

Analysis of Specialty Coffee Business Performances: Focus on Management of Farmer Organizations in Indonesia

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Received: 17 October 2017 / Accepted: 21 July 2019

Abstract

Indonesian specialty coffee farmer organization is established by Government of Indonesia (GoI) for managing coffee production, processing, and marketing in farmer group level. Through farm-level industrialization program, the GoI supported coffee farmer organizations in several specialty coffee producing regions for increasing farmers' livelihoods. These farmer organizations are encouraged to produce higher quality of coffee in term of specialty coffee and link directly with buyers. Therefore, the farmer groups would obtain the profits that can be shared to the members of farmer organizations. This research aims firstly to understand the performances, challenges and risk management of specialty coffee business on farmer organizations level across Indonesia, and secondly to understand the profits gained by specialty coffee farmer organizations. The research has been conducted in several specialty coffee producing regions, including Bali, East Java, Flores and South Sulawesi. The case study and ethnography were carried out by collecting data through direct observation and in depth interviews. Number of respondents were 27 producer organizations which were selected by judgement sampling method. The data were analyzed by using descriptive method and profit analysis. The research results show that alternative model of value chain interventions (VCIs) is required for improving the profits of specialty coffee business on farmer organizations level and farmers' livelihoods. Maximization the VCIs to increase the benefits for farmers, the VCIs should be conducted by incorporating both off-farm and on-farm aspects.

Keywords: Coffee, processing, farmer organization, profit, livelihoods, value chain intervention

INTRODUCTION

Indonesia is the world's third largest coffee producing country, after Brazil and Vietnam. In 2017, the total acreage of Indonesian coffee plantation was approximately 1.23 million hectare with total production of both Arabica and Robusta coffee reached 639,305 tons (Ditjenbun, 2016). There are several regions across Indonesia that known for producing high grade or specialty coffee. These include Northern Sumatera covering Aceh,

Mandailing, and Lintong, East Java covering Kayu Mas, Dampit, and Belawan, Bali (Kintamani), Flores, and Southern Sulawesi covering Kalosi and Toraja. In these areas, coffee is traditionally cultivated by small-holder farmers.

In Indonesia, coffee is an important source of national devisa and smallholder farmers' income across Indonesia coffee producing areas. According to Ottaway (2007), it represented approximately 0.6%

of national income. In recent years, the value of coffee and cocoa exports combined was below 10% of agricultural export revenue. According to Ditjenbun (2016), coffee is the main source of income for about 1.2 million smallholder farmer that rely on coffee. Hence, this has led the Government of Indonesia (GoI) to establish several national programs to support coffee development.

In the context of its trade, coffee business in Indonesia still depends on the dynamics of global coffee market as a result of market integration into international trade system (Hallam & Rapsomanikis, 2008; Dradjat, 2011). Consequences of that are fluctuation on coffee prices and uncertainty of coffee market conditions, which affecting the profits perceived by coffee actors, especially farmers (Aklimawati & Wahyudi, 2013). In addition, changes in the dynamics of coffee market increasingly urge the farmers to pursue consumers' demands. Nowadays, consumers have become demanding particularly in consuming coffee. Hence, not all of these behaviors can be fulfilled by farmers. Based on this case, Mawardi *et al.* (2006) stated that coffee market behavior is taking a part of buyer's demand or can be mentioned as buyer market-driven. To overcome those conditions, farmer organizations should be strengthened in order to run a business and establishing partnerships with private sectors. However, the existing organizations still point out a weak bargaining position in marketing coffee products. Empowering organizations both the role and function are needed to be implemented relating to do business activities. One of this actions is building up coffee processing units (*unit pengolahan hasil*, UPHs) which are managed by farmers themselves. The establishment of it could improve and uniform the coffee quality produced by farmers considering that the farmers have usually produced coffee in the form of unsorted-coffee bean.

Recently, farmer-managed UPHs are more commonly found across the coffee producing regions of Indonesia, particularly in Arabica coffee producing areas. The UPHs are mainly established by government agencies to support village-level agribusinesses. The UPHs are also established aiming for increasing farmers' livelihoods. UPHs, along with cooperatives, are established to provide benefits to farmers by improving quality and direct linkage with buyers. However, the various forms of support provided by the government, development agencies, private sector and Non-Government Organizations (NGOs) across the coffee-producing regions culminated in different levels of performance among specialty coffee farmer organizations across Indonesia. In addition, each specialty coffee farmer organization faced various challenges and management risk. These have influenced on the profits resulted by coffee processing units. Hartatri & de Rosari (2011) revealed that there are several weaknesses of coffee selling through UPH. Firstly, UPHs require large capital to purchase red cherries coffee from farmers. Secondly, UPHs find difficulty to purchase coffee from the farmers because of the coffee saving culture owned by the farmers, particularly in Flores. Therefore, this research is aiming to (1) provide a better understanding of the performance, challenges and management risk of specialty coffee business in farmer organization level in several specialty coffee producing regions; and (2) to understand the profits gained by specialty coffee farmer organizations..

MATERIALS AND METHODS

Location and Time

The research has been conducted in several specialty coffee producing regions from 2013 to 2014, such as (i) Bangli District, Bali; (ii) Bondowoso and Situbondo Districts,

East Java; (iii) Ngada and Manggarai Districts, Flores; and (iv) Enrekang Districts, South Sulawesi. These locations were selected considering that all of them have already established coffee processing units (UPHs) and performed collective action on processing and marketing. On the other side, all of these coffee producing regions also have become selected locations in introducing social capital model namely mediated partnership model (MOTRAMED).

Data Collection

Survey method was applied to collect primary and secondary data. In collecting the data, direct observation and interviews were carried out. Direct observation was intended to understand the practices of UPHs on sourcing red cherries coffee from their members. Meanwhile, in-depth semi-structured interviews were organized by using questionnaire for compiling information and primary data directly from key informants. Besides of survey method, ethnography approach was implemented in gathering the data. In addition, ethnography was implemented by interacting between the researchers and community to study cultural practices (Skukauskaitė, 2012; Adeyinka-Ojo *et al.*, 2014) of post-harvest handling and coffee processing in particular group of UPHs. This social approach was intended to guide the researchers in drawing up conclusions of the research. The primary data in this research includes cost of coffee processing (such as for purchasing, labor, loan interest payed by UPHs, fuel, transportation, buying supporting material/e.g. sack, stationary, depreciation), coffee prices (highest, average, and lowest prices), coffee quantity, income from coffee selling, buyer, and characteristic of farmer organizations. Then, the secondary data were in the form of financial reports of farmer organizations.

Sampling Technique

Respondents in this study were determined by non-probability sampling approach using judgement sampling method. This method was used in consideration that selected respondents can represent the research population and provide information related to the research purposes (Asnur, 2010). The respondents were mainly key informants in fourth coffee producing regions which consisted of 8 UPHs and 1 MPIG (*Masyarakat Perlindungan Indikasi Geografis/Protected Geographical Indication Society*) cooperative in Bali; 7 UPHs and 2 MPIG cooperatives in East Java; 6 UPHs in Flores; and 2 cooperatives in South Sulawesi. Thus, a number of respondents of this research were 27 producer organizations.

Analysis Method

This research applied a case study approach by using quantitative and qualitative research method to explore and analyze the data, such as coffee business conducted by farmer group organizations, challenges, management risk of specialty coffee farmer group organizations. The combination both qualitative and quantitative research are intended to draw accurate and objective conclusions (Rianse & Abdi, 2009) regarding policies and interventions for strengthening coffee business management at the farmer organizations level. In analyzing the data, descriptive method was used to interpret primary data mainly in the form of qualitative data. The data were described into tables or charts, and reports to explain field phenomenon. Beside, the quantitative data were analyzed by using profit analysis which was led to understand the profits received by each specialty coffee farmer organization. The equation to calculate profits on specialty coffee business, as follow:

$$\pi = TR - TC$$

which is π as profits; TR as total revenue; and TC as total cost to produce specialty coffee. Using this mathematical equation, it can be known how much profits received by the farmer organizations in each regions.

RESULTS AND DISCUSSION

Indonesian Specialty Coffee Farmer Organisations

According to Indonesian Department of Agriculture (Deptan, 1997), farmer organizations were designed to serve as learning, cooperative, and production units, where the main activity of coffee farmer organizations in Indonesia is commonly to act as a conduit for government extension services. While government extension may have been the initial reason for formations of these farmer organizations, extension services were very rarely provided. BAPPEDA (2009) claimed that farmers supporting agencies, especially extension services, functioned poorly across the country, with low effectiveness in terms of coaching, support, and dissemination of technology. Therefore, the members of farmer organizations find difficulties to improve their knowledge and abilities in order to improve their bargaining power.

Based on field survey, there was no extension services which had been provided by the government agency at local villages in Ruteng since 2007/2008. It was the same conditions as happened in Kintamani. Extension services in that area were much less than in should be. These shortcomings have been exacerbated by a new system of agricultural extension across Indonesia, whereby all extension services (fisheries, husbandry, food crops, and plantation crops) have been centralized in a single agency as *Badan Pelaksana Penyuluhan dan Ketahanan Pangan* (BP2KP), with staffs expected to

master all commodities, despite their different sector backgrounds. In the past, there were specific extension agents for plantation crops such as coffee. In effect, the capacity of BP2KP staff to provide effective extension services depends on their enthusiasm and willingness to develop new knowledge. Thus, BP2KP staffs are rarely confident enough to transfer their knowledge to coffee farmers due to the lack of knowledge on coffee management. Further, this has impacted on the poor bargaining power of smallholder farmers and it has been identified in recent years as the primary cause of low farm-gate prices in Indonesia. As a result, farmer organizations were directed as a business units at the farm level to improve their profits gained in an attempt to cope with the challenges of trade liberalization.

Refer to Ditjen PPHP (2011) stated that there had been a rapid growth of UPHs established in the Arabica-growing regions of Indonesia. Between 2005 and 2009, the GoI established 40 UPHs for plantation commodities across Indonesia. The establishing program of farm-level industrialization in Kintamani aimed to increase the farm-gate price of coffee. Table 1 shows that the GoI has spent great deal of money in implementing its agribusiness development program across several specialty coffee producing areas in Indonesia from 2001 to 2014. This money was spent on buying coffee processing machines, providing technical assistances, extension services, and training. By looking at the social aspect, although this budget is provided by the government to establish business units at farmer organization level, it was not based on the farmers' needs, but it was shaped because of the government's program. However, this program also attempted to improve the social capital on the organization activities.

Table 1. Budget establishment of coffee processing units (UPHs) in several specialty coffee producing regions in Indonesia

Location	Number of UPH	Expenditure (IDR)
Kintamani, Bali	21	4.5 billion
Bajawa, Flores	14	250 million
Bondowoso, East Java	30	900 million

The sustainability and feasibility of the farm-level industrialization program were variously influenced by several factors, both internal and external. Theoretically, the internal factors influence the performance of the UPHs include: (1) the motivations of farmer groups' members to achieve the objectives agreed upon by the farmer groups (Umstot, 1988); (2) self-efficacy (Bandura, 1997); (3) interaction between farmer group members (Cartwright & Zander, 1968); (4) leadership approach (Gibson *et al.*, 1997); and (5) group norms (Gibson *et al.*, 1997; Umstot, 1998; Johnson & Johnson, 2000). The external factors include: (1) agricultural extension services providers as "expert power" and "informational power" (Johnson & Johnson, 2000); and, (2) village officials as "legitimate power" and "informational power" (Johnson & Johnson, 2000). Although these factors are mainly for general farmer organizations, but these factors are also can be referred to the factors influence on the UPHs' performance.

The results revealed that among Indonesian coffee farmer organizations, the internal factors suggested above mainly depended on the actions of the leaders of the farmer organizations; i.e., how the leaders articulated and communicated the message to their members played an important role in the farmer groups' activities. Good communication skills should be had by the leaders to more easily direct their organizations. This skills are needed to share information and knowledge such as coffee cultivation, price, market and business management to their members. According to the UPHs and cooperatives established by the GoI, the motivation of the UPHs and cooperatives' members was

significantly influenced by the involvement and attitudes of external agents including local governments, agricultural extension services, development agencies and village officials in the coffee producing areas. This proved to be the case in both Kintamani and Enrekang. In Kintamani, during the first ten years of the establishment of four pioneer UPHs, the government worked collaboratively with the Indonesian Coffee and Cocoa Research Institute (ICCRI), providing extension services and supervising the coffee processing activities. This action was also the first of research trial in introducing MOTRAMED. The model has brought success story in increasing coffee proces and quality at the farm level. In addition, the image of Kintamani coffee became known in both domestic and international coffee markets. However, at the end of this ten years period, the government reduced its attention to these UPHs because they were considered to be independent. From then on, the performance of these UPHs decreased significantly due to several issues, including social issues among the members of UPHs and economic issues. The social issues were included poor sense of belonging of the members on running coffee business, low awareness of the members on the organizing coffee processing units, and conflict of interest between the administrators and the members regarding the government's assistances. They assumed that the processing facilities was addresses only for the administrators. Meanwhile on the economic issues, its factors included lack of capital and bad debt expense by the buyers. It resulted the UPHs could not fulfill working capital on running their coffee business. Furthermore, two UPHs were inactively processing coffee in 2013.

In Enrekang, local processing and collective marketing activities were still being implemented by the cooperative in Benteng Alla Utara village due to the significant role played by the chief of the village in accessing the

global market. Through the role of the chief in the village, the smallholder farmers could be convinced to change their attitudes towards selling coffee from selling semi-dried parchment to red cherries coffee. It assumed that social norms in that coffee producing region are still very strong in changing the behavior of the farmers and facilitating cooperation among of them to organize their activities and gain mutual benefits. In this case, strong social capital is a necessity in empowering farmers to improve their economic household condition and ultimately alleviate poverty. Social capital become an intangible asset of farmer organizations to build a social network and conducting a collective activities for developing their business (Syahra, 2003; Wuysang, 2014). Based on this field phenomenon, the implementation of value chain interventions (VCIs) in Indonesia was also influenced by the passionate contribution of the heads of farmer groups, village officials or influential people domiciled in the particular regions. Therefore, the organization of a cooperative is less effective than an individual, and that a private operator (i.e. an individual) could be a more sustainable business entity because the sustainability of cooperative highly frequently depends on the contributions of several external actors. The involvement of other actors in influencing farmers, which is key stakeholders such as government officials, public figures or other influential people, have important position to organize an activity being successful. This influence have been related to becoming of farmers' attitudes, so they are motivated to take action and subsequent change their behaviors (Iqbal & Sumaryanto, 2007; Indraningsih, 2011).

Coffee Farmer Organizations Activities

Understanding coffee processing business activities, including costs is important

because coffee processing costs can be used as one of the efficiency indicators. This research also aimed to explicate the production activities of coffee farmer organizations, in their responsibility as managers of local processing units, in an attempt to assess whether this presents a feasible model for village-level coffee development in Indonesia. Through profitability analysis, it was known the profits gained by the organizations and financial advantages in conducting collective action, particularly in the processing unit and marketing. This research documented the coffee processing activities of these organizations, as part of a farm level industrialization agenda established by the government, across Kintamani, East Java, Flores and Enrekang.

Table 2 shows that in gross terms, farmer organizations in Enrekang produced higher profits compared to farmer organizations in other regions. However, UPHs in East Java appears to be the lowest operating ratio compared to the other regions, followed by Flores, Enrekang and Kintamani. The higher operating ratio indicated that operational costs incurred by UPHs for processing coffee was high, so there was a dissipation on certain financing spent by UPHs. By looking at Table 2, the operating ratio on the coffee processing units in Bali was more than 100 percent, but the other regions did not exceed of 100 percent. Therefore, the UPHs in Bali were meeting a decrease in financial performance or it could be mentioned as a deficit. The lowest operating cost reflected on UPHs in East Java mainly due to farmers in East Java produced semi-dried parchment in which producing semi-dried parchment coffee required lowest processing costs, particularly fuel and labour costs compared to other regions. Moreover, the UPHs expended low transportation costs because buyer (a Surabaya-based exporter) paid the transportation costs.

Table 2. Profit analysis of coffee processing at farmer organizations level across specialty coffee producing regions in Indonesia

Production structure	Bali (Kintamani)	East Java (Bondowoso)	Flores (Bajawa)	South Sulawesi (Enrekang)
Production (average per UPH per year)	21.25 tons (green beans)	3.8 tons (green beans)	7.56 tons (green beans)	9.95 tons (green beans)
Product type				
a. Semi-dried parchment (%)	0	93.72	0	0
b. Dried parchment (%)	94.12	0	91.11	0
c. Green beans (%)	5.88	6.28	8.89	100
Red cherries buying price	5,750/kg	5,340/kg	4,750/kg	6,1310/kg
Selling price green beans coffee, IDR	35,000/kg	40,800/kg	50,000/kg	54,804/kg
Total expenditure for coffee, IDR	712,500,000	49,250,000	188,750,000	365,483,169
Fuel costs, IDR	20,632,500	5,138,937.5	11,281,875	10,584,662
Transportation costs, IDR	850,000	135,000	0	30,121,000
Labour costs, IDR	18,500,000	8,775,000	34,106,250	62,331,000
Bank interest charges, IDR	23,000,000	13,770,000	1,137,500	64,730,729
Other costs, IDR	630,000	311,250	1,162,500	0
Total production costs, IDR	776,112,500	77,380,187	235,275,625	533,250,560
Total income, IDR	756,250,000	213,250,000	409,493,750	735,812,843
Profit, IDR	(19,862,500)	135,869,812	174,218,125	202,562,283
Operating ratio	102.63%	36.29%	57.46%	72.47%

According to the profits received by UPHs, the UPHs in Enrekang gained a higher profit than the other regions because of the high price of coffee paid by the buyer. The high farm-gate price obtained by farmers in Enrekang mainly due to differences in the price negotiation process with the main buyer (a Makassar-based exporter) commenced between one and two months before the harvest season, while in other areas price negotiations commenced when the UPHs had almost finished their coffee processing activities. Thus, the farmer organization in Enrekang could create its plan for processing activities. This increased the efficiency and the profits gained by UPHs in this region. In addition, the coffee products produced by the farmer organization in Enrekang were relatively higher price than the products produced by farmer organizations in other regions. This was perhaps because the higher competition among buyers in Sulawesi area, and the cooperative in Enrekang produced green beans coffee whereas other farmer organizations produced both semi-dried and dried parchment, which may have meant that the value-added of green beans was higher than that of semi-dried and dried parchment. On

the other hand, Table 2 shows that the bank interest charges paid by the farmer organization in Enrekang were also the highest due to this particular farmer organization's lack of access to subsidized government finance, whereas farmer groups in other regions have more access to finance that supported by local governments. The cooperative in Enrekang accessed the loan by using the head of cooperative's document assets (land certificate) as collateral, and so it may be considered a more sustainable model in the long-term as it is financially independent.

Labor costs in the coffee farmer organizations identify the contribution of the farmer organizations in providing local off-farm employment. The labor were employed in the coffee processing units across Kintamani, East Java, Flores and Enrekang. Labor costs in Enrekang were the highest of the areas because coffee were sorted before selling to the buyer (Campos, coffee roaster company based in Australia), while in other areas, coffee were not sorted. The price certainty from buyers in Enrekang and the direct relationship with the roaster also influenced the labor used by the farmer

organizations; without price certainty labor may be reduced to minimizing risks at the expense of quality. In this case, price was to be dominant factor in influencing the farmers to produce high quality of coffee through sorting activities. The difference in price between sorted coffee and unsorted coffee could motivate the farmers to take more effort in processing coffee into a high quality product. On the production structure, labor cost constitute the biggest expenditure after the purchase of raw materials of coffee, so the farmer organizations should arrange an appropriate production plan in order to prevent incur losses (Aklimawati, 2017).

Coffee Farmer Organizations Challenges

Recently, community-based economic development organization through downstream program still encounter many obstacles in its development due to the lack of establishment of supporting industries, such as raw material suppliers. These industries are required to involve in producing raw materials which can be supplied to the core industries. In providing raw materials of coffee, there are various challenges to produce high quality product, in terms of production, agricultural institution, and other social issues. In the context of the institution, challenges faced by farmer groups are relatively complex. Based on research results, farm-level industrialization has encouraged farmer groups to conduct product upgrading of full-washed and wet hulled coffee rather than dry processed coffee, and has linked farmer organizations with lead coffee companies for accessing the specialty coffee market. These organizations were encouraged to become viable business units, and to develop the farmers entrepreneurship skills. However, these skills were mainly developed by farmer organization leaders with limited contributions made by other members. The majority of farmers only

play a role as suppliers of red cherries coffee. Furthermore, as the implementation of upgrading activities was mainly conducted by their leaders, it was only the running of the UPHs required particular technical and entrepreneurship skills. However, the responsibility of the UPHs was confronted with numerous contradictions and challenges. Many of the UPHs did not take the form of farmer cooperatives or collective businesses, but were essentially businesses managed by their leaders and their leaders' families with leaders acting as entrepreneurs. The system applied by most of the coffee farmer organizations, where red cherries were purchased from farmers, forced the leaders to essentially act as coffee traders. Of the 24 active UPHs in Kintamani (Bali), 17 UPHs were involved in purchasing red cherries, whereas the remainder played the role of marketing agent for the smallholder farmers. On the other regions, of the two active cooperatives in Enrekang, one of them played the role of marketing agent, while the other purchased red cherries coffee. Another indication that the UPHs functioned as individual businesses was that no profits were shared among members of the farmer groups. Out of nineteen farmer groups surveyed across Kintamani, East Java, Flores and Enrekang in 2013, none of them shared the profits of their coffee processing activities with members of farmer organizations or farmers selling coffee to UPHs. Instead of sharing with members, the profits were prioritized for building working capital for purchasing red cherries coffee the following year. As a result, the majority of smallholder farmers only enjoyed benefits in the form of improved red cherries prices. Further, this has led the farmers' members to not have sense of belonging of the UPHs, so they will do not pay much attention about the performance of UPHs.

However, the upgrading activities conducted by coffee farmer groups that purchased red

cherries needed a great deal of money to meet processing costs. Because the farmer organizations had limited working capital and limited access to finance, as noted above that the heads of the UPHs especially in Enrekang had to use their own assets as collateral when accessing loans from commercial banks, and these loans had relatively high interest rates. Therefore, the farmer organizations, particularly the leaders of the farmer organizations, were in effect conducting a high risk business, however, these risks were not shared by members of the farmer groups. On the other hand, when the farmer groups earned high profits, it is highly likely that only the leaders and their families enjoyed the profits of the VCIs. Therefore, the model of VCI established by the GoI effectively encouraged smallholder farmers to become involved in relatively high risk, small scale businesses. It means that collective action implemented in the model was not matching with the original concept of empowerment model. In the original concept of that model, UPHs were functioned to process and sell the coffee collectively, and do not intend to buy red-cherries or semi-dried parchment coffee from the farmers. Due to this high risk business, during the implementation of farm-level industrialization across coffee producing regions, several coffee farmer organizations collapsed. For example, in 2013, 11 of the 35 coffee farmer organizations in the Kintamani (Bangli and Badung districts) ceased actively processing coffee. There are six key reasons for these failures. First, the leaders of the farmer organizations had low entrepreneurial, managerial and marketing skills. These skills played an important role in managing the organizations and businesses. Thus, if more leaders of farmer groups acquire entrepreneurship skills, the likelihood of business survival would be greatly increased. Second, the farmer organizations had limited access to financial services,

a situation exacerbated by the slow turnover due to the long time required by farmer organizations for producing fully washed coffee (this contrasts with relatively quick turnover for trade in lower quality, unsorted coffees/*kopi asalan*). Third, the high level of competition between farmer organizations and the private sector forced farmer organizations into difficulties in getting raw material of coffee. For example, in 2012, several farmer organizations, (such as those in Belantih village), offered a higher price in order to purchase larger volumes of coffee in an environment of high competition with other UPHs and larger local traders in the region (such as PT. TAM). Fourth, UPHs' high processing costs (and low efficiency), fluctuations in the global coffee price and slow turnover resulted in financial losses. This was also caused by the excessively high prices offered by the UPHs in 2012, which led the UPHs to become inactive in 2013. Fifth, it is highly likely that the advantages of farm-level industrialization will only accrue to leaders of farmer organizations, and this has exacerbated social concerns amongst members. In many cases, members of UPHs expressed jealousy and resentment towards their leaders and their families, which ultimately have caused the UPHs to collapse. Take for example, the social issues in Manggarai related to the farm-level industrialization program. Two UPHs based in Colol and Cumbi collapsed due to the jealousy of the UPHs' members who claimed that the coffee processing machines donated by the government were not being used to meet the needs of the UPHs, such that the government removed the processing machines from the village to avoid the growing social unrest. By 2013, only 3 UPHs were still actively processing coffee in the Manggarai district. This dissension was mainly caused by the UPH leaders' poor communication skills, and the lack of transparency of all of the farmer

group activities, particularly management of the budget. Transparency was important because the main activities of these organizations were not only to facilitate extension services and the production of high quality coffee, but also to run the coffee business. Therefore, transparency of farmer group's management became a sensitive issue for all of the members of coffee farmer organizations. Sixth, the UPHs did not develop appropriate risk minimization tools and were exposed to unsustainably high risks in relation to price fluctuations, price certainty and quality. This is a key concern across all the UPHs.

It is highly likely that farm-level industrialization is still far from efficient; evident in the fact that many of the coffee processing machines were unused. Across Kintamani, East Java and Flores, many coffee producing machines such as pulpers, washers, graders, and hullers, were not being used by the UPHs. The uselessness of these machines was attributable to the lack of understanding, sensitivity and willingness towards the actual needs of farmer organizations. Another problem faced by farmer group was social dissensions, jealousy, and the unclear status of UPH's leader. Take the case of one UPH in Kintamani, *Lembu Nandhini*, had never used the coffee processing machines since the first machines were provided by the local government in 2012. Furthermore, one UPH member in Kintamani (*Sari Murni*) revealed that the machines provided by the government to this UPH had not been in use for two years due to the significantly reduced quantity of coffee produced by the farmers. Almost all of the smallholder coffee farmers in this UPH had converted their coffee crop into citrus because of the relatively high citrus prices compared to coffee price since 2012. The farmers assume that the income earned from citrus provides a quick capital return compared to coffee income. Therefore, the farmers have been more focused on managing their citrus

crop than that of coffee farming. Thus, before providing coffee processing machines, the farmer organizations that are part of the program should be selected carefully to maximize the use of the coffee processing machines and maximize the results of the program.

Risk Management

On managing agricultural business, smallholder coffee farmers face various risks including the risk of pest and disease, labour risk, financial risk, price or market risk and natural event risk (Ejigie, 2005). The cultivation of other crops and a diversified livelihood portfolio could potentially reduce the farmers' risk. According to Ellis (2000), the diversified planting system mostly applied by smallholder farmers in developing countries minimizes the risk of attacks by pests and diseases. In general, diversified plantings in Indonesia appear to improve households' food security, and many Indonesian smallholder coffee farmers also cultivate food crops, including rice, cassava and corn. Coffee production levels vary considerably each year due primarily to rainfall fluctuations, and can be negatively affected by drought, as well as by excessive rainfall during flowering affecting fruit set. The results reflect that smallholder farmers, UPHs and cooperatives also face labor risk, besides production risk influenced by climate change. In the coffee harvest season, it is often difficult to hire temporary labor for picking cherries and processing coffee, since these labor demands are highly seasonal, will vary each year depending on weather events and are difficult to predict. These difficulties, by extension, increase the coffee picking and production costs. For example, in Kintamani in 2013, the cost of labor during the harvest increased approximately up to 75 percent to such an extent that farmers' coffee growing profits were significantly affected.

In addition, a further risk that coffee farmer organizations face is related to labor health and safety. For example, the cooperative in Enrekang frequently picks up red cherries from farmers' houses located in more remote village by motorcycle. Because infrastructure such as roads and lighting are limited, the product upgrading activities, as part of VCIs can prove high risk for farmer group laborers' in Enrekang, particularly in Benteng Alla Utara village. Moreover, this cooperative frequently picks up the red cherries in the evening. For this reason, workers at the UPH processing unit have to work overnight since coffee has to be processed immediately after harvesting to maintain quality. The high volume during peak periods, the uncoordinated nature of harvesting, and limited infrastructure requires laborers to work through the night, contributing to labor shortages at the UPH. While scheduling the coffee harvest during the peak season may partially address the labor problem, it is unlikely to solve it completely. From another perspective, the implementation of farm-level industrialization has increased employment in the coffee-producing villages. On average, the research found that 12 laborers were employed in each of the processing units, and this off-farm employment generation could be considered as positive element of rural livelihood diversification. This would be true as long as it is more productive to employ this labor in such processing activities rather than on-farm in productivity improvements. This labor issue should be resolved in the interests of optimizing the level of farm industrialization. Producing fully washed coffee exposed UPHs to greater risks of quality decline, especially when the mountainous regions are exposed to highly variable rainfall patterns. Thus, the long drying process will lead the green beans to turn white; this influences the both physical and cup taste qualities. Minimizing the risks related to quality play an important role for maintaining and sustaining the coffee

prices and coffee processing activities. Some of the UPHs had to borrow large amounts of money from a commercial bank to purchase and process this particular coffee. However, the global coffee price constantly fluctuates. Therefore, when the global coffee price decreases, UPHs are prone to loss, a dilemma exacerbated by the very limited promotion skills of the Indonesian coffee farmer organizations, which often depend heavily on the local government and other actors to market their coffee (and whose knowledge of specialty coffee markets is also limited).

Ultimately, the UPHs' limited skills pertaining to risk management have exacerbated their performance and that of the cooperatives. While these skills are perhaps the most important aspect of the coffee trade, risk management is the important aspect that frequently ignored by VCIs in the Indonesian coffee sector. Risk is mainly influenced by the buying price of red cherries, the selling price of coffee, a fluctuating global coffee price, and the challenges of quality control for a specialty product. Well, UPHs and cooperatives have to compete with collectors and other private sector when purchasing coffee from farmers. In supplying that raw materials, it indicates the market structure in this region tend to be a perfect competition market. There are many producers and buyers on the market that conducting the transaction and the products are mostly homogeneous. Several UPHs and cooperatives increased their buying price for red cherries coffee in order to process a greater volume of coffee. However, the production capacity of these UPHs was relatively low due to limited access to finance. The UPHs' and cooperatives' incomes were minimal since they had limited opportunities to purchase large volumes of red cherries, due to limited working capital and farm-level supply constraints. For example, limited financial access resulted in farmer groups in East Java (Kayumas, Situbondo district and Bondowoso

district) losing their opportunity to purchase higher volumes of red cherries coffee, while a nearby estate plantation (PTPN XII) had more finance to purchase the coffee, and to even provide pre-harvest credit to farmers through collaborating with local collectors. Furthermore, in Flores, the implementation of farm-level industrialization faced difficulties arising from the poor availability of red cherries. On Flores, where the penetration of banks is still limited, farmers tend to store dried green beans (*asalan*) or dried red cherries as a form of household savings that can be accessed to pay for their children's education fees and to meet cultural ceremonial needs. It is found that there are some of farmers who was not engaged the UPH due to saving habit and access to capital loans. These finding were confirmed by the information of the farmers who explained that they did not have saving in the future since they sold fresh red cherries. Another reason is the UPH could not provide money for loans, whereas other village collectors would provide farmers with credit prior to the coffee harvest season. This, however, would require more sophisticated risk management by the UPHs and cooperatives because they were borrowing money from commercial banks. Unfortunately, the low competency of the heads of UPHs and cooperatives to manage the coffee business and associated risks saw some UPHs and cooperatives descend into bankruptcy.

It has been argued by Kula *et al.* (2006) that weak regulations and poor operations conducted by local government were factors limiting investments in upgrading and increasing risks and transaction costs. In the Indonesian coffee sector, the absence of government regulation of financial support for smallholder farmers, UPHs and cooperatives, has increased the risks these actors face when running coffee businesses. Moreover, many small local exporters in Indonesia have

gone bankrupt because they could not compete with the more efficient foreign coffee trading companies in the coffee business in Indonesia, such as Ecom and Volcafe.

Alternative Model

According to Slob (2006), farmers who did not process their coffee cherries only obtained 6.5 percent of the final retail value. Meanwhile, if farmers had access to the niche market, the smallholder farmers would obtain a higher percentage of final retail price and a higher farm-gate price. For this reason, the GoI encouraged the smallholder farmers, through a farm-level industrialization program, to improve the value added retained by smallholder farmers. Furthermore, the vast number of private buying and processing coffee stations stimulated competition between the coffee businesses at the farm level, which seemed to benefit smallholder producers through increased farm-gate prices. It also created some off-farm employment opportunities in the coffee producing areas. However, as already suggested, the UPHs and cooperatives had several weaknesses, and other coffee buyers, such as collectors, traders and processors, were frequently able to out-compete them through greater managerial and marketing skills and the ability to provide financial services to smallholder farmers. This resulted in the UPHs and cooperatives having lower competitive advantage compared to the private sector. This was one of the reasons why many farmers sold their coffee to collectors and other traders, rather than to farmer organizations, even though the UPHs and cooperatives' price was often higher than that of other buyers. Furthermore, the processing of coffee required a great deal of working capital to purchase red cherries coffee. In relation to farmer groups in Enrekang, the local government and finance institutions failed to provide

enough support to the cooperatives to implement farm-level industrialization. Thus, farmer groups had to extend credit to farmers so that they could fulfill their basic needs. As a farmer in Tarian village gave information that the weakness of selling red cherries coffee to the cooperative in Benteng Alla is that farmers cannot receive money on the day that red cherries are delivered.

According to Murekezi *et al.* (2012), private processing stations in Rwanda were able to produce better quality coffee than the cooperatives. In Indonesia, centralized mills in Aceh, North Sumatera, Toraja and Enrekang had more ability to control coffee quality than the coffee farmer organizations because the farmers were still not familiar with the full-washed coffee processing method. Coffee farmer organizations possessed lower skills when it came to producing and quality control compared to centralized private sector mills. In addition, the more complex, fully-washed processing method compared to the wet-hulled processing method induced some laxity in the coffee farmer organizations and exposed them to greater risks of quality deterioration when they did not strictly follow the procedures. In Flores, in a bid to reduce the possibility of low quality coffee, the government employed several site supervisors, with one site supervisor supervising two UPHs. This finding was based on interviewing with Ngada Estate Crops Agency in 2013. As the development program in Indonesia is highly likely to be influenced by politics, as the input of regional heads and political parties in certain sectors will influence local strategies and policy development, quality control conducted by site supervisors is at best vulnerable and at worst unsustainable. This may lead to the collapse of the coffee farmer organizations due to the low quality coffee produced by the coffee farmer organizations. In Kintamani, for example, when the government agency and development agencies reduced their supervi-

sion of the four UPH pioneers, the quality of coffee produced by the local farmer groups decreased significantly.

Closer relationships and collaboration between the coffee farmer organizations and the private sector in Indonesian coffee production should improve the capacity of the UPHs and cooperatives to control coffee quality. If accomplished, such collaboration should bring more benefits to the smallholder farmers and buyers, e.g., long term coffee business, a higher farm-gate price for smallholder farmers, and higher profits for both the farmers and the private sector. By extension, supporting the private sector with a farm-level industrialization program could increase the impacts of the farm-level industrialization program. Recently, increasing numbers of private sector organizations have established coffee processing units in several coffee producing regions. The local government of Bali has started supporting private sector organizations by providing coffee processing machines similar with UPHs managed by farmer organizations. The results suggest that these private sector actors have greater capacity to survive in the coffee business. Thus, the influence of value chain intervention may prove greater and more sustainable for smallholder farmers in the long-term. The dynamics of the global coffee industry have resulted in a shift in the system applied by UPHs in East Java. Initially, these UPHs were encouraged to produce green beans. However, since 2012, UPHs have been encouraged to produce semi-dried parchment due to the increasing demand for wet hulled coffee. This system has also been applied by 5 coffee farmer organizations in Buleleng district (Bali) since 2004. This indicates that there is an alternative way for UPHs to produce a different product, following the global demand for Indonesian coffee. Producing semi-dried parchment coffee requires less working capital due to its faster cash flow. UPHs that

produce semi-dried parchment are able to sell their coffee within 3 days whereas producing green beans coffee requires more than 21 days. However, although the profits of the UPHs might decrease, the risks involved in the coffee business would also decrease because the UPHs would not have to depend upon huge bank loans. The farmers also assumed that producing semi-dried parchment was classified as a medium risk business for the coffee farmer organization. Another perception of the farmers revealed that producing semi-dried parchment has more benefits than that of dried parchment. Moreover, the government supported the farmers with providing coffee processing machines. Thus, in cases where the working capital and risks are low, the business will be easier to run. As continuity is one of the important factors for small scale businesses like UPHs, involving them in high risk business renders them vulnerable to financial and social problems, particularly when the profits and risks are not shared equally by the members of the UPHs. Therefore, producing semi-dried parchment might be better for UPHs as they could reduce their financial problems. However, this seems that over time the systems applied by the UPHs tend to look more and more like the existing and traditional system anyway.

Another way to increase farmers' profits in producing specialty coffee, it will be possible to encourage farmers voluntarily entrust the coffee to their UPHs instead of selling the coffee to the UPHs. In turnover working capital, the members are motivated in gathering principal fund for processing their coffee. The UPHs shall produce and sell the coffee in the form of green bean as the higher value-added on that product than semi-dried or dried parchment coffee. The reward of the willingness of farmers to save their money as working capital of the UPHs is proportionally allocation of the profits from coffee sale according to their contribution. Thus,

the risk business regarding the financial support will be distributed evenly to all of the UPHs' members. Eventually, all of the members will gain more income and prosperous, not only the UPHs' administrators.

Value chain interventions through the implementation of a farm-level industrialization program have improved the value of coffee produced by farmers, which has increased the farm-gate price. However, farm-level industrialization has encouraged farmers to restrict their focus to off-farm aspects, while on-farm aspects are frequently neglected. In other words, some farmers are spending most of their time on off-farm aspects, i.e., processing coffee, and less time on on-farm aspects, a possible error in judgment that could lead to decreased coffee production in the long term. Therefore, although the coffee price is increasing, the volume of coffee production is decreasing, and this would not only impact on the farmers' and other actors' incomes, but would also influence the sustainability of the coffee business conducted by the UPHs. Moreover, the pest and disease attack, particularly berry borer and leaf rust across coffee producing areas in Indonesia is increasing. Further, this will decrease coffee production and quality. Thus, the implementation of farm-level industrialization must be conducted parallel with increasing coffee productivity activities if it is to improve the smallholder coffee farmers' profits. Increased productivity is achieved by providing regular and intensive training, extension services, and field schools; and by providing on-farm inputs such as planting materials, fertilizers and pesticides.

CONCLUSIONS

Farm-level industrialization has increased the number of coffee farmer organizations across Indonesia's coffee producing regions, which are often provided with coffee processing machines donated by the GoI.

The performance of the UPH/farmer organizations is influenced by the involvement and attitudes of external agents including local governments, agricultural extension services, development agencies and village officials in the coffee producing areas. There are several challenges faced by UPHs in Indonesia, including the low entrepreneurial, managerial and marketing skills of the UPHs' leaders, the purchasing coffee from farmers conducted by UPHs has forced farmers to run a high business risk. This mainly because the UPHs require high working capital, while the UPHs have limited access to financial, the high level of competition in buying raw material among farmer organizations and private sector has increased the production cost, members of UPHs expressed jealousy and resentment towards their leaders' and their families, and the UPHs did not develop appropriate risk minimization tools and were exposed to unsustainably high risks in relation to price fluctuations, price certainty and quality. The UPHs' leaders have limited skills on risk management. Therefore, providing training on risk management is also crucial to sustain the coffee processing units managed by the farmer organizations. The profit analysis of coffee processing unit runned by the UPHs and farmer organizations showed that the farmer organizations in Enrekang, South Sulawesi have gained the highest profits, followed by Flores, East Java and Bali. Meanwhile, producing semi-dried parchment coffee that conducted by UPHs in East Java has resulted lowest operating costs. This indicates that encouraging UPHs and farmer organizations to produce semi-dried parchment will be more beneficial for farmers.

ACKNOWLEDGEMENT

The authors would like to acknowledge to ACIAR that has provided the funding to conduct this research.

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