



Challenges and Opportunities for North Lombok Robusta Coffee

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Abstract

Robusta coffee is an important agricultural commodity in North Lombok Regency, Indonesia, contributing to rural livelihoods and regional economic development. However, the performance of the Robusta coffee agribusiness remains constrained by various external challenges while simultaneously presenting emerging opportunities. This study aims to identify and analyze the key challenges and opportunities affecting the development of Robusta coffee in North Lombok, and proposes strategies for expanding market for North Lombok Robusta coffee. The results show that the main challenges identified include fluctuating coffee prices, the low bargaining position of farmers and processors, inconsistent coffee bean quality, and limited access to subsidized fertilizers. Conversely, significant opportunities arise from increasing domestic and global demand for coffee, availability of government support programs, the potential for value-added coffee processing, and improved access to market and technical information. The findings indicate that opportunity-driven strategies, particularly those related to value addition, quality improvement, sustainable input management, and information utilization, can mitigate existing challenges and enhance the competitiveness and sustainability of the Robusta coffee agribusiness in North Lombok. The study provides policy-relevant insights for stakeholders involved in regional coffee development, by outlining concrete intervention areas, such as productivity enhancement, quality improvement, institutional strengthening, and market access expansion, to support value chain upgrading and sustainable Robusta coffee development in North Lombok. The novelty of this study lies in its integration of regency-level analysis of Robusta coffee in North Lombok and reconceptualizes Robusta from a low-value commodity into high-value one through expanding markets with differentiated emerging specialty and sustainable products.

Keywords: Robusta coffee; Agribusiness Development; Challenges and Opportunities; Value Addition.

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INTRODUCTION

In the world, coffee is the most important agricultural commodity, with its highest international trade value within the agricultural commodities. In coffee industry, Indonesia is the fourth-largest coffee producer in the world, after Brazil, Vietnam, and Colombia (ICO, 2023). Indonesia is well known not only for the volume of its coffee exports but also for the diversity of its coffee types, particularly Arabica and Robusta, which are cultivated across different ecological zones of the archipelago. North Lombok Regency, located in West Nusa Tenggara Province (BPS NTB, 2025), is one of the promising Robusta coffee plantations in Indonesia. However, this potential has not been fully explored (Antara News, 2024).

Indonesia's coffee sector is deeply embedded in the social, cultural, and economic fabric of rural life. More than 90% of Indonesia's coffee is produced by smallholder farmers, many of whom manage less than two hectares of land (ICO, 2023). Robusta accounts for approximately 75% of Indonesia's coffee production, and is mainly cultivated in lowland and mid-elevation regions, including South Sumatra, Lampung, East Java, Bali, and West Nusa Tenggara (Citragro Indonesia, 2025).

Robusta coffee grows better in lower altitudes and warmer climates than Arabica (Campuzano-Duque, Herrera, Ged, & Blair, 2021; Food & Wine, 2025), making it particularly suitable for regions like North Lombok, where the elevation ranges from 100 to 800 meters above sea level (BPS Lombok Utara, 2024). While Arabica often receives more attention in specialty coffee markets, Robusta holds significant potential due to its higher caffeine content, resilience to pests and diseases, and higher yield per hectare (Muslim, Putri, &

Kurniawan, 2021). These attributes make Robusta a strategic crop for increasing the income of smallholder farmers, such as them in North Lombok, where economic opportunities are limited (Sabina, Sutanto, & Suriadi, 2025; Taufik, 2024). Indeed, coffee is one of the main estate crops in the regency (BPS Lombok Utara, 2023, 2024), although production levels remain modest at about 600 kg/ha (BPS Lombok Utara, 2023), compared to more developed coffee regions, such as, North Sumatra at 1,306 kg/ha, South Sumatra at 898 kg/ha, Aceh at 823 kg/ha, or Indonesia at 789 kg/ha (BPS, 2024).

Most smallholders in North Lombok sell their coffee through local collectors or middlemen, with little knowledge or power over pricing structures. This lack of market transparency reduces farmer bargaining power and reinforces a cycle of dependency. Additionally, coffee prices are susceptible to global market shocks and domestic currency fluctuations, exposing smallholders to income instability (Panggabean, Sari, & Wijaya, 2020).

There are also challenges for Robusta coffee farming in North Lombok. These include limited access to capital, technology, and training, climate change and market volatility. Brief explanations for these challenges are provided in the following.

Coffee farmers in North Lombok rely on traditional farming techniques, with minimal input and limited knowledge of post-harvest handling, which brings consequence of sub-optimal quality and prices. Moreover, the coffee value chain in this region remains fragmented and underdeveloped, with farmers often selling coffee fruits to middlemen at low prices (Fitriani, 2023; Junaidi & Pratiwi, 2022), and therefore reducing farmer income.

In recent years, there has been a growing trend toward specialty and traceable coffee, with increasing demand for single-origin and sustainably produced Robusta in both domestic and international markets (ICO, 2023; Pretty et al., 2018). North Lombok, with its distinct environment and cultural identity, can capitalize on these trends through geographical indication labeling, certification (e.g., organic or fair trade), and coffee tourism development. Government and NGO interventions, especially in the post-2018 earthquake recovery period, have also focused on supporting local agribusiness, including coffee. These interventions open doors for inclusive agricultural development, capacity-building, and better integration into the global coffee market. Recent initiatives by the local government and NGOs such as the Samalas Foundation and Rinjani Lombok Coffee Cooperative have aimed to revitalize the sector by introducing better cultivation practices, improving access to drying and processing equipment, and facilitating farmer cooperatives (Direktorat Jenderal Perkebunan, 2022).

This paper aims to explore challenges and opportunities of Robusta coffee of North Lombok, and proposes strategies for expanding market for North Lombok Robusta coffee. Therefore, the expected benefits from this study are to seize the opportunities for this business, as to bring more benefits to the region, particularly, the coffee farmers, entrepreneurs, and other related economic activities in the region, directly and indirectly.

METHODS

This study applied survey method (Babbie, 2004; Fink & Kosecoff, 1998; Mosher & Kalton, 1985; Thomas, 1996) and secondary data collection method (Jackson, 1988; Simon, 1969; Sjah, 2011), to achieve the research objectives. The research was conducted in North Lombok Regency, West Nusa Tenggara Province, Indonesia. This region was selected due to its growing role as a Robusta coffee-producing area, and covers the five districts within the regency. Primary data were collected through interviews with stakeholders involves in the agribusiness of Robusta coffee. The respondents included 50 farmers, 10 processors, 10 traders, and 10 key informants. In particular to paper, data collection was focused on threats and opportunities for Robusta coffee agribusiness in North Lombok. The primary data were completed with secondary data related to the topic investigated. Relevant secondary data were collected from related bodies in North Lombok, Ministry of Agriculture reports, NGO and cooperative documentation, previous research and academic journals, and others of relevant to this study.

The data analysis in this study employed a qualitative descriptive approach to examine the challenges and opportunities facing the Robusta coffee agribusiness in North Lombok Regency. The analysis was conducted through content analysis, in which key themes and recurring issues were identified, categorized, and interpreted. Initially, the collected data

were screened and organized to ensure relevance to the study objectives. Subsequently, information was grouped into two main analytical categories: challenges (threats) and opportunities. Challenges were identified based on factors that potentially hinder the performance and sustainability of the Robusta coffee agribusiness. Opportunities were identified from external conditions that could support agribusiness development, including market demand, institutional support, processing potential, and information accessibility. Following categorization, an opportunity–threat (OT) analytical framework was applied to examine how identified opportunities could be leveraged to address existing challenges. This framework enabled the formulation of development strategies that rely solely on external factors, in accordance with the availability of data. The results of the analysis were then interpreted descriptively to generate policy-relevant insights and strategic recommendations for improving the competitiveness and sustainability of Robusta coffee agribusiness in North Lombok. The results are presented in the next section.

HASIL DAN PEMBAHASAN

Threats of Robusta Coffee Agribusiness in North Lombok

The study identified several threats for the agribusiness of Robusta coffee in North Lombok, West Nusa Tenggara, Indonesia. They are described below. These threats will need to overcome, eliminated, or reduced, for improving the coffee agribusiness.

Fluctuated Coffee Price

Price fluctuation remains one of the most significant threats to the sustainability of Robusta coffee agribusiness in North Lombok. Coffee prices are strongly influenced by global supply and demand, climatic variability in major producing countries, and international commodity market dynamics. As a result, farm-gate prices received by farmers often fluctuate sharply between harvest seasons. This volatility creates income uncertainty for smallholder farmers, making it difficult for them to plan production, invest in farm inputs, or adopt improved cultivation and post-harvest technologies (Kompas.com, 2025). Persistent price instability may also discourage farmers from maintaining coffee plantations properly, potentially leading to declining productivity and quality over time.

Low Bargaining Position of Coffee Producers and Processors

Robusta coffee producers and small-scale processors in North Lombok generally occupy a weak position in the coffee value chain. Most farmers sell their coffee to village collectors or intermediaries due to limited access to market information, processing facilities, and direct buyers. This marketing structure creates an imbalance in price negotiations, where buyers have greater control over price determination, while farmers are price takers (Azzahra, Mutiara, & Hariance, 2024; Maman, Nugraha, & Amarullah, 2024). The low bargaining position reduces farmers' share of the final market value and limits incentives to improve quality or engage in value-added processing. The lack of incentive led farmers to not processing the coffee beans. Without strong farmer organizations or cooperatives, producers in regions such as North Lombok remain vulnerable to unfavorable trading terms.

Low Quality of Coffee Beans

Low and inconsistent quality of Robusta coffee beans also poses a major threat to agribusiness development. Coffee quality is closely linked to harvesting practices, post-harvest handling, drying, storage, and processing techniques. Many smallholder farmers lack adequate knowledge, infrastructure, and capital to implement proper quality control measures, resulting in high defect rates, uneven moisture content, and reduced cup quality (Winarno, 2024). Poor bean quality limits access to premium markets and results in lower prices at the farm level. Consequently, farmers are trapped in a cycle of low income and limited capacity to reinvest in quality improvement, which weakens the competitiveness of Robusta coffee from North Lombok in both domestic and export markets.

Limited Subsidized Fertilizers for Coffee Farmers

Limited access to subsidized fertilizers further constrains Robusta coffee production in North Lombok. Fertilizer subsidies in Indonesia are often prioritized for staple food crops, while perennial plantation crops such as coffee receive relatively limited support. As a result, coffee farmers frequently apply fertilizer at rates below recommended levels or rely on

inadequate nutrient management practices (Dewi, Arisena, Ranadewi, Kariyani, & Dewi, 2025). Insufficient fertilization negatively affects plant growth, yield stability, and bean quality, ultimately reducing farm profitability. Over the long term, nutrient depletion may degrade soil fertility, threatening the sustainability of coffee farming systems. Improved access to subsidized fertilizers and training on balanced fertilization are therefore essential to enhance productivity and resilience.

Opportunities of Robusta Coffee Agribusiness in North Lombok

Opportunities of Robusta Coffee Agribusiness in North Lombok are considered high. These come from high market demand, government support, product processing, and information access. They are described below.

High Market Demand

Robusta coffee continues to experience high and growing market demand, both globally and domestically, creating significant opportunities for producers in North Lombok. Globally, Robusta coffee is widely used in instant coffee, ready-to-drink beverages, and espresso blends due to its strong flavor profile and higher caffeine content. At the national level, Indonesia's domestic coffee consumption has increased steadily in recent years, driven by population growth, urbanization, and the expansion of coffee shops and small-scale roasting businesses. This trend creates a stable market outlet for Robusta coffee produced in regions such as North Lombok, reducing dependence on export markets alone and offering opportunities for better price absorption when quality and supply consistency improve (ICO, 2023; Kementerian Pertanian RI, 2022).

Available Support from the Indonesian Government

The Indonesian government provides various forms of support that create opportunities for developing Robusta coffee agribusiness in North Lombok. These include farmer training programs, extension services, seedling distribution, rehabilitation of aging coffee trees, and support for farmer groups and cooperatives. Government initiatives aimed at strengthening plantation commodities, including coffee, are implemented through the Ministry of Agriculture and regional agricultural offices in NTB. In addition, programs focusing on agribusiness development, access to credit, and capacity building enhance farmers' ability to adopt improved cultivation and post-harvest practices. Such policy and institutional support can help smallholder coffee farmers in North Lombok increase productivity, improve quality, and strengthen their integration into value chains (Direktorat Jenderal Perkebunan, 2022; Kementerian Pertanian RI, 2021).

Coffee Beans Can Be Processed into Coffee Products

An important opportunity for Robusta coffee agribusiness in North Lombok lies in the potential for value addition through processing. Coffee beans can be transformed into various products such as roasted beans, ground coffee, packaged coffee powder, and ready-to-brew products. Processing coffee locally allows farmers and rural enterprises to capture a larger share of the value chain, rather than selling raw beans at low farm-gate prices. In North Lombok, the development of small-scale processing units and farmer-based enterprises can increase income, create rural employment, and strengthen local economic resilience. Value-added processing also enables differentiation through local branding, geographic identity, and quality attributes, which are increasingly appreciated by domestic consumers (Hutahaean, Rustiadi, Fauzi, Nurmalina, & Rubiyo, 2024).

Information Accessible Easily

The increasing accessibility of information represents another key opportunity for Robusta coffee farmers in North Lombok. Advances in digital technology, mobile phones, and internet connectivity enable farmers to access information on coffee prices, cultivation techniques, post-harvest handling, and market opportunities more easily than in the past. Extension materials, training videos, and market information are increasingly disseminated through online platforms and social media, complementing conventional extension services. Improved access to information can enhance farmers' decision-making, reduce information asymmetry in marketing, and gradually strengthen their bargaining position. When effectively

utilized, digital information access supports innovation adoption and improves farmers' responsiveness to market demands (FAO, 2021b; Pretty et al., 2018).

Strategies for Improving Robusta Coffee Agribusiness in North Lombok

Strategies for improving Robusta coffee agribusiness in North Lombok are formulated from the opportunities and threats described previously. As such, these strategies are called OT strategies (Opportunities and Threats Strategies). They are each discussed below.

Market-Oriented Value Addition to Reduce Price Volatility and Weak Bargaining Power

High market demand for coffee, particularly Robusta, provides a strong opportunity to mitigate the threat of fluctuating coffee prices and the weak bargaining position of farmers in North Lombok. Instead of selling green coffee beans at farm-gate prices determined largely by intermediaries, farmers and local enterprises can engage in **value-added processing**, such as roasting, grinding, and packaging. Numerous studies indicate that value addition significantly increases farmers' share of the final product price and reduces vulnerability to global commodity price fluctuations (Hutahaeen et al., 2024; ICO, 2023).

In the context of North Lombok, where smallholder farmers dominate coffee production, developing small-scale processing units at the village or cooperative level would allow producers to directly access domestic markets, including local consumers, tourism-related outlets, and urban coffee shops. This strategy aligns with the increasing domestic consumption of coffee in Indonesia and helps stabilize farmer income by shifting from raw commodity sales to differentiated products with more stable prices.

Utilizing Government Support and Information Access to Improve Coffee Quality

Low and inconsistent coffee bean quality remains a critical threat to Robusta coffee competitiveness in North Lombok. At the same time, the availability of government support programs and increasing access to information represent key opportunities to address this issue. Government initiatives through the Ministry of Agriculture and regional agricultural offices provide training, extension services, and technical assistance aimed at improving cultivation and post-harvest practices (Direktorat Jenderal Perkebunan, 2022).

By integrating extension services with digital information platforms, farmers can more easily access guidance on selective harvesting, fermentation, drying, storage, and quality grading. Improved quality directly enhances market access and price premiums, thereby strengthening farmers' bargaining positions in the value chain (Winarno, 2024). In North Lombok, where many farmers still rely on traditional practices, targeted quality-oriented training can generate substantial improvements in both income and competitiveness.

Knowledge-Based Nutrient Management to Address Limited Fertilizer Subsidies

Limited access to subsidized fertilizers poses a long-term threat to productivity and sustainability of Robusta coffee farming in North Lombok. However, this constraint can be partially offset by leveraging government support and accessible information to promote efficient and sustainable nutrient management practices. Research shows that balanced fertilization, organic amendments, and integrated soil fertility management can maintain yields while reducing dependence on subsidized chemical fertilizers (Brady & Weil, 2016; FAO, 2021c).

Training programs and extension activities can focus on composting, use of organic matter, and site-specific nutrient management tailored to local soil conditions. In North Lombok, where fertilizer availability is uncertain, such knowledge-based approaches enhance resilience, lower production costs, and improve soil health, supporting long-term productivity of coffee plantations.

Improving Market Transparency through Information Accessibility

Price volatility and weak bargaining power are exacerbated by limited access to market information. Increasing accessibility of information through mobile phones, internet platforms, and digital extension services offers a clear opportunity to reduce these threats. Access to real-time price data and market trends enables farmers to make better marketing decisions, including timing of sales and choice of buyers (FAO, 2021a; Pretty et al., 2018).

For coffee farmers in North Lombok, improved market transparency can reduce information asymmetry between farmers and traders, thereby strengthening negotiation

capacity. When farmers understand quality-based price differentiation and prevailing market prices, they are less likely to accept unfavorable prices and more likely to seek better market channels, contributing to a more efficient and equitable value chain.

Government-Facilitated Small-Scale Processing to Improve Quality and Income Stability

The opportunity to process coffee beans into various products can be combined with government facilitation to address both quality limitations and price instability. Government support in the form of equipment assistance, training, and micro-enterprise development can encourage the establishment of small-scale processing units in North Lombok. Such facilities improve consistency in post-harvest handling and reduce quality losses, which are common threats in smallholder coffee systems (Hutahaeen et al., 2024).

Processing also diversifies income sources and reduces reliance on volatile green-bean markets. By promoting cooperative-based processing and local branding, this strategy enhances both quality and income stability, while supporting rural economic development.

Limitations and Further Research

This study has several limitations that should be acknowledged. This study is constrained methodologically by its reliance on descriptive analysis, which limits the ability to capture intra-regional variation among farmers, quantify the severity of identified constraints, or establish causal linkages between challenges and performance outcomes in the Robusta coffee value chain. From a policy perspective, the analysis does not evaluate institutional capacity, governance effectiveness, or resource availability at the local level, which may affect the feasibility and scalability of the proposed interventions. In terms of market analysis, the absence of consumer and buyer side data, restricts the assessment of price premiums, demand dynamics, and competitiveness of differentiated Robusta coffee from North Lombok.

Future research should address these limitations by incorporating primary data collection through farm surveys, in-depth interviews, and value chain mapping to generate more granular and up-to-date evidence. Quantitative approaches could be used to measure the impacts of productivity enhancing technologies, quality upgrading, and institutional interventions on farmer income and market access. Further studies may also explore consumer preferences, willingness to pay for differentiated Robusta coffee, and the feasibility of certification or geographical indication schemes, thereby strengthening the empirical basis for policy and investment decisions aimed at sustainable Robusta coffee development in North Lombok.

CONCLUSIONS

This study finds that development strategies for Robusta coffee agribusiness in North Lombok can be effectively formulated by linking identified external opportunities with existing threats. Key threats include price volatility, low bargaining power, inconsistent coffee bean quality, and limited access to subsidized fertilizers. Meanwhile, strong market demand, government support, processing potential, and increasing information accessibility provide significant opportunities for sector improvement. The results indicate that market-oriented value addition, quality improvement supported by extension services, knowledge-based nutrient management, and enhanced market transparency are the most effective approaches to mitigating these threats. Leveraging these opportunities can reduce farmers' vulnerability to price fluctuations, strengthen bargaining positions, improve product quality, and enhance the sustainability of Robusta coffee production. Overall, opportunity-driven interventions offer a practical and policy-relevant pathway to improving the competitiveness and resilience of Robusta coffee agribusiness in North Lombok. This paper contributes academically by applying the Opportunities–Threats (OT) framework within a value chain perspective to analyze Robusta coffee development in a peripheral smallholder region, and at the policy level by translating the findings into a regional strategy model that prioritizes actionable interventions for productivity, quality, institutional strengthening, and market differentiation in North Lombok.

RECOMMENDATIONS

Local governments should prioritize the development of small-scale and cooperative-based coffee processing to increase value addition and income stability. Extension and training programs need to focus on improving production and post-harvest quality, while promoting sustainable nutrient management practices to reduce dependence on subsidized fertilizers. Expanding access to market and technical information through digital and extension-based platforms is also essential to reduce information asymmetry. Finally, integrated policy coordination is required to align market demand, processing potential, and government support for the sustainable development of Robusta coffee agribusiness in North Lombok. Future research should incorporate primary data through farm surveys, interviews, and value chain mapping to provide more granular evidence. Quantitative analyses are needed to assess the impacts of productivity, quality, and institutional interventions on farmer income and market access, alongside studies on consumer preferences, price premiums, and the feasibility of certification or geographical indication schemes for Robusta coffee in North Lombok.

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