidence from Ethiopia, Bangladesh, and Rwanda. In *Proceedings of the 30th International Conference of Agricultural Economists*, July 28–August 2, 2018.

Mengistu, A. A. (2017). *Crop productivity, efficiency and commercialization of smallholder farmer in the highland of Eastern Ethiopia* [Doctoral dissertation, Haramaya University].

Mohammed, A., Baze, M., & Ahmed, M. (2016). Smallholder commercialization and commercial farming in coffee-spice based farming system of Southwest Ethiopia. *International Journal of Research Studies in Agricultural Sciences, 2*(5), 13–26.

Nasir, I. M., Mulugeta, W., & Kassa, B. (2017). Impact of commercialization on rural households' food security in major coffee growing areas of South West Ethiopia: The case of Jimma Zone. *International Journal of Economics & Management Sciences, 6*, Article 437. https://doi.org/10.4172/2162-6359.1000437

National Bank of Ethiopia. (2020). *Annual report 2019/20*.

Licensed Under Creative Commons Attribution (CC BY-NC)

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.

Ochieng, J., Knerr, B., Owuor, G., & Ouma, E. (2020). Food crops commercialization and household livelihoods: Evidence from rural regions in Central Africa. *Agribusiness, 36*(2), 318–338.

Ogutu, S. O., Gödecke, T., & Qaim, M. (2017). *Agricultural commercialization and nutrition in smallholder farm households* (Global Food Discussion Paper No. 97). University of Göttingen. http://www.uni-goettingen.de/de/213486.html

Osmani, M. A. G., Islam, K., Ghosh, B. C., & Hossain, M. E. (2014). Commercialization of smallholder farmers and its welfare outcomes: Evidence from Durgapur Upazila of Rajshahi District, Bangladesh. *Journal of World Economic Research, 3*(6), 119–126.

Pingali, P. L., & Rosegrant, M. W. (1995). Agricultural commercialization and diversification: Processes and policies. *Food Policy, 20*(3), 171–185.

Singh, I., Squire, L., & Strauss, J. (1986). *Agricultural household models: Extensions, applications and policy*. Johns Hopkins University Press.

Strasberg, P. J., Jayne, T. S., Yamano, T., Nyoro, J. K., Karanja, D. D., & Strauss, J. (1999). *Effects of agricultural commercialization on food crop input use and productivity in Kenya*. Food Security International Development Policy Syntheses. https://doi.org/10.22004/ag.econ.54675

Tirkaso, W. T. (2013). *The role of agricultural commercialization for smallholders' productivity and food security* [Master's thesis, Swedish University of Agricultural Sciences].

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