

VALUE CHAIN ANALYSIS OF COFFEE IN ENHANCING THE COMPETITIVENESS OF INDONESIA'S COFFEE AGRIBUSINESS

Saidul Alam^{1a*}

¹ Politeknik Pembangunan Pertanian (Polbangtan) Medan, Indonesia

^a alam.kirana38@gmail.com

(*) Corresponding Author
alam.kirana38@gmail.com

ARTICLE HISTORY

Received : 20-11-2025

Revised : 07-12-2025

Accepted : 20-02-2026

KEYWORDS

value chain, coffee agribusiness, competitiveness, coffee farmers, Indonesia

ABSTRACT

This study aims to analyze the structure of the coffee value chain and its role in enhancing the competitiveness of Indonesia's coffee agribusiness. The research employed a qualitative descriptive approach using a case study method in several major coffee-producing regions in Indonesia, including Aceh, North Sumatra, and Sulawesi. Data were collected through in-depth interviews, field observations, and document analysis involving coffee farmers, processing actors, traders, SMEs, and coffee exporters. The data were analyzed thematically to describe the value chain structure and identify key factors influencing agribusiness competitiveness. The results indicate that Indonesia's coffee value chain consists of five main stages: production, post-harvest handling, processing, distribution, and marketing. The highest value added is generated at the processing and marketing stages, while farmers at the upstream level receive relatively low value added. Key factors influencing coffee agribusiness competitiveness include product quality, technology adoption, institutional roles, and access to capital. Optimizing the value chain through improved post-harvest quality, technological adoption, and strengthened institutional support can enhance the competitiveness of Indonesian coffee in the global market. This study recommends improving access to finance and strengthening farmers' capacity as key strategies for developing a sustainable national coffee agribusiness.

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INTRODUCTIONS

Coffee is one of the leading plantation commodities that plays a strategic role in both the global and national economies. At the global level, coffee is a widely traded agricultural commodity with high economic value, while at the national level, it serves as a major source of income for farmers, provides employment opportunities, and contributes to foreign exchange earnings through exports. Indonesia ranks among the world's top five coffee-producing countries, supported by significant production volumes and a wide diversity of coffee varieties, including Arabica, Robusta, and Liberica, which are cultivated across various regions with distinctive agroclimatic characteristics. These advantages offer substantial opportunities for Indonesia to develop a highly competitive coffee agribusiness in the global market. Despite its abundant natural resource potential, the competitiveness of Indonesia's coffee agribusiness in international markets continues to face numerous challenges. Indonesian coffee exports are still predominantly composed of raw or semi-processed products, resulting in relatively low value added compared to other coffee-producing countries that have developed more integrated processing industries and strong branding strategies.

In addition, fluctuations in global coffee prices, increasing demands for quality and sustainability standards, and shifts in global consumer preferences further influence Indonesia's position in the highly competitive international coffee market (Edelmann et al., 2022; Gurmessa et al., 2022; Jacobi et al., 2024).

The issue of coffee competitiveness in Indonesia is not solely related to production aspects but is also closely linked to the structure and performance of the agribusiness system as a whole. In this context, the effectiveness of the value chain becomes a critical factor in determining the competitiveness of a commodity. The value chain encompasses the entire sequence of activities involved in value creation, starting from input provision, on-farm production, post-harvest handling, processing, distribution, and marketing to final consumers. Each stage within the value chain contributes to value addition and determines the bargaining position of the actors involved.

In Indonesia's coffee agribusiness, the value chain still faces various structural and institutional constraints. The majority of coffee farming is carried out by smallholder farmers who are limited in terms of capital, technology, and access to information. These constraints adversely affect product quality and consistency, particularly at the post-harvest stage, which plays a crucial role in determining final coffee quality. Furthermore, weak integration among farmers, processors, and market actors has resulted in an uneven distribution of value added, where greater benefits are captured by downstream actors, while farmers as primary producers receive a relatively smaller share (Monik & Siregar, 2022; Syaifullah et al., 2024).

Another major challenge within Indonesia's coffee value chain is the limited access of farmers and small-scale enterprises to high-value markets, both in export markets and premium domestic segments. Limited certification, weak cooperative institutions, and insufficient adoption of technology and innovation in processing and marketing represent significant barriers to enhancing the competitiveness of coffee agribusiness. These conditions indicate that increasing production alone is insufficient to improve competitiveness without comprehensive improvements and optimization of the value chain. Previous studies have examined coffee agribusiness from the perspectives of production, productivity, and marketing. However, comprehensive analyses that focus on the structure of the coffee value chain and its relationship with the competitiveness of Indonesia's coffee agribusiness remain relatively limited, particularly those emphasizing inter-actor linkages, value-added distribution, and sustainable value chain strengthening strategies. This research gap highlights the need for an analytical approach capable of providing a holistic understanding of the dynamics of the coffee value chain and its implications for agribusiness competitiveness (Nguyen et al., 2023; Silva et al., 2023).

Based on the foregoing discussion, value chain analysis is essential for identifying critical points within Indonesia's coffee agribusiness system, including upstream, midstream, and downstream segments. This approach is expected to provide insights into the roles of various actors, product and value flows, and factors influencing efficiency and competitiveness. By developing a comprehensive understanding of the structure and performance of the value chain, appropriate strategies can be formulated to enhance value added, strengthen the position of farmers, and improve the global competitiveness of Indonesian coffee in a sustainable manner. Accordingly, this study aims to analyze the structure of Indonesia's coffee value chain, identify factors influencing the competitiveness of coffee agribusiness, and formulate value chain optimization strategies to sustainably strengthen Indonesia's position in the global coffee market.

LITERATURE REVIEW

Value Chain Concept

The value chain is an analytical approach used to examine a series of economic activities carried out by various business actors in creating value added to a product, from the production stage to marketing to final consumers. According to Shanker et al. (2022), the value chain not only illustrates the physical flow of products but also reflects relationships among actors, the distribution of value added, and the role of institutions within production and marketing systems.

In the agribusiness context, the value chain approach is employed to identify the efficiency and contribution of each stage of activity to product competitiveness. Peralta et al. (2022) argues that a well-coordinated value chain can enhance product quality, strengthen the bargaining position of small-scale actors, and expand access to high-value markets. Conversely, poorly integrated value chains tend to result in low value added and unequal income distribution among actors. The value chain approach also emphasizes the importance of collaboration and coordination among business actors. De Felice et al. (2025) state that improving the competitiveness of agricultural products is strongly

influenced by the level of integration among farmers, processors, and marketers, particularly in meeting quality standards, sustainability requirements, and market demand. Therefore, value chain analysis serves as an important instrument for formulating sustainable agribusiness competitiveness enhancement strategies.

Coffee Agribusiness in Indonesia

Coffee agribusiness is an economic system encompassing activities ranging from seedling production, cultivation, harvesting, post-harvest handling, processing, to coffee marketing. According to Surarityothin et al. (2025), the development of coffee agribusiness should not rely solely on increasing production but also on enhancing value added through efficient processing and marketing. Within the coffee agribusiness system, each stage plays a critical role in determining the quality and competitiveness of the final product. In Indonesia, the structure of coffee agribusiness is still predominantly characterized by smallholder farmers who face limited access to technology, capital, and market information. Alhabsyi et al. (2024) emphasize that such limitations weaken farmers' bargaining positions within the coffee value chain, resulting in a greater share of value added being captured by downstream actors. This condition highlights the need to strengthen the role of farmers through capacity building and deeper integration into more efficient value chains.

Agribusiness institutions, such as cooperatives, small and medium-sized coffee processing enterprises, and business partnerships, play a crucial role in enhancing coffee competitiveness. According to Marcus et al. (2023), strong institutions are capable of improving distribution efficiency, expanding market access, and encouraging product innovation based on consumer demand. In addition, the utilization of digital technologies in marketing and business management has become an increasingly important factor in the development of modern coffee agribusiness. Thus, strengthening coffee agribusiness in Indonesia requires an integrated approach that goes beyond increasing production and focuses on optimizing the value chain. This approach is expected to enhance value added, strengthen the position of farmers and local business actors, and improve the competitiveness of Indonesian coffee in both domestic and global markets (Hidalgo et al., 2023; Ramirez-Gomez et al., 2022).

METHOD

This study employs a descriptive qualitative approach using a case study method to analyze the structure and performance of the coffee value chain as well as the factors influencing the competitiveness of Indonesia's coffee agribusiness. The qualitative approach is chosen because the study aims to obtain an in-depth understanding of relationships among actors, activity flows, and value creation processes within the coffee value chain, which cannot be fully explained through quantitative approaches. The case study was conducted in several major coffee-producing regions in Indonesia, including Aceh, North Sumatra, and Sulawesi, which are known for their diverse production characteristics, coffee varieties, and agribusiness patterns. The selection of these research locations is based on the consideration that these regions represent national coffee production centers and play a significant role in Indonesia's coffee value chain, both for domestic consumption and export markets (Rachman et al., 2024).

Data were collected through in-depth interviews, field observations, and documentation studies. Interviews were conducted with key informants directly involved in the coffee value chain, including coffee farmers, processors, traders, small and medium enterprise (SME) actors, and coffee exporters. Field observations were used to obtain direct insights into production activities, post-harvest handling, and coffee processing processes, while documentation was employed to supplement data in the form of reports, policies, and secondary data relevant to coffee agribusiness.

The collected data were then analyzed thematically by grouping information according to stages within the coffee value chain, from production to marketing. This analysis aims to identify the roles of each actor, the flow of value added, and the factors influencing coffee agribusiness competitiveness. The results of the analysis are subsequently used to describe the structure of Indonesia's coffee value chain and its implications for enhancing the competitiveness of coffee agribusiness in a sustainable manner.

RESULT AND DISCUSSIONS

Structure of Indonesia's Coffee Value Chain

The research results show that the structure of Indonesia’s coffee value chain consists of five interrelated main stages, starting from production activities at the farmer level to marketing in domestic and international markets. Each stage involves different actors and contributes variably to the creation of value added in coffee products. The production stage represents the upstream part of the value chain, which includes nursery activities and coffee cultivation. At this stage, farmers act as the main actors, focusing on land management, crop maintenance, and coffee harvesting. However, the value added generated at the production stage is relatively low due to technological limitations, small-scale farming operations, and high dependence on natural factors (De Felice et al., 2025; Utrilla-Catalan et al., 2022).

The post-harvest stage includes sorting, drying, and storage of coffee beans. The findings indicate that this stage has a significant influence on the final quality of coffee. Non-standardized post-harvest practices result in variations in product quality, which subsequently affect selling prices at the next stages. Most farmers still apply traditional methods that are less effective in maintaining coffee bean quality. The processing stage involves fermentation, hulling, and roasting processes, which are generally carried out by processing enterprises, micro, small, and medium enterprises (MSMEs), or cooperatives. At this stage, the value added of coffee increases significantly due to improvements in quality, product differentiation, and alignment with market preferences. Coffee processed into semi-finished or ready-to-consume products has a higher economic value compared to raw coffee beans (Alhabsyi et al., 2024; Sutarmin et al., 2022).

The distribution stage involves collectors, wholesalers, and exporters who play a role in channeling coffee from production areas to domestic and international markets. Efficient distribution contributes to the smooth flow of products; however, in practice, farmers often have weak bargaining positions due to their dependence on intermediary traders.

The marketing stage constitutes the downstream part of the value chain and determines market access and final coffee prices. Coffee marketing is conducted through domestic and international markets with different market segments, ranging from conventional coffee to specialty coffee. Coffee that successfully penetrates international markets generally meets specific quality standards and certification requirements.

Table 1. Structure of Indonesia’s Coffee Value Chain

Value Chain Stage	Main Activities	Main Actors	Contribution to Value Added
Production	Nursery, cultivation, harvesting	Farmers	Low
Post-harvest	Sorting, drying	Farmers, farmer groups	Medium
Processing	Fermentation, roasting	MSMEs, cooperatives	High
Distribution	Collection, transportation	Traders, exporters	Medium
Marketing	Domestic and export sales	Exporters, retailers	High

Determinants of Coffee Agribusiness Competitiveness

The study identifies several key factors influencing the competitiveness of Indonesia’s coffee agribusiness. The first factor is product quality, which is strongly determined by the implementation of quality standards, particularly at the post-harvest stage. Standardization of sorting and drying processes has been proven to improve coffee bean quality and directly increase selling prices. The second factor is the utilization of technology in processing and marketing. The adoption of more modern processing technologies enables business actors to produce coffee products with more consistent quality. In addition, the use of digital technology and e-commerce platforms opens wider market access opportunities, especially for coffee MSMEs and farmer cooperatives. The third factor is institutional support, which includes the role of cooperatives, business partnerships, and the implementation of specialty coffee certification. Strong institutions enhance the bargaining position of farmers and small business actors within the value chain while facilitating access to high-value markets. Certification and geographically based coffee identities also contribute to increasing consumer trust and product value (Fromm, 2023; Halil & Sahlan, 2023; Ochago et al., 2024).

The fourth factor is access to capital. The findings indicate that limited financing remains a major constraint for farmers and small business actors in improving production quality and developing coffee processing enterprises. Limited capital hinders technology adoption, business expansion, and compliance with market standards.

Table 2. Determinants of Coffee Agribusiness Competitiveness

Factor	Main Findings	Impact on Competitiveness
Product Quality	Uneven post-harvest standardization	Increases selling price
Technology	Limited technology adoption	Expands market access
Institutions	Cooperatives & certification play a key role	Strengthens bargaining power
Access to Capital	Limited farmer financing	Constrains business development

DISCUSSION

Coffee Value Chain Structure and Its Implications for Competitiveness

The findings indicate that Indonesia's coffee value chain consists of five main stages: production, post-harvest handling, processing, distribution, and marketing. This structure aligns with the value chain concept proposed by Surarityothin et al. (2025), which states that product value is created through a series of interconnected activities from upstream to downstream. However, the results reveal that value-added contributions across the stages of Indonesia's coffee value chain remain uneven. At the production stage, farmers as primary upstream actors generate relatively low value added. This condition supports Gereffi's (2020) view that small-scale actors at the upstream level tend to have weak bargaining power within the value chain, particularly when access to technology and markets is limited. As a result, farmers primarily function as raw material suppliers, while higher economic gains are captured at downstream stages.

The post-harvest stage represents a critical point in the coffee value chain, as it significantly determines final product quality. This finding is consistent with Shanker et al. (2022), who emphasize that agricultural product quality is highly influenced by coordination among value chain actors, especially during post-harvest handling. Non-standardized post-harvest practices at the farmer level lead to quality variability, thereby reducing product competitiveness in markets that demand consistent quality.

The Role of Processing and Institutions in Value Creation

The results show that the processing stage is the primary source of value added in Indonesia's coffee value chain. This supports Peralta et al. (2022), which states that increased value added in agricultural products generally occurs at the processing and product differentiation stages. Coffee processing through fermentation and roasting enables the creation of products with quality attributes that meet market preferences, particularly in specialty coffee markets. Furthermore, institutional actors such as cooperatives, MSMEs, and business partnerships play a significant role in enhancing coffee agribusiness competitiveness. This finding aligns with Hanley et al. (2026), which highlights the importance of institutions in improving coordination efficiency, strengthening the bargaining position of small-scale actors, and expanding market access. Strong institutions enable farmers and small enterprises to integrate into more efficient and market-oriented value chains.

The implementation of certification and the development of specialty coffee also increase product value and competitiveness. This supports the argument of Fantini et al. (2025) that integrating farmers into high-value market segments requires institutional support and clear quality standards.

Technology and Access to Capital as Supporting Factors

The utilization of technology in coffee processing and marketing is a key factor in improving agribusiness competitiveness. This finding is consistent with Rawati et al. (2025), who argue that modern agribusiness transformation is characterized by increased technological adoption and digital marketing. Processing technology enhances product quality consistency, while digital platforms and e-commerce expand market access, particularly for coffee MSMEs. However, limited access to capital remains a major constraint in optimizing Indonesia's coffee value chain. This finding supports Samoggia & Fantini (2023), which notes that financing constraints hinder technology adoption and innovation in agriculture. Without adequate financial support, farmers and small business actors face difficulties in improving production quality and expanding coffee processing activities.

Implications for Strengthening the Coffee Value Chain

The findings indicate that enhancing the competitiveness of Indonesia's coffee agribusiness requires integrated optimization of the value chain. This reinforces value chain theory, which emphasizes the importance of coordination

among actors and balanced value-added distribution. Strengthening farmer capacity, improving post-harvest quality, developing value-added processing, and reinforcing institutions and access to capital are key strategies for improving the performance of Indonesia's coffee value chain and enhancing its competitiveness in the global market.

CONCLUSION

Based on the research findings and discussion, it can be concluded that Indonesia's coffee value chain consists of several interconnected stages, including production, post-harvest handling, processing, distribution, and marketing. Each stage plays a distinct role in the formation of value added, with value contributions increasing toward downstream stages, particularly in processing and marketing activities. This study demonstrates that optimizing the coffee value chain through improvements in product quality, technology utilization, and institutional strengthening positively affects the competitiveness of Indonesia's coffee agribusiness. The standardization of post-harvest quality, adoption of processing and digital marketing technologies, and development of cooperatives and business partnerships enhance product value and strengthen the bargaining position of farmers and small business actors within the coffee value chain, especially in the context of global market competition. Nevertheless limited access to capital and low human resource capacity, particularly at the farmer level, remain major constraints in the development of the national coffee agribusiness. Therefore, improving access to financing supported by financial institutions, along with enhanced training and assistance for farmers, is a key recommendation to strengthen value chain performance and sustainably improve the competitiveness of Indonesia's coffee agribusiness.

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