Identifying Optimal Market Choices to Increase the Profitability of Coffee Farmers in Sultan Kudarat through Modelling and Scenario Analysis

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Abstract

Philippine coffee production experienced a significant decline in the year 2019-2020 due to low productivity, lack of capital, limited access to credit, limited knowledge of farming technologies, high production costs, price volatility, and inability to meet market requirements in terms of quality and volume. This study focuses on the coffee chain of Sultan Kudarat – the top producer of coffee in the Philippines. Coffee farmers in this area allocate their harvested cherries as fresh cherry, dried cherry, and green coffee beans to five market outlets: Nestle Philippines, local traders, growers' association, direct selling, and other markets (e.g., coffee shops and hotels). Choosing the best market to sell their product is a problem for farmers, especially when there are restrictions in marketing their coffee. Hence, a supply chain network design model and simulation are developed to investigate the changes in the profits of coffee farmers as they market their products, whether to be sold as fresh cherry, dried cherry, or processed into green coffee beans before marketing to the above-mentioned market outlets, based on the average annual costs affecting the production, primary processing, and market prices of coffee products. Assuming that the annual coffee yield per tree and the average prices of coffee product in different markets are constant, the results show that selling fresh cherry or dried cherry gain positive profits given the farmer's current resources and farming practices. Our approach was inspired by the developed SCND model for the Cavendish banana commodity in the Davao Region, which serves as a diagnostic tool for assessing the profitability of a commodity in different market options. Therefore, the developed model can be modified and used for regular coffee farms and other commodities, and the results from the scenario analysis can offer recommendations to smallholder farmers by identifying the optimal market choices to increase their profitability.