

Empowering Small-Scale Coffee Farmers through a Cost and Profit Calculator with Market Optimization Tool

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Abstract

The absence of a farm performance analysis tool leaves coffee farmers dependent on their personal experiences to navigate their expenses and product sales. This dependence leads to high production costs and low income. As of 2021, coffee farmers earn PhP 107,204 annually, which is lower when compared to the minimum annual salary in the Philippines, which is around PhP 150,000. To address these challenges, a web application has been developed that provides a set of essential tools for farmers. Specifically, the features offered by the application are a cost calculator, profit calculator, and market optimization. The application empowers farmers to discern the most cost-efficient and lucrative scenarios, facilitating reductions in coffee farming expenditures and the maximization of profits. In the current phase of this project, the functionalities are available on an online web application to perform a cost calculation, profit calculation, or market optimization. In the future, we also plan to create offline versions of all the other modules to help farmers access the application more easily. Additionally, we aim to translate the app into local languages to make it understandable to local farmers. Application testing with farmers will also be done to further refine the application to make sure that it is user-friendly. To ensure the accuracy of the results generated, the equations and bounds used in our calculators and Market Optimization Tool are based on the Supply Chain Network Design of coffee markets in various regions of Mindanao and collected datasets from farmers. The Cost and Profit Calculator with Market Optimization Tool serves as a valuable asset, benefiting not only small-scale coffee farmers but also holding the potential to foster the growth and sustainability of the coffee industry in both Mindanao and the entire Philippines. This innovative tool empowers farmers by equipping them with essential knowledge and decision-making resources, leading to enhanced financial outcomes and the fortification of the coffee sector.