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Implementation of the empowerment model of female laborers on Arabica coffee processing industry in Bangli Regency, Bali Province

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Abstract---*The Model Analytic Hierarchy Process (AHP) selection of the female laborers' empowerment strategy at UPH which refers to the results of the SWOT analysis shows that strengthening the competence of women laborers' is the main priority of empowerment as a solution to the gap performance of female laborers' in the arabica coffee processing industry in Bali. Based on the model, the purpose of this research is to increase the capability of female laborers. The search for female laborers' empowerment needs using the method of appreciative inquiry, through (a) rapid research involving multidisciplinary teams; (b) in-depth interviews and direct observation; (c) Interactive Management sessions; (d) peer review. The main results of the implementation of strategies for strengthening female laborers capability in UPH Kintamani Indonesia are (a) achievement of capability outcome in technical and production management and processing, as well as in UPH institution management; (b) documents of infrastructure development needs in the UPH and roadmap of UPH development documents, SOPs (machine utilization and added value enhancements), and regulations on strategic partnership arrangements. Empowerment of female laborers in UPH Kintamani Indonesia needs to be continuously evaluated and the results are followed up to produce premium-quality Arabica coffee production processed following IG certification, supported by distinctive product design innovations to support business independence and partnership contract sustainability.*

Keywords---*arabica coffee, empowerment, female, laborers, product.*

Introduction

Coffee is one of the important export commodities in Indonesia. Currently, Indonesia ranks third as the largest coffee exporter in the world after Brazil and Vietnam. Coffee plants in Indonesia consist of several types, including Arabica Coffee, Robusta Coffee, and Liberia Coffee. The islands of Sumatra, Java, Flores, and Bali are the main regions of coffee producers in Indonesia (Arnawa et al., 2010; Salamah, 2014). In the province of Bali, coffee is a strategic commodity superior commodity. Superior commodities with high productive efficiency and high competitiveness, in turn, contribute positively to local revenues and as a source of community livelihood (Udayana et al., 2014; Darmawan, 2016; Astiti et al., 2014). The most widely cultivated types of coffee in Bali are Robusta Coffee and Arabica Coffee. Arabica coffee has more advantages compared to Robusta Coffee so much in demand in the world market. Arabica coffee grows well and spread in three districts in Bali which have altitudes above 900 m above sea level, namely: Buleleng Regency, Badung Regency, and Bangli Regency. Geographically these three districts are bordered by one another have similar agroecological and suitable for Arabica Coffee plants. Natural factors, human factors, or a combination of these two factors provide special features and qualities that need to be legally protected in the form of Geographical Indication (IG). In the context of development, the Bali Provincial Government in coordination with the Dinas in charge of plantations in each district has conducted guidance in the Processing Unit of Result (UPH) to improve the export quality of the coffee commodity of Bali.

One of the plantation commodities in the famous Bangli Regency is Arabica Kintamani Coffee which has received international recognition by awarding a certificate of Geographical Indication. Geographical Indication is an indication that can clearly explain that a product originates from a certain region or region of a State, has good quality, reputation and other characteristics that are fundamentally closely related to its geographical origin (Arnawa et al., 2010; Udayana et al., 2014). The people of Kintamani are the people who still adhere to the customary principle in the agricultural activities of Arabica Kintamani Coffee, such as Subak Abian institution, in its daily activities based on the principle of Subak Abian 'Tri Hita Karana', which are three causes to achieve happiness that focuses on the human. Consisting of Parahyangan (harmonious relationship of man with god), Pawongan (harmonious relationship among human beings), Palemahan (a harmonious relationship between man and the environment) (Widhyasari, 2012). Kintamani Arabica Coffee products belong to speciality coffee products, which have distinctive flavors and aromas caused by weather factors, humidity levels, planting location, and processing of coffee beans (Arnawa et al., 2010; Salamah, 2014; Mont, 2002; Sudarsan et al., 2005) which is dominated by female laborer produces coffee with a distinctive taste.

Previous research findings revealed that the female laborer's participation rate in the dominant processing agro-industry sub-sector reached 91.7%. Female wages as measured in the unit of analysis of production processing activities of 5 tonnes/ha of red logic Arabica coffee to 760 kg of rice coffee (green bean) of Rp 14,450,000 of total cost Rp 31.600.700. In other words, the wages enjoyed by female laborers amount to 45% in coffee processing activities, ranging from picking, mining, fermentation, and drying, sorting green beans to rice coffee (Ose). The average income of female laborers is Rp 750,000-Rp 800,000/person/harvest season.

In recent decades, standard economics has very little to say about gender and says that economics consists of rational, genderless interactions between organizations and individuals. However, today economists must take gender roles more carefully. Economists of this school argue that the general view of rational economic man should not discriminate and ignore the role of women in various sectors of the productive economy. It appears that macroeconomic policy still treats men and women differently. How to measure the economy does not take into account the contribution of the female. the female in the household does a lot of household chores, ranging from caring for and providing nutritious food to children and old/sick household members to cooking, cleaning, and so on. Generally, the domestic work of these women is not paid as it is in formal economic transactions, it is not taken into account in National Income. Gross Domestic Product is only a partial measure of economic progress because the welfare of mankind depends on many factors, including the position of women in the household. Reductions in total household income, often more adversely affecting women than men, are due to the enormous responsibilities of women in the household, particularly in terms of the health of household members and the education of children. What's more, the facts show that women's income ratio is always below men's. The role of gender in the household economy has become mainstream in formulating economic strategies and policies (Astuti, 2013). Certainly, can be remembered the events of the monetary crisis that hit the world in 1997/1998 when many workers and employees were laid off due to the economic conditions of many countries in the world reaching the nadir. However, at that time the country of Indonesia is not a failed state. There are still safety valves, namely the existence of micro and small enterprises in the creation of new jobs. In addition, many have been instrumental in increasing the income of many people, especially in the plantation sector in the area of Kintamani Bangli.

The research on the implementation of the female laborers' empowerment model based on the Arabica Kintamani coffee processing industry is a follow-up of the previous research result. The Model Analytic Hierarchy Process (ANP) selection of the female laborers' empowerment strategy at UPH which refers to the results of the SWOT analysis shows that strengthening the competence of women laborers' is the main priority of empowerment as a solution to the gap performance of female laborers' in the arabica coffee processing industry in Bali. The ANP model of empowering female laborers revealed that the main priority of empowerment is to strengthen the competence of female laborers. The ANP model developed under UPH internal business process conditions in the Kintamani Bangli area is not optimal yet. Therefore the implementation of this empowerment model becomes important (Robbins et al., 2002; Spreitzer et al., 1997).

Based on the model, the purpose of this research is to increase the capability of female laborers based on the search results of appreciative needs, through the fulfilment of training needs and social innovation of female laborers, and the need for infrastructure development in UPH (Kouser & Qaim, 2017).

Methods

In Kintamani Bangli there are 30 UPHs listed in Geographical Indication (IG) Kintamani Arabica Coffee. Of the 30 UPHs selected 15 UPHs (50% of the total UPHs) were chosen at random, noting that the UPHs in the same village

should not be selected. Female laborers respondents are 100 people determined purposively. The amount of value added during coffee processing is calculated by the Hayami Method. According to this method, the added value in the process of product processing is the difference between the value of the product with the value of raw materials and other inputs, excluding labor (Hayami et al., 1987).

The search for female laborers' empowerment needs using the method of appreciative inquiry (Whittington; Dewar, 2003; Peele III, 2006; Robert, 2013), through (a) rapid research, commensurate with the RRA (Rapid Rural Appraisal) method involving multidisciplinary teams in collecting and analyzing data logical causality in a short time; (b) in-depth interviews and direct observation; (c) participatory workshops, commensurate with the Sigma-5-based IM (Interactive Management) (facilitator, demosophia/situation room, computer, consensus methodology, and participant groups) and the well-documented root-cause process (Warfield & Cardenas, 1994; Warfield, 2006; Darmawan, 2017). Participants involved are provincial and district level agricultural/agricultural offices, financial institutions/banks, heads of farmer groups, heads of the Indicative Geographical Communities Protection Farming Cooperatives (MPIG), partner companies/ exporters, universities NGOs/PMT (Peasant partner supervisor) field management unit, Subak Abian leader, UPHs manager, and female laborers in UPHs; (d) peer review conducted twice, during quick research and workshop discussions. Strengthening of business and strategic partnership is realized at business meeting sessions between UPH business actors and partners with participatory learning and action approach (Wipradnyadewi et al., 2023).

The implementation is focused on the following: (a) identifying the potential of female laborers and the condition and potential UPH of Arabic coffee; (b) the achievement of training in production and marketing, and UPH management; (c) infrastructure development needs of UPH; (d) the realization of social innovation; (e) realization of benchmarking to more advanced UPHs and strategic partnerships.

Results and Discussion

The role of the Arabica Kintamani coffee processing industry and the participation of female laborers

Agricultural development is an important and strategic thing as a bearer of the economy of Bali Province. In addition to its role as a supporter of the tourism sector, the agricultural sector acts as an employer absorber which currently has not been able to be absorbed optimally by the tourism sector. Bali's economic dependence on the tourism sector which is entirely free from risks and uncertainties is a shadow of Bali's economic growth. Therefore, it is required to search for new economic resources to achieve progressive, inclusive, resilient, and sustainable economic growth. The potential of the Arabica coffee processing industry that developed in the Kintamani area, Bangli regency is very realistically developed further as the Balinese economic development strategy that 'Mandara' (advanced, peaceful, peace and prosperous) in the future.

The findings of previous research revealed that the dominance of female labor participation in the sub-sector of processing agro-industry reached 91,7%, covering the following activities: harvest (100% women), mining (95% female and 5% male) 90% female and 10% male), fermented coffee beans (95% female and 5% male), drying process (100% female), and sorting of green bean (HS) and coffee of rice (Ose) all usage female laborers. Female wages as measured in the unit of analysis of production processing activities of 5,000 kg/ha of red logic Arabic coffee (GM) to 760 kg of rice coffee (Ose) amounted to Rp 14,450,000 of total cost Rp 31.600.700. This shows that the wages enjoyed by female laborers are 45%, starting from the activity of picking, mining, fermentation of seeds and drying, sorting green bean to become rice coffee (Ose). With an average female worker wage of Rp 60,000 per day, the average female laborers' income reaches Rp 750,000-Rp 800,000/person/harvest season.

Processing and quality control of Kintamani Arabica Coffee

In the last five years, the increasing trend of Arabica coffee demand from Japan and European countries for the type of coffee of HS is 41%, while for coffee Ose (coffee of rice) 6 6-fold increase from the coffee of HS. Referring to the data, the prospect of Arabica Coffee development as an export commodity is quite big. Therefore, quality control becomes essential to maintain and seize the world market opportunity. With the growing market demand for coffee supplies, the UPH in Kintamani needs to increase the quality of production and quality control to meet the market demand. Currently, Farmers Cooperative Farmers Geographical Indication Protection (MPIG) Kopi Kintamani Bali has exporting partners (Korea, Japan, and Australia) and in cooperation with Kemenkop UKM.

Processing Arabica coffee if wet in UPH Kintamani through the following stages: sorting by mining, peeling the skin using the pulper machine, fermentation for 36 hours, drying for 14 days (12% moisture content), skinner using huller machine, then packing using gunny sack. The process of making ground coffee through the process of

roasting, cooling, and smoothing using a grinder machine and packing using aluminium foil paper through the vacuum press process. To maintain the quality of Arabica Coffee according to IG product certification standard (IDIG000000001, 05 December 2008) consistent quality control in UPH, starting from ingredients, quality control of rice coffee and coffee powder processing, and quality control on the final product. Expanding its share by designing new target markets and online marketing systems can be a choice of business development strategy (Bachelor, 2007), given the large production capacity at UPH.

Utilization of machines and added value

Value added is formed when there is a change in shape from the original production. This form of value added is important to be done by the female laborer in UPH to increase their income. The process of forming added value in Arabica Coffee, ranging from the processing of coffee into coffee HS, coffee Ose, and coffee powder. Utilization of technology (in this context coffee processing machines) and value-added Arabica coffee can help the female laborer dominating Arabica Coffee processing activities in UPH Kintamani increase wages and in turn their income.

The utilization rate of the machine at UPH Arabica Coffee in Kintamani is low, ie 6.8% pulper machine, 6.2% huller machine, 0.6% roasting machine, and 0.7% pouring machine so no additional processing machines are needed. In line with the opinion of [Darmawan \(2016\)](#), UPH needs to focus on improving the productive efficiency of Arabic coffee in red logs. UPH activity located in Kintamani Bangli area in red coffee processing into HS coffee has resulted in added value of Rp 9,918/kg with value-added ratio of 58% of product value, processing of HS coffee into Ose coffee produces added value of Rp 40,749 / kg with added value ratio of 85%, and for processing of coffee Ose into coffee powder obtain value-added Rp 118.057/kg with added value ratio of 92%.

Model of female laborers' empowerment in Arabica coffee processing industry

The Analytic Hierarchy Process (ANP) developed by Thomas L. Saaty provides a means of incorporating assessments and measurements to obtain priority-scale ratios for the distribution of influences among factors and factor groups in decisions ([Saaty, 2006](#); [Darmawan, 2018](#)). The ANP model of the selection of female laborers empowerment strategies in UPH (using SWOT finding strategies as input) that was produced in previous research [Darmawan \(2017\)](#), revealed there are five female empowerment strategies as follows: partnership synergy (weight 0.11), growth of female laborers' competence (0.39), institutional strengthening (0.14), strengthening of marketing function (0.16), and stimulus for application of machinery and equipment technology (0.20). Thus, referring to the ANP Model of empowerment of female laborers, the main priority of empowering female laborers is to strengthen their competence of female laborers. This finding is in line with [Setyowati \(2010\)](#), opinion on the development of human resource competence as a solution to improve the work of the organization. The ANP model is developed under UPH internal business process conditions in the Kintamani Bangli region that is not yet optimal.

Implementation of female laborers' empowerment model in Arabica coffee processing industry

The results of the implementation of female laborers' empowerment model in Arabica coffee processing industry at UPH in Kintamani Bangli are as follows: (1) identified potential of female labor; (2) training in (a) technical and management for female labor (production and process management, marketing and service functions for market networking and entrepreneurship development) and (b) UPH management, including: institutional development of UPH oriented to community collective business, accounting system (accounting principles, recording and recapitulation of transactions, financial statements), business statistics, and key performance indicators with good results; (3) identified the need for infrastructure development in UPH; (4) realization of social innovation (document of development roadmap of UPH, SOP (utilization of machine ie. pulper, huller, roasting, and powders as well as SOP increase of added value), and PTT (the rules of procedure) strategic partnership; (5) held benchmarking to more advanced UPH and strategic partnership (production, finance and trade means) in the context of strengthening the performance of the community-based Arabica coffee supply chain in Kintamani Indonesia ([Kulapichitr et al., 2019](#); [Agnoletti et al., 2022](#); [Barbosa et al., 2019](#)).

However, training regarding the improvement of product design innovation capabilities and the development of change-based organizations on this occasion has not yet been planned ([Kandampully, 2002](#); [Purhantara, 2009](#); [Saatcioglu & Ozmen, 2010](#); [Rahab & Sudjono, 2011](#)). In line with [Gawe et al. \(2009\)](#), the Arabica coffee processing industry at UPH Kintamani Bangli region should have a strategic orientation, and innovation service to produce high-quality speciality processed Arabica coffee in UPH, and refers to IG certification standard, supported by

unique product design innovation to support business performance and partnership.
Managing the results and impacts of female laborers' empowerment

Female laborers' empowerment activities in UPH Kopi Arabika Kintamani are often seen as the final product and are separated from activities to achieve the goal of empowerment, so that after completion of the mentoring as if completed the activity. There is even a view that assumes that after the training is completed the goal to be achieved has been realized. This view is very misleading because basically, the training activities of the female laborers are one of the media for UPH management Arabica Coffee is aware of the problems and needs and actions needed to overcome the problem, as well as fulfil its needs. Female laborers' empowerment activities should be viewed as a system or sub-system or as part of a series of activities to achieve the goal of enhancing women's capability in UPHs in the context of improving the performance of the coffee value chain. Here, female laborers' empowerment is assumed as an integrated system, consisting of interconnected sub-systems, ie human, technological, financial, social, institutional, and information and communication technology (ICT) sub-systems. To empower female laborers not to be separated from other activities, in the sense of providing significant supportive power, the results and impacts of empowerment need to be managed as well as possible, and activities of monitoring activities post-female laborers' empowerment activities (Hess et al., 2004; Chen et al., 2011).

Steps in managing the results and impacts of female laborers' empowerment are as follows: monitoring and evaluation of female laborers' empowerment, Follow-up Plan (RTL) of female laborers' empowerment, identification of carrying capacity of RTL and RTL constraints, and periodic evaluation. Thus, it appears that responsibility for the impact of female laborers' empowerment is not solely on the task force of female laborers empowerment and government at district and provincial levels. The commitment and sense of belonging from stakeholders, especially the management of UPH Kopi Arabika Kintamani, is the success factor of the post-empowerment of female laborers in UPH.

Conclusion

Based on the implementation of the strategy of strengthening the capability of female labor in UPH, referring to the need for participatory empowerment, it is concluded that the following matters are: (1) identified potential of female labor; (2) training in (a) technical and management for female labor (production and process management, marketing and service functions for market networking and entrepreneurship development) and (b) UPH management, including: institutional development of UPH oriented to community collective business, accounting system (accounting principles, recording and recapitulation of transactions, financial statements), business statistics, and key performance indicators with good results; (3) identified the need for infrastructure development in UPH; (4) realization of social innovation (document of development roadmap of UPH, SOP (utilization of machine and SOP increase of added value), and PTT (regulation) of strategic partnership; (5) held benchmarking to more advanced UPH and strategic partnership (production, finance and trade means) in the context of strengthening the performance of the community-based Arabica coffee supply chain in Kintamani Indonesia.

Suggestion

Empowerment of female laborers through the strengthening of their competence in UPH Kintamani, even in the Arabica coffee processing unit in Indonesia, needs to be continuously conducted, evaluated and the result is followed up to produce premium quality Arabica coffee processed following IG certification, supported by innovative product design typical to support business independence and sustainability of partnership contracts.

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