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# Coffee Commercialization in the Bolaven Plateau in the Southern of Lao PDR

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## Abstract

Coffee commercialization is a part of agricultural commercialization, which is recently tended to be increasingly integrated into the national, regional, and global market to increase the export earnings. In this context, coffee commercialization is discoursed in pertinent to six perspectives involving agricultural commercialization, the linkage of agriculture and commercialization, new thinking of agricultural commercialization, productive resources for coffee commercialization, process of coffee commercialization, and impact of coffee commercialization. Agricultural commercialization has to reconstruct of relation to food security and gender role in agricultural commercialization. The implication of empirical analysis of FATE research project in the Southern of Lao PDR highlights three novel features of coffee commercialization including productive resources for coffee commercialization, process of coffee commercialization, and impact of coffee commercialization. The primary conditions required for coffee commercialization are productive resources including land, capital, and labor. The coffee commercialization is essentially processing through plantation, nurturing, harvesting, and marketing. The commercialization provides livelihood impact arena for local farmers' food security and employment opportunities including for women and creates compact gender division of labor in different processes of coffee commercialization.

**Keywords:** commercialization, commercialization and agriculture, commercialization process, coffee production, Lao PDR

## 1. Introduction

Agriculture commercialization has long debated regarding commercialization and rural living standard [1], commercialization of subsistence agriculture in developing countries [2], process of commercialization to determine nutritional outcomes [3], smallholder agriculture commercialization [4–7], and commercialization and agricultural extension services [8, 9]. Some provide a background of concepts and theories of commercialization that marketable surplus as a concept and neoclassical theory of agricultural commercialization [8, 10]. Other examine case empirical studies of commercialization of agriculture [3, 5, 7, 9, 11]. Most of the empirical study take general cash crop and limited focus on coffee commercialization [12–16].

Generally, agriculture commercialization is the process of changing the path of putting agricultural production into the market. It is an approach to changing farmers' perspective on farming as a subsistence activity toward a profitable business, if economic sustenance in developing countries is to be achieved ([17], p.172). Other five decisive characteristics of agricultural commercialization apart from profit maximization are production for sales, fulfill the needs and preference of customers, business-oriented, and gaining success [8]. Some highlight agricultural commercialization "as an agricultural transformation process in which farmers shift from mainly consumption-oriented subsistence production toward the market and profit-oriented production systems" [7]. Therefore, agricultural commercialization has become the first priority to boost economy and development by enhancing food security and increasing crop productivity for export. However, commercializing agriculture is a crucial and challenging option when the core question is required to take into consideration of "how farmers can adapt and develop a subsistence farming into a profitable business and how to promote commercial agriculture". Besides this, the concern of food security also requires the commercial transformation of subsistence agriculture.

Agriculture is a strategic sector promoting economic growth, development, and sustainability in most least developed and developing nations including that of Lao PDR. It underpins food security, rural development, and export expenditure, which is the mainstay of economic contribution. Agriculture is also becoming dominant to livelihood activity of smallholder and large-scale farmers. Despite the fact that agriculture production in many least/developing countries tended to be lag behind and experienced a chronic problem causing the rise of poverty and food insecurity. However, with the growing integration of the global market, agriculture production tended to be increasingly integrated into the regional, national, and global market; while agricultural commodity tends to increase the export earnings.

Hence, least developed and developing nations have to confront many difficulties to develop and promote the agriculture sector, both internal and external. The internal difficulties include low productivity, lack of technical support, low skill capacity, poor infrastructure, and deficient institutional. Also, the external difficulties mean highly competitive within the market as the trend of globalization, liberalization, and particularly commercialization are leading to the growth of market integration. Therefore, transforming agriculture outputs from a subsistence economy to market-oriented is an option, called "agriculture commercialization."

Lao People's Democratic Republic or Laos has policy to support agricultural commercialization of cash crop products, including coffee. Lao's agriculture system was subsistence farming in the past. People produced a little surplus for exchange after household consumptions. In the last four decade, the country started agricultural transformation by introducing the New Economic Mechanism strategy (NEM) in the Fourth Party Congress in 1986. This strategy is aiming to commercialize agriculture by increasing cash crop production and encourage smallholder farmer to become integrated in regional and international markets. The transformation of agriculture through the commercialization process has been carried out with a strategy of "an open market economy." Various programs have been introduced by the government promotion of commodity production (PCP) and to support the transformation of commercialization by reviewing a significant issue related to the agriculture system of Lao PDR. Hence, agricultural production has been implemented under the PCP. Therefore, commercial plantations have expanded dramatically, including coffee.

Coffee plantations were first introduced to Laos around 1920s by the French Colonial Empire in the Bolaven Plateau, southern of Laos [18], which is a top commodity for export-led in Laos nowadays [19]. Today, about 99% of Lao coffee is

produced in the Bolaven Plateau, approximately 15,000 smallholder households or 69% of farms depend on coffee production as their primary source of income and harvest of green coffee about 28,000 tons in 2013 [20, 21] and with 1053 smallholder family farming produce organic coffee [22]. Coffee producers in southern Laos include private investors, farmers' cooperative, and individual farmers [20, 23]. The total coffee plantation accounts 86,763 ha; a portion of a coffee plantation in Bolaven Plateau is the largest highland area in the country that covers more than 70,000 ha [24]. Therefore, coffee is one of the most outstanding crops cultivated in Laos, mostly by smallholder farmers who live in rural areas, where it is aimed for rural development and sustainability effort. Commercialization of coffee has been promoted by the government and private sector under the NEM in the 1990s, particularly to export the potential markets, at satisfactory market demand, and fair price for farmers. About 95% of the total coffee sold in international markets [24] constitutes coffee commercialization.

This chapter aims at discourse and shed light on some issues of coffee commercialization regarding their concept and theory of agricultural commercialization, nexus of commercialization and agriculture, rethinking of commercialization and agriculture, productive resources for coffee commercialization, process of coffee commercialization, and impact of coffee commercialization. The implication of empirical work of the FATE research project, a collaborative project of five countries: Laos, Nepal, Rwanda, Bolivia, and Switzerland during 2014–2020 is applied as a case study. The focus of the project is the feminization of employment in coffee production at the Bolaven plateau, the southern of Laos. The research project is mainly focused on how women are involved with agricultural commercialization, particularly in coffee commercialization process. The chapter is thus expected to enhance the novelty of knowledge in the field. The chapter, after introduction continues with discourse of literature in the field and follows with the empirical implication of the coffee commercialization, and ends with concluding discussion.

## **2. Conceptualization of commercialization**

Commercialization has different meanings and concepts. Many scholars provide that commercialization is to do with the production side, while others stress the importance of the marketing and distribution channels. Commercialization is thus a relation of the process of production, processing, transportation, and marketing of the product. Commercialization is involving several agencies to fulfill different tasks of production, processing, transportation, and marketing. Taking commercialization as a process, nature and rate of commercialization are concerned with a group of farmers, peasants, whose livelihood is relying on agriculture.

Commercialization is defined by various disciplines. Over time, most literature on commercialization has operated the definition of commercialization in a number of ways; in most cases, commercialization has been found in the concept of development studies relating to agriculture. In common term, “commercialization” refers to the process and the proportion to finalize agricultural production into the market. It is a subset of the broader process of innovation that is driven by market and profit motives, with firms and others seeking to gain a positive return on investment and marketing, including through the creation of competitive niche markets ([25], p.37). Commercialization is thus a process to marketing, particularly high-value cash crops such as horticultural crops and primary food crops such as wheat [6]. However, others view commercialization not only for the marketing, but also commercialization should be profit maximization, response to the needs and interests of buyers, and fulfill the achievements of business [8]. Some scholars focus



on the issues of market management to have stable procurement of raw materials and the capacity to access regional and foreign markets [26]. This part deflated the viewpoint that commercialization processes enhance the economy of the local livelihood and business sector. On the one hand, in order to achieve developed and sustainable status, agricultural commercialization has to follow a pathway from subsistence farming to a more profitable business of market-oriented economy and shifting to cash crops cultivation. In that case, commercialization of agriculture is a process of cash crop production which is produced for sale [27].

In this context, the concept of commercialization is set around the framework of agriculture involving the transformation pattern from subsistence-oriented economy to the market-oriented economy by commercializing agricultural cash crop productivity. This also underlined that the transition of smallholder farming from subsistence to more commercialized enterprises is a key feature of agricultural transformation in the process of economic development [28, 29]. Collectively, the agriculture commercialization allows numerous smallholder farmers to participate in the market economy. Following the pattern of agriculture commercialization, this transformation creates different opportunities which may lead to the raising in return of farmer's assets such as land and labor, encouraging women empowerment and an integrated of market. Hence, commercialization is defined in this chapter as shifting from a highly subsistence-oriented of food production for home consumption toward more cultivate of cash crops, more specialized production and targeting both domestic and international markets.

Viewing the process of commercialization, various scholars highlight of different dimensions. Some researchers specify that process of commercialization is defined by three levels, including subsistence systems, semi-commercial systems, and commercial systems [6, 17]. These processes may be defined as a mean of generating more income into the household by leaning the advantages of subsistence production. Commercialization process is certain to modernize agriculture by increasingly using the complexity of the production process, and utilizing new technology and mechanization in the production process [4]. Processes in smallholder commercialization are also seen as a pathway of non-agricultural sectors integration to overall economic structure [13]. In that sense, various agencies, both public and private institutions, involve with commercialization at different magnitudes and contribute to the success and failure of commercialization. Some of the factors contributing to the success and failure of the commercialization are, for instance, (1) effective institution, (2) improved infrastructure, (3) knowledge management, (4) adequate incentives, (5) stakeholders' initiative, and (6) a conducive environment [30]. For the achievement of the commercialization of agriculture, it has to take all factors into account as such.

### **3. Nexus of commercialization and agriculture**

What is the relation between commercialization and agriculture? The relation of the commercialization and agriculture is involving market surplus, productive resource, and value chain. A relation of commercialization and agriculture can be seen through the market surplus. The market surplus of agricultural produce is an indicator of commercialization measurement. The greater market orientation of the producers means commercialization, whereas small proportions of surpluses are more subsistence-oriented [8]. Besides, Bandara [8] define that the commercialization of agriculture is supplying of agricultural production to market which target high profit ratio and ensuring that meet the need of consumers' interests. This type

of business is called “agri-business” that use business management concept to help farmers’ success in their business ([8]: 6).

Goletti et al. [26] stated that agricultural commercialization is a complex process that comprising various dimension (e.g. famers, technology, market and marketing, finance, institution, infrastructure, consumers). Also, the transition from subsistence to different degrees of commercialize (e.g. low, medium, high, and advance) leads in different value. They highlight that it is possible to measure agriculture commercialization and suggested that to promote commercial agriculture should create applicable systematic of commercialization [26].

Mahaliyanaarachchi [31] also stated that agricultural extension is an on-going and informal educational process that takes place for a long time. Also, agricultural extension’s benefits cause farmers’ livelihood development. Therefore, it is recommended that it needs to improve farmers’ knowledge, skills and influence their new way of thinking in agriculture activity such as apply new technologies, farming activities, and marketing ([8, 31]: 14).

Rivera [32] mentioned that agricultural extension is also primary element that impact the degree of commercialization of agriculture. Nowadays, agricultural extension is a primary agricultural product with a stable price (commodification of agricultural extension and the transforming of knowledge into a product for sale) supported transforming both public sector extension and private business sector on technology transfer in agriculture sector [8, 32]. Concepts of commercial agriculture extension can be observed in three dimensions. Firstly, the agricultural extension is observed as a commercial product or service that exchanged by two parties. First party is extension providers as sellers and other party (farmers) as buyers. Secondly, it is applying primary concept as supply and demand. Hence, agricultural extension become a demand-oriented activity. Finally, extension can be viewed as inputs (e.g. fertilizer, hybrid seeds, agro-chemicals, machinery, and others), which is fundamental for the commercially oriented farming [8].

Some studies discovered that most developing countries in Asian and Latin American used the land for cash crop production since the 1980s [2, 3] because of encourage to increase cash crop export and local income improvement [2]. At the same time, a study of Omiti et al. [4] found that agricultural commercialization in Kenya has a constraint in creating a value chain. Various crops take different forms of market access such as maize has inadequate market access, while tomatoes, milk, and kales production have good market access. In short, high market integration and reasonable market access support diversification into high-value mixed enterprises [4]. One research on an impact of cooperatives on smallholders’ commercialization behavior revealed that smaller farmers tend to supply less product because they target to increase the price while larger farmers maximize their farm product [33]. Jaleta et al. [13] pointed out that smallholder commercialization concept goes beyond the marketing of surplus staple products because it consists of household input use decisions, major objectives of production, household participation in input and output markets, degree of specialization in production, and dependence on markets for income and consumption. It is a highlight to emphasize on smallholder commercialization level [13].

Based on Zhou et al. [7]’s study in the southern africa who pointed out that agricultural commercialization produces both positive and negative effects. The authors pointed out some key findings that agricultural commercialization produces both positive and negative effects. The positive effects at the household level reflected from increased productivity, family employment, more household income through market participation and employment, a better consumption diversity, nutritional welfare development, improved education, health and welfare, and household living conditions development [7, 34]. Besides, at the society arena,

commercialization contributes to food security, poverty alleviation, rural and urban employment creation, improved livelihoods and social status, and economic growth via productivity and investment [7, 34]. The commercialized leads to negative effects such as no improvement household nutrition and livelihoods of the poorest, more risk complex market, household food insecurity, and insufficiency food [7, 17, 34]. Besides, the commercialization influences to income inequalities [7, 17]. Agricultural commercialization among poor smallholders is an issue that requires to pay attention to reduce poverty, improve household food and nutrition security, and foster growth in rural areas [35].

#### 4. Rethinking of agricultural commercialization

Various discourses on agricultural commercialization provide background concept and the relation of the issue with regard to the definition of terms, process, and their relations. In this part, the interest is to reconstruct the agricultural commercialization to rethink how commercialization will lead to food security and gender role in agricultural commercialization.

A classical thought argues that the commercialization of agriculture is a cause of poor nutrition [3]. Others argue that subsistence agriculture may not be a viable activity to secure sustainable household food security [13, 36]. Agricultural commercialization is thus provision of both opportunities for food security and income earning. One of the pathways to food security is to promote food crop productivity [5] that is to enhance household food supply. Pathways to promote food crop productivity are improving access to credits and inputs, input cost management, high-value crop investment, and investment in infrastructure and human capital. The element of food security is related to accessibility, availability, stability, and utilization of food [4]. Measuring food security can apply concept of consumption or calorie intake method, expenditure, nutritional food sufficiency, coping strategies, and resources availability [37].

The most crucial question is to what extent the agricultural commercialization contributes to food security. The effect of agriculture commercialization on income and productivity seems positive, whether on the household level or for large scale producers; however, it depends on the allocation [2]. The allocation refers to resources management including land, labor, and capital toward production activities, which come to the decision of how to allocate or distribute these resources in order to achieve a greater benefit from this transformation. Since the household food availability and consumption depended on agriculture in many least developed and developing nations; the impact of agriculture commercialization should be evaluated for better application of the conceptual framework of agriculture commercialization. Despite the fact that the process of agriculture commercialization is positively affected, the income gains from selling crop in the market, which also enhancing household capacity to effort for food. However, food security and income have not yet shown a direct relationship. In terms of food security, there are still arguments for and in opposition to smallholder commercialization as a pathway for making sure household food security. Food security is also determined by farming activities, in which the shifting to cash crop may be led to the decrease of food crop cultivation. On the one hand, smallholder commercialization is assumed to have damaging outcomes on household dietary and food safety status.

Indeed, the adverse impact of the process of commercialization on food security is still debatable among scholars. For example, Von Braun [38] argued that “commercialization has a direct effect on household’s earning degree which likely results in a rise in food and non-meals expenditure” ([38]: 187). On the other hand,



the famous Engel's Law claimed that there is an inverse relationship between the proportion of food expenditure and overall earnings, which people are willing to spend more on food as their incomes increased [39]. Therefore, food security pushed further concern on the impact of agriculture commercialization; however, the correlation between the raise of income earning and nutrition can also make a positive difference.

The second issue that needs to rethink of the agricultural commercialization is gender role in agricultural commercialization. Some scholars attempt to provide measurement and effect of commercialization of agriculture. Different degrees of agricultural commercialization are well defined. Primary characters of agricultural commercialization are farmers, technology, market and marketing, finance, institution, infrastructure, and consumers [26]. Among them, a group of factors that lead to project success are commercialization that needs involvement a large number of women [26]. However, different participation of stakeholders' involvement in agricultural commercialization leads to different magnitudes of agricultural commercialization. The high and advanced dimension of agricultural commercialization need lower involvement of farmers and need industrialization of agriculture, for instance.

Gender role is a decisive component to agricultural commercialization, particularly to commercialize of agriculture at the micro-level (household and company levels) that commercialize crop improves local livelihood. Women play crucial role in both commercialization of agricultural produce and secure household food supply. A study of Sørensen [40] found that commercial of food crop constructed a new gender relation. Men play role dominantly in food production which reflects of patriarchal practice. Also, the socio-economics lead to different bargaining power. Women from a better economic have better bargaining power when compare with other women who have not good economic conditions [40]. Gender power relation within households provides the benefits arena to women. It is expected that women gain cash income from commercialization, but whether or not women benefit depends on how decisions are made within the households [26]. In fact, labor wage is not equally distributed for women and men for the same amount of work. Instead, women are facing commercialization of agricultural work plus the burden of household chores. The benefit of smallholder commercialization on the gender dimension also depends on a specific commodity when gender-labor demand and on the decision to the income generated [13]. A confirmation is that commercialization of agriculture provides disadvantage for women because of gender inequality in access to productive resources unless they become membership of farmer groups [41].

## **5. Productive resources for coffee commercialization**

### **5.1 Land acquisition for coffee production**

The most fundamental factor in agricultural production is land acquisition. The government of Lao PDR has the vision to promote the agricultural sector; the priority is to specify the existence of cultivated land expansion in the national framework. The survey and allocation of agricultural land have been carried out nationwide to allocate land to the district level. Land titles have been issued for farmers at the village level, equivalents to 43.2% of all villages across the country and cover 37.1% of the total districts [19] or about 800,000 pieces (Open Development Laos, 2019).

Land classification and land title are required to take into account as the factor affecting agriculture production because the potential of arable land, particularly



agriculture land, refers to the areas that can be brought for cultivation with soil, water, and climatic suitability. Pingali and Rosegrant [17] noted that “Agricultural commercialization means more than the marketing of agricultural output; it means [that] the product choice [s] and input use decisions are based on the principles of profit maximization” (n.p). Therefore, the land is a determinant factor of agriculture product inputs, acquisition of use or ownership rights to large areas of land for production of agricultural commodities, by farmers has recently attracted considerable interest.

Land use for coffee commercialization at the Bolaven Plateau, southern Laos consists of two forms, local own, and foreign private own. The former form is mainly smallholder coffee commercialization, who are local people, in which land use is only approximately 1–2 ha for coffee plantation. Based on the FATE household survey in 2015, the average land use for smallholder who could commercialize their coffee is 2.64 ha with a minimum of 0.10 ha, and the maximum land size is 20 ha. The majority of the farmers, about 45% owned land of 2.0–4.9 ha of agriculture land and 51% of these coffee land is used to plant Arabica coffee. There shows correlation between coffee commercialization and land use at a significant level. Access to cultivated land by the smallholders in the plateau is by three approaches including *Chap Chong* (Lao word means free land acquisition), land inheritance, and purchasing land use right [42].

The latter form, land use for coffee plantation is by foreign private ownership. After the economic liberalization policy has been applied under the NEM, the government of Laos (GoL) gives the permit to foreign investors to allow for land concession to various industries also for coffee plantation. The rapid proliferation of land concessions has been granted by the GoL to investors who are seeking to capitalize on the plateau’s agriculture, forestry, hydropower, and mineral commodity chain potentialities [43–45]. The first agriculture land concession for a foreign private company to coffee planter was granted to Asia Tech in 1991 about 12,000 ha. A plenty number of smallholder coffee producer turned into the host of coffee concession, 37 of 84 villages in the Bolaven Plateau hosted at least one coffee concession in the administrative village; while 10 villages hosted two or more concession projects [46]. Today, the idea of land concession is still debatable in the institutional level; whereas, agriculture land concession demonstrates primarily to coffee commercialization.

## 5.2 Capital formation

Capital input is another significant productive resource of coffee commercialization in which farmers have to have some capital to start farming as a running cost such as for planting, nurturing, processing, and marketing. In order to process all of these farming activities, farmers have to accumulate the capital from various sources and spend for those activities. Smallholder coffee producers seek their ways to find the capital to support their coffee production. Access to capital can be approached in several ways, including through rural development fund, banking institutions, private money lenders, relatives, and friends [42]. However, the study found that the production of coffee holds an average cost of production, representing as fixed and variable costs. Therefore, capital input in this context will consider all the cost of production, both fixed and variable costs. The study showed that the production of coffee cost about 9.13 million kips per hectare, 0.04 million kips per hectare as a fixed cost, and 9.09 million kips as variable cost. For the variable cost, tools and equipment using in the process of coffee production are including, which take about 19.59% of the total cost of production. Petroleum gas cost the highest with an average of 19.55% of the total cost of production; while the cost of

wage labor was only about 22.57%, fertilizers cost about 22.47% of the total cost of production, and other administrative costs about 15.82%.

### 5.3 Labor input for coffee production

In demographic change, the total population of Lao was only 7.13 million people, and 53.93% are below the age of 25, in 2017 [19]; however, the core of the rate of contribution in labor force still considers low. The agriculture sector contributed 62.46% of the GDP growth in 1990 and started to decline in 2017, and recently contributed only 18.55% of the total GDP growth rate (Lao Statistic [47]). While the number of labors participating in agriculture has been fell from 71.3% in 2011 to 65.2% in 2015 [48]. Therefore, the major paradigm of labor input in relations to agriculture development came into attention, specifically in coffee production because it increased from 52.01 tons in 2011 to 99.78 tons in 2015 [19], which means labor demand for coffee production is declining.

Hence, labor as a mean of productivity, engaging in every process of production shows relatively correlation with one another, including surplus and earning. Traditionally, the use of household labor in farming production is important as the part of labor market and production input as well. The study noted that in general, the rate of self-employed farming took about 91% of the total category of occupation; where was correlated to the number of lands owned.

Hence, there is no surprise to the pattern of employment where the wage of self-employed (per month) took the second place of highest salary after the wage salary (per month). It is possible to conclude that working in the coffee farming tends to reach a higher sense of stability; wage labor becomes more specialized and gained expertise through working experiences from years to years as wage labor already carries some fundamental skill working in agriculture or coffee planting. In the past, people always exchanged one another with labor, weed and harvested coffee.

To focus on labor input in the coffee production community, first understand the pattern of labor mobility. During the process of coffee plantation, nurturing and harvesting process are the most significant steps that requires quite numerous of labor; therefore, coffee producers required to hire wage labors to work in the coffee garden all year round particularly in production seasons. As a result, wage labor in coffee production has been shifted around during seasonal and non-seasonal periods.

Labor demand is determined by the cultivation land or the size of the farm. Coffee production is labor intensive; thus, labor is required in different process of coffee plantation. Hence, the greater number of labor results in increasing productivity; similarly the minimum number of labors used in the nurturing process also leads to a decrease in productivity. Therefore, in the process of coffee production, both household and wage labor represent a complex pattern, this also includes the number of women participating in this coffee community as well.

The pattern of employment in the coffee farm at the Bolaven Plateau seemed flexible in term of hiring pattern. There show four patterns of employment including wage employment, non-farm self-employment, a permanent worker for farm, and seasonal worker for the farm. Wage employment takes major account of the off-farm employment (56.4%), where local people still contribute to the employment in different occupation mainly agricultural work, public sector, and private work. Seasonal farm employment shares a larger account than permanent work for the farm. The major work for seasonal employment is an agricultural worker (general/clearing weeds) accounted for 28.6% and harvest only about 17% [49].

Although, there is a variety of labor employment pattern that shifted within the coffee production at the Bolaven Plateau; a significant factor affecting labor

mobility is the cycle of the temporary and permanent worker during the farming season. The temporary worker based on payment as known for wage employment usually increased in the farming season. Whereas, permanent worker based on types of work, in a small farm producer or a large company is small proportion. Therefore, the rate of permanent employment relied on the size of the land (for small farm producer) and the payment or benefits (for the large company producer).

Seasonal farmworkers were mainly migrated from nearby provinces, districts, and villages who come for different farm works including coffee tree plantation, fertilizing, clearing, and harvesting. The major account of the farm employment was general/clearing weeds (28.2%) and followed by harvest only (16.9%) [50]. However, many types of work are required to be done by wage labors from the same village, including planting seed and weeding, whereas some processes are required to be done by wage labor migrated from nearby village or district, specifically during the harvesting season. Furthermore, during the harvest season, the rate of wage labor slightly increased because labor demand is high during the peak season.

## **6. Process of coffee commercialization**

### **6.1 Coffee plantation**

The plantation is the primary process of coffee commercialization that provides various methods to grow coffee. There are three types of coffee plantation including planting with seeds, planting to cut the top, and planting to prune and every method depends on the size of seeds depends on the geographical area, the elevation, and the climate of the planting areas. The first method of coffee plantation, planting with seeds is applied with a limited of land, this technique is widely adapted because it takes only a year to growth, with a simple of nurturing and fertilizing. Hence, this technique concerns different preparation step before the plantation, including soil, seed, and fertilizer. In many cases, farmers mixed between soil and manure as a basement of the plant.

Planting to prune is another method mostly used in the lowland areas with dry weather. In most case, the coffee plant can be easily damaged. For the small coffee tree, it will grow only if the branches break to the top as needed. Nurturing is quite tricky for this planting method due to pests and weeds. However, if the coffee tree gains a bigger size with great roots, soil, and watering condition, the branches can grow easily. The third coffee planting method, the planting to cut the top is suitable for the planting areas located on high altitude over 900 m above sea level,, due to the plateau areas cover with less sunlight and benefit from rains for watering condition. Arabica is the most popular beans growing in the plateau areas; however, the cutting or pruning technique requires expertise and experience because this method required to prune only one branch at the top. This method seems to be mostly used in the Bolaven Plateau when the geography is profitable. Nurturing and fertilizing are simple for this planting method.

### **6.2 Nurturing**

The process of nurturing coffee plant depends on the planting method, where planting to prune is the most difficult for nurturing due to pest and weeds. The common nurturing techniques are related to six steps including planting season, watering condition, coffee stem covering, weeds and prevention, fertilizer, and



coffee pruning. The first step is to select planting season. The best season for growing coffee plant is rainy season starting from May to June in order to reduce watering condition for seedlings. However, without the rains, it is required to water the plants about 10 days before covering the plant with dry straw for maintaining soil moisture, which is labor-intensive and time-consuming. The next step is watering of the tree. Watering the coffee plant should not be overwatering. The new coffee plant is required a limited amount of water to help for sitting up; therefore, planting coffee during rainy season is the best method for nurturing. Without watering, the coffee plant can be easily damaged because nutrition relies on water to dissolve. The study found that farmers only relies on rainfall for watering condition. Coffee stem covering: there are many types of materials used for stem covering, including Napier grass. When Napier grass damaged, it produced a large amount of nitrogen, which is useful for coffee. However, in Laos, straw is widely used, replacing napier grass to reduce the cost as well. Covering the stem, a third step, of the coffee plant should be 10–20 cm away from the plant for preventing some pests or insects. With 1-m width and greater than 10 cm of thickness will help for maintaining the soil moisture. The study found that the limitation of using stem covering, as farmer only used dry straw and grass, and some areas also experienced less rainfall in a year (6–8 months or less) as a result of lowering the productivity.

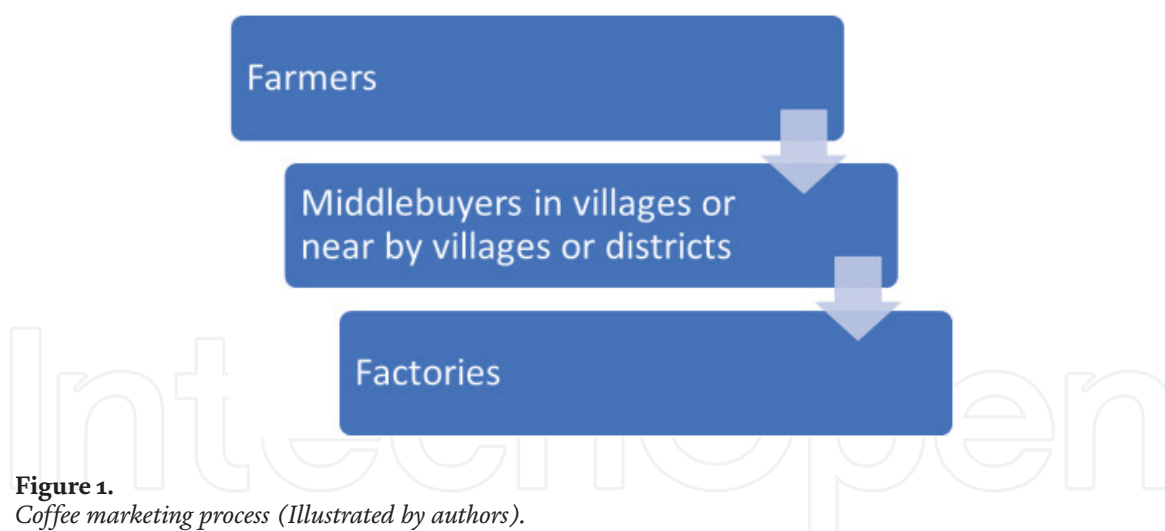
The weeds and prevention, a fourth step of coffee plantation is to get rid of weeds, farmers are sometime using shovel, knife, or cutting. However, the most used to deal with this problem is chemical or pesticide with the exception of the coffee farm of coffee producer cooperative (CPC) which has strict control of chemical to meet the criteria of the organic certified product. Diuron is one type of pest control, which farmers used only 200 g for 400 m<sup>2</sup> of cultivated land. Another option for the farmer is pesticide spray, where farmer has to spray 50 cm away from the plant in order to save the coffee plant. The study showed that farmers, particularly the CPC members are more likely to use natural method such as knife and shovel to deal with weeds and pest instead of spraying pesticide or chemical. Household labors are more likely to engage in this process more than another process. Fertilizer is one of the most important step of coffee nurturing. To fertilize the coffee plant, it is required to make the hole around the coffee plant about 5 cm in depth and mainly use the radius of the canopy of the plant and cover the soil with dry straw. Fertilizing in the first to the third year will be much effective. Manure is the best fertilizer used with the proportion of 100–350 grams per time, fertilize three times a year during these consecutive years. Thus, the study noted that 42.46% of coffee producer used organic fertilizer, the coffee shell, and manure. On the other hand, the other 57.54% do not use organic fertilizer at all because they take only red cherry beans [50].

Coffee pruning is a last important step of coffee nurturing. The productivity of coffee depends on pruning. Without pruning step, the coffee plant can produce a large number of beans, but the year after the production and quality will be decreased because the roots, stem, and branches are already used to produce the seeds. The study recognized that most coffee producers avoid the pruning step as a result of unstable productivity, plenty of older coffee plant were left behind, some dried, and damaged.

### 6.3 Harvesting

Harvesting is an important process of coffee commercialization to add value to the coffee product and preparation for commercialization. As usual, the coffee cherries will begin to ripen in about November until April. To collect or harvest the





**Figure 1.**  
Coffee marketing process (Illustrated by authors).

best quality of coffee beans, it is to collect the ripened beans in the shade of orange to red. Green coffee beans should be avoided due to poor quality. By using large baskets tidying on the waist or hanged to the neck before, store it into the sack. This step is time-consuming, collecting coffee beans will need to collecting continuously about 3–4 times with a distance of about 20 days because the beans are ripened differently.

Post-harvest processing prepares important step to marketing. Most of the coffee beans particularly Arabica are sold in red bean after picking at the farmgate by the farmers. Processing of the red bean to dried one need facility including machine, that means another capital investment for this facility. The farmers who cannot afford this technique, thus prefers to sell red been. The CPC member groups have the opportunities to process the red bean before marketing at the processing houses. The processing of the red bean provides important procedure for the farmers to involve with difference commercialization process and have higher value added.

## 6.4 Marketing

Marketing of coffee product highlights the most decisive stage of coffee commercialization during post-harvest. The coffee farmers market their coffee product in various forms, including selling of red cherries, dried beans, milled beans, and roasted beans. Selling the production in the form of red cherry beans is most popular one, where the price is varied between 1500 and 3200 kip per kg. Some groups of farmers who have Robusta and Excellsa coffee prefer dried beans where they can keep for long time and expect to higher value. Recently, some of the farmers also roast their products to serve the tourists locally to get higher coffee value. The marketing circle starts with the farmers and continue to a middleman, and then exporter or factory (**Figure 1**). The middle man will come to purchase coffee beans at the farm gate before processing and wholesaling to the coffee industry such as Dao Heuang coffee factory in Champasak province.

## 7. Impact of coffee commercialization

### 7.1 Employment opportunities in coffee production

Coffee production provides main source of employment opportunities for local people. The employment opportunities take four categories including daily wage,

monthly, payment under contractor, and payment by product. Farmers normally get daily wage for harvesting, weeding, and applying fertilizer activities. Monthly paid on the other hand only for harvesting task, and payment under contractor is applied for weeding work. In addition, farmers get daily wage paid for harvesting based on product of coffee bean's weight, where they could get 1 kg of red cherry is about 800–1000 kips. Laborers prefer to receive payment based on the weight because they earn better than a fixed wage which daily fixed-wage is only 30,000–50,000 kips per person. A laborer can pick about 100 or 200 kg, which is approximately 100,000–200,000 kips per day. The payment is higher and competitive during the harvesting. The extra laborer is needed for harvesting and pay by weight during booming of red cherry coffee. Besides, some farmers pay monthly wage only for harvesting, especially in Sedkhod, Phorkhem, and Dong villages under the payment rate of between 700,000 and 1,000,000 kips.

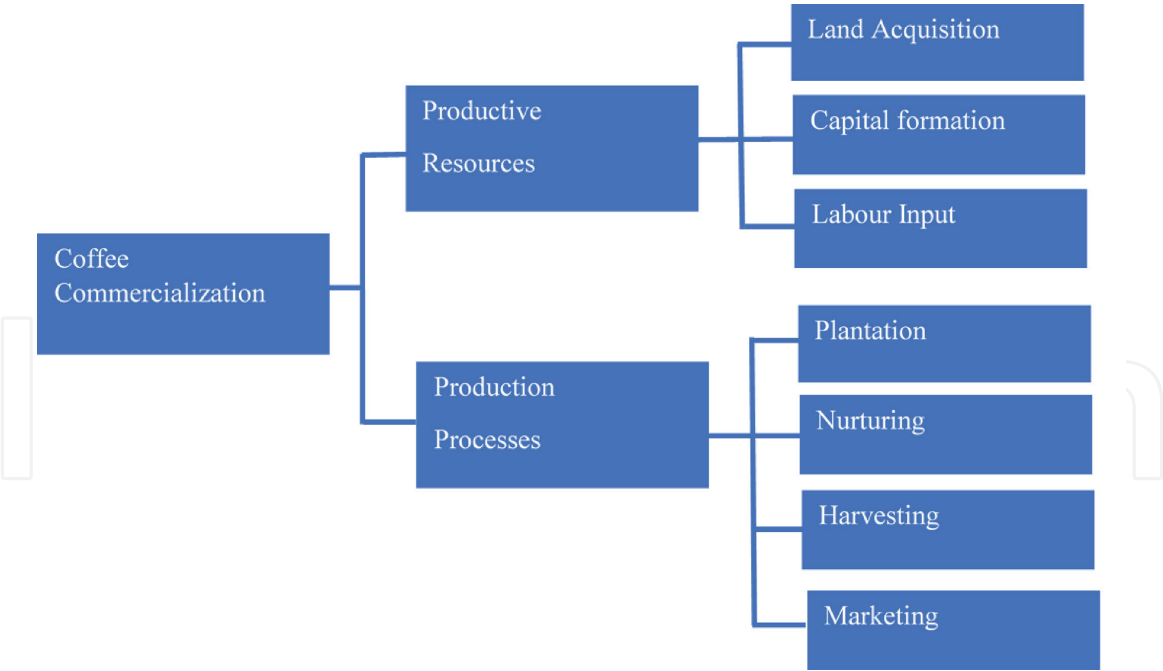
In short, coffee cultivation creates employment opportunities and address seasonal unemployment issue for people in the village, nearby villages as well as people from other districts or provinces, especially during harvesting, weeding, and apply fertilizer in different seasons. It is evident that coffee provide direct jobs to local people and a complementary source of income for them. In fact, the coffee production absorbs seasonal unemployment laborers of agricultural sector, where the farmers can work during the post-harvest season of agriculture.

## **7.2 Women's participation in the process of coffee production**

Coffee commercialization is gender-related working culture that required women participation in farm production in particular work positions including seedling, weeding, fertilizing, harvesting, and processing. Women take most part of the seedling work including prepare seed box and nurturing. Weeding of coffee trees by using traditional tools such as knife to clear grassed out of farm is also carried out by women, while men use machine grass cutter. The coffee cultivation activity requires weeding several times throughout a year which provide employment opportunities and wage earning for women. Women also take part in another activity of the farm, that is fertilizer application. Women participate in harvesting, particularly for Arabica Cartimor coffee which requires soft hands to take care of the young cherries while picking. Women are good at these techniques. The coffee cherry of Arabica variety is not ripened at the single time. Therefore, only red ones are allowed to be plucked. During the booming of the red coffee, cherry need to be picked; otherwise, the red cherry falls and wastes.

Although, women and men spend similar time-use in coffee cultivation together, some tasks of coffee cultivation are gender-based. The tasks require energy (e.g. weeding by using the machine, fertilizing, pruning, washing, and heavy lifting) are men's task, while women take the time-consuming and light work such as harvesting, manual weeding, and sun drying. Furthermore, labor hired on coffee cultivation reflects gender role. There is more female labor than male labor on both manual weeding and harvesting tasks. The harvesting and manual weeding are considered as time-consuming work and tedious tasks. Men prefer to do a task that wastes energy in a short time.

The gender and seasonal employment reveal that gender of hired labor is significantly correlated with employment activity including wage, work hour, benefit, working day, and worker with children at work at the 0.05 and 0.01 level. Female workers also mainly involve in the processing factory for the task of filling and packaging coffee sack. In conclusion, women's role in coffee commercialization is involved with the household or company production levels, particularly for the light and time-consuming works (**Figure 2**).



**Figure 2.**  
*Coffee commercialization (illustrated by authors).*

## 8. Concluding discussion

Various grounds of literature review provide agricultural commercialization in different aspect, not least commercialization is shifting from subsistence mode of production toward more market-based cultivation of cash crops, more specialized production, and targeting both domestic and international markets. There shows of the nexus of commercialization and agriculture which aims at sales, profit maximization, and meet the needs of customers [8]. To satisfy those conditions, the agriculture needs to be market surplus, productive resources, and value chain added [41]. Agricultural commercialization has to rethink and reconstruct how to meet the need of both food security [5, 13, 36] and gender role in agricultural commercialization [13, 26, 40]. A challenge is to create most favorable conditions for agricultural commercialization to meet the need of food security.

Agricultural commercialization of coffee production highlight factors that plays decisive role in the commercialization processes. Productive resources include land acquisition, capital formation, and labor input constitutes the fundamental elements of the process. Land acquisition including ownership, usage, and benefit form the background of the commercialization. Without these resources, the process might not be fulfilled. Thanks for the farmers who could take forms of land uses such as *Chapchong*, inheritance, and purchase the right to use [42]. Capital and labor also contributes significant impact and direction on commercialization in which they could facilitate and secure the process.

In this context, coffee commercialization process takes form of plantation, nurturing, harvesting, and marketing. Plantation needs detail support of techniques on how to apply to different contexts of coffee plantation including soil, seed, and fertilizer. Nurturing requires special treatment in order to get fruitful harvest. Harvesting is marking as one of the process to indicate of the success of the farm. If the yield is fruitful, this marks as a sign of production surplus for home consumption to secure food supply and ready for-profit maximization. Finally, marketing is crucial indicator of the commercialization, of how the product is selling and how they can maximize profit.

This chapter attempts to highlight some dimensions of gender working culture, particularly women participation in seedling, weeding, fertilizing, harvesting, and processing. In general, it is assumed that women have equal role, time use, and benefit from work. In fact, to create gender equality is not an easy task. The most important function is to share and distribute the benefit from coffee commercialization. Gender role on commercialization is thus needed to equally distribute the task and benefit from the process. On the one hand, the commercialization has to maximize profit as much as possible to women who are considered as the most effective household financial manager. Therefore, the commercialization of coffee is a complex set of factors, agencies, and mediators to facilitate the process.

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