THE VALUE CHAIN GOVERNANCE OF ROBUSTA COFFEE IN BOGOR REGENCY

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Abstract: The governance structure is critical in coffee value chain development. An effective coffee value chain governance is expected to improve efficiency, reduce costs, and increase innovation while benefiting consumers and society. This research aims to analyze the governance structure of the robusta coffee value chain in Sukamakmur District, Bogor Regency, West Java. The study employed survey data from 41 actors along the robusta coffee value chains. Kind of actors are farmers, intermediaries, and downstream actors. The data was analyzed using Gereffi's value chain mapping and governance analyses. The study revealed that the robusta coffee value chain actors consist of farmers, small-scale traders, large-scale traders, regional traders, coffee processing companies, retailers, roasteries, and cafés. Every actor along the coffee value chain has different activities that add value and differentiate the coffee products. The findings indicated that the Robusta coffee value chain governance is categorized as market governance with low information complexity, high information codifiability, and high supplier capability. To strengthen the governance, it is necessary to establish a partnership with downstream actors and carry out intervention from lead firms, to improve coordination among value chain actors and increase coffee quality.

Keywords: chain actor, coffee value chain, lead firm, market governance, robusta coffee

Abstrak: Struktur tata kelola memiliki peranan penting dalam pengembangan rantai nilai kopi. Tata kelola rantai nilai kopi yang efektif diharapkan dapat meningkatkan efisiensi, mengurangi biaya, dan meningkatkan inovasi sekaligus memberikan manfaat bagi konsumen dan masyarakat. Penelitian ini bertujuan untuk menganalisis struktur tata kelola rantai nilai kopi robusta di Kecamatan Sukamakmur, Kabupaten Bogor, Jawa Barat. Penelitian ini menggunakan data survei dari 41 aktor sepanjang rantai nilai kopi robusta. Jenis pelaku tersebut adalah petani, pedagang pengumpul, dan aktor hilir. Data dianalisis menggunakan pemetaan rantai nilai dan analisis tata kelola dengan pendekatan Gereffi. Penelitian ini mengungkapkan bahwa aktor rantai nilai kopi robusta terdiri dari petani, pedagang skala kecil, pedagang skala besar, pedagang regional, koperasi, perusahaan pengolahan kopi, pengecer, roastery, dan kafe. Setiap aktor rantai memiliki aktivitas yang berbeda yang menambah nilai dan membedakan produk kopi di sepanjang rantai nilai. Hasil analisis menunjukkan bahwa tata kelola rantai nilai kopi Robusta dikategorikan sebagai tata kelola market dengan kompleksitas informasi rendah, kemampuan kodifikasi informasi tinggi, dan kemampuan pemasok yang tinggi. Untuk memperkuat tata kelola, diperlukan kemitraan dengan aktor hilir dan intervensi dari lead firm untuk meningkatkan koordinasi antara aktor rantai nilai dan meningkatkan mutu kopi.

Kata kunci: aktor rantai, kopi robusta, perusahaan pemimpin, rantai nilai kopi, tata kelola pasar

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INTRODUCTION

Indonesia is one of the world's top coffee exporting countries and generated $842 million in export earnings from 380.177 tonnes of green beans in 2021, making it the fourth-largest coffee exporting country (UN Comtrade, 2023). The majority of coffee production in Indonesia is Robusta (72.48%), and the majority (98%) of coffee plantations are owned by smallholders who own less than one hectare of land (MoA, 2021). Indonesia is well-known for its exports of Robusta coffee, typically sold in bulk. The country often competes with Vietnam in the global market, particularly in the category of cheap bulk coffee commonly used for making instant coffee or added as a filler in commercial coffee blends.

The shift in demand along the global commodity chain substantially affects the coffee trade's institutional mechanisms and governance structure in coffee-producing countries. The role of governance is an essential aspect of the coffee value chain. The differences in market power and interdependence between the economic actors impact governance in trade. Strong actors can dictate governance mechanisms. In many cases, small-scale producers on downstream actors in the chain, such as intermediaries, processing industries, transporters, or exporters, for input and credit supply on the one hand and market access on the other (Trienekens, 2011).

The coffee governance structure is not something certain. It can vary depending on the location and interaction among actors in its value chain. Mulyati and Indrawan (2021) identified modular as the governance shaping the Arabica coffee value chain in Bondowoso, East Java, and Mandailing Natal, North Sumatra. Vicol et al. (2018) concluded that the intervention of upgrading through partnerships between farmers and international or local roasters leads to the global coffee value chain in Enrekang, South Sulawesi; Bangli, Bali, and Sumedang, West Java, having relational governance. How governance is structured can combine different governance types, as observed in the case of Rwanda coffee (Gerard et al. 2022). This is due to the use of various approaches by different exporter actors, such as relational contracts, vertical integration, and captive approaches when contracting with suppliers. Similarly, Aisyah (2022) found that out of the nine

value chain channels, Arabica Ijen coffee tends to have a modular governance type, although there are still two chains that employ market governance. At the same time, Grabs and Ponte (2019) observed a shift in the type of power and governance that occurred in 40 years of coffee global value chain (GVC) evolution and found new dependency relationships closely linked to Northern-dominated definitions of quality.

According to Hartatri (2014), the governance of the Indonesian coffee value chain is influenced by the end of the International Coffee Agreement (ICA). Lead firms have the power to dictate small Indonesian coffee farmers in terms of coffee production, as these actors have closer relationships with end consumers. This leads to lead firm strategies to obtain coffee directly from its source. It can increase farmers' access to knowledge, technology, and finance. Although they do not guarantee better economic performance, the ability to participate in these regulatory systems can function as a reputation for farmers, facilitating coordination between roasters, traders, and farmers, which can lead to upgrading at the farmer level. Upgrading the farmers in the value chain is important because coffee is the source of income for farmers, the producer of raw materials for industry, and the provider of employment opportunities.

Power and governance structure is crucial in value chain development. In its development, governance can vary between regions or loci. This can happen due to differences in the types of coffee produced in these regions. For example, Arabica coffee is generally intended for specialty markets in Indonesia and internationally, while Robusta is for the processing industry in the domestic and global markets. These two types of coffee will certainly have different governance, and even the same type of coffee can have different governance structures because Indonesian coffee is very location-specific. The studies mentioned earlier generally examine Arabica coffee governance, with few investigating Robusta governance in Indonesia. Therefore, in this research, it is necessary to understand and analyze the Robusta governance structure, the majority of coffee production in Indonesia.

Research in governance structures within the value chain framework is significant in comprehending and enhancing the value chain's organization and identifying potential opportunities and barriers for industry entry. This can help identify strengths and weaknesses in

the current governance structure and opportunities for improvement that can lead to increased efficiency, competitiveness, and sustainability of the Robusta coffee industry. Additionally, such research can provide insights into the distribution of benefits and risks among actors along the value chain. Therefore, this research aims to analyze the governance of the coffee value chain to assist policy-making in improving value chain development. Based on the Gereffi approach (Gereffi et al. 2005), this study hypothesizes that robusta coffee will have one of the existing types of governance, namely market, modular, relational, captive, or hierarchy. This paper analyzes the activities in the Robusta coffee industry by focusing on the relationship and power between actors along the chain.

METHODS

The research was conducted in West Java Province, specifically in Sukamakmur District, Bogor Regency. The research locations were purposively selected since Bogor Regency is the largest Robusta coffee-producing regency in West Java Province. Robusta production reached 4,004 tons or 39.58% of the province's total production (MoA, 2021). Sukamakmur district is the highest producer of Robusta in Bogor Regency. In 2022 its production was around 1,467 tons, contributing 41.13% of Bogor Regency production (BPS-Statistics Indonesia, 2023).

Data was collected by filling out questionnaires and interviews with the Robusta coffee value chain actors. For this study, forty-one respondents were questioned, including thirty-two coffee farmers, six coffee traders, and three coffee processing and roasting enterprises. Farmers were selected using purposive sampling with criteria for farmers who produce and sell green beans for coffee processing industries. For value chain actors in the downstream part, sampling was conducted using the snowball sampling technique so that the flow and value chain actors involved could be determined accurately. The data collection was conducted in September 2022. In addition, the study utilized secondary data from multiple sources, such as The United Nations Comtrade database; the Directorate General of Estates, the Ministry of Agriculture; BPS-Statistic Indonesia; and other related literature.

Value Chain Governance Framework

The governance type of the Robusta coffee value chain in Indonesia is identified using the global value chain governance framework of Gereffi et al. (2005). These types are not based entirely on empirical data but are analytical, although some elements have been derived from empirical observations. There are five fundamental forms of governance for global value chains that Gereffi has identified, namely market, modular, relational, captive, and hierarchy (Gereffi et al. 2005; Gereffi and Fernandez-Stark, 2011) (Figure 1).
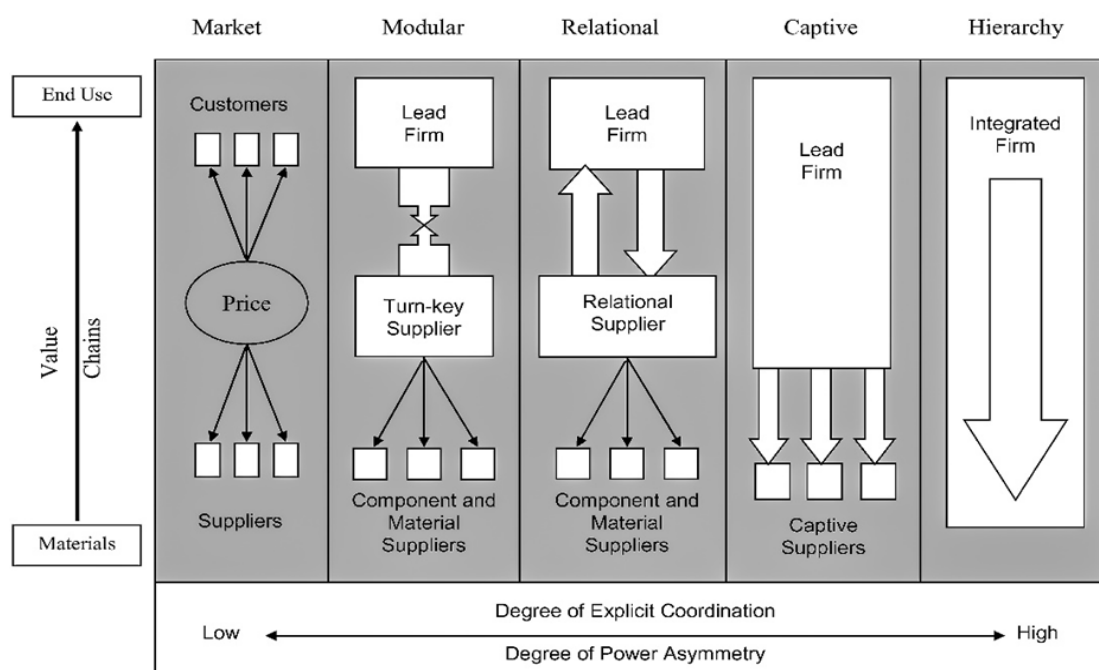

Figure 1. Types of the governance of global value chain (Gereffi et al. 2005)

The market is the most basic form of governance, where buyers and sellers interact in a spot market with low switching costs. Repeated transactions may occur, but the linkages are not long-term. In Modular governance, suppliers manufacture products according to a customer's specifications and assume full responsibility for the process. The use of generic machinery limits transaction-specific investments. In comparison, relational governance involves complex interactions between buyers and sellers, creating mutual dependence and high levels of asset specificity. Trust and reputation are vital in building long-term relationships. In captive governance, small suppliers are transactionally dependent on larger buyers, facing high switching costs. High monitoring and control by lead firms characterize these networks. The last one, hierarchy, is the most centralized type of governance, characterized by vertical integration and managerial control flowing from headquarters to subsidiaries and affiliates.

Based on Table 1, this study hypothesizes that robusta coffee will have one of the existing types of governance, namely market, modular, relational, captive, or hierarchy. To analyze governance type, different values assigned to the three key variables led to the emergence of five global value chain governance types. These variables include the complexity of inter-firm transactions (product characteristics, the information required to fulfill product specifications), the extent to which this complexity can be reduced by codification (the ease of translating specifications into technical standards, knowledge exchanged, written standards), and whether suppliers have the necessary capabilities to meet the buyers' requirements (capable of responding to demands, providing goods with the required quality and on time). The high or low value of the variable is obtained from the actors' answers in filling out the questionnaire. The governance types range from markets, which involve low levels of explicit coordination and power asymmetry between buyers and suppliers, to hierarchy, which involves high levels of explicit coordination and power asymmetry between buyers and suppliers, as indicated in the last column of Table 1. Likert scale analysis was used to measure the perceptions of value chain actors towards the established governance structure. The stages involved include data collection, data summation, and assigning weights to each answer by multiplying them by the Likert score to produce a total score when added together. A category value will be determined from the combination of three determining variables divided into two, namely high and low, by calculating the percentage score index. The formula for calculating refers to Aisyah (2022) and Sugiyono (2022) as follows:

Total Score = Number of respondents × Likert score

Percentage score index (%) = ((Total score)/(Highest Likert score × Number of respondets)) x 100%

Determination of governance structure categories from three variables:

0 – 50% = low
50.1 – 100% = high

RESULTS

The Actors and Activities of Robusta Coffee Value Chain

The first step towards elaborating the value chain concept involves identifying and mapping indicators related to the value chain. These indicators comprise the core process or primary activities and several actors engaged in those chain activities. By examining these indicators, an initial overview of the value chain can be attained, enabling the subsequent governance analysis phase.

Based on the activities, five major segments comprise the robusta coffee value chain: production, initial processing, trade, processing industry, and marketing (Figure 2). Based on the categorization of institutions, the value chain activities of Robusta Coffee involve actors such as small farmers, small-scale traders, large-scale traders, regional traders, processing industries, roasteries, retail, and coffee shops. Each actor plays a distinct role and function in the value chain of Robusta coffee, from producers to consumers.

Out of 32 farmers, most sell their harvested crops through farmer groups as small-scale traders and processors of cherry coffee (Table 2). These farmer groups process cherry coffee into green beans, producing almost 18 tons annually. The Robusta coffee value chain comprises two primary channels:

green beans from farmer groups sold to (1) processing industries to produce ground coffee and instant coffee (90.63%) or (2) coffee shops as espresso-based coffee for end consumers (9.37%). Green beans are produced from three different processing types: natural, full-washed, or honey. Natural processing is the most commonly performed process in this regency because it is simple, less expensive, less labor-intensive, and a traditional method used for generations. Farmers sell these green beans to various actors, such as small- and large-scale collector traders (intermediaries), regional traders, or directly to roasteries, based on their preference. The sales at the farmer level are non-binding, enabling farmers to choose to sell green beans to actors that offer higher prices. Field observations in the processing industry chain indicate that many farmers (54%) opt to sell their produce to large-scale collectors due to random picking and a harvest debt system. Around 39% sell their green beans to small-scale traders, and the rest sell to regional traders. The latter cost is the highest because the regional trader is far from the village. These traders sell green beans primarily to small industries in Bogor for ground coffee.

Small quantities are sold to large industries outside West Java province: Surabaya, East Java province, and Lampung. These large industries are national companies Mayora and Kapal Api and foreign-owned companies like Nestlé, which process the green beans into ground coffee and instant coffee. Another chain for Robusta Coffee involves the flow of commodities that go to roasteries and coffee shops. Roasteries purchase red-picked green beans from farmers and small-scale traders based on specific standards and grading in small quantities to ensure their quality. Roasteries and coffee shops sell their coffee as roasted beans, ground coffee, and espresso-based coffee.

The Governance of Robusta Coffee Value Chain

Value chain governance involves the management of relationships between various actors in the value chain, including suppliers, producers, intermediaries, retailers, and consumers. The goal of value chain governance is to ensure that all actors in the value chain work together effectively and efficiently to create value for customers and maximize profits for the participants.

Table 1. Determinants of the governance type

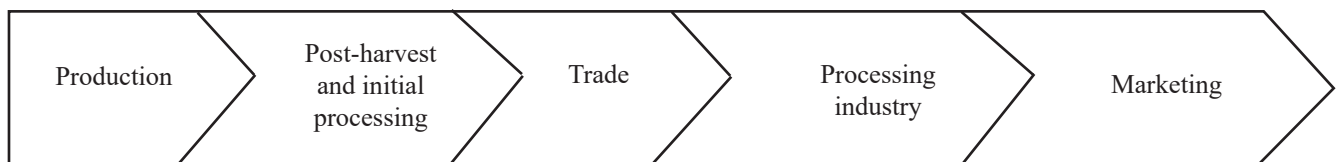| Type of governance	Complexity of transactions	Ability to codify transactions	Capabilities in the supply base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low
Modular	High	High	High	↑
Relational	High	Low	High	
Captive	High	High	Low	↓
Hierarchy	High	Low	Low	High

Source: Gereffi et al. (2005)

Figure 2. Main activities in the robusta value chain

Table 2. The differences between the actor's activities in industry chain and roastery chain

Value Chain Stages	Actors	Function	Activities	Industry chain	Roastery chain
Production and post-harvest	Farmers	Produce cherry coffee	General crop management	+ +	+ +
			Red-cherry picking	- -	+ +
	Farmer group	Produce and sell GB	Processing and packaging GB	+ +	+ +
			Sorting broken and moldy GB	- -	+ +
			Sell GB to small-scale, large-scale, regional traders	+ +	+ -
			Sell GB to roasteries	- -	+ +
			Distribute GB to the buyer	+ +	+ +
Trades	Small-scale traders	Buy and sell GB	Buy GB from farmers	+ +	+ +
			Storage	+ +	+ +
			Packaging	- -	+ +
			Sell and distribute GB to large-scale and regional traders, and roastery	+ -	+ -
	Large-scale traders	Buy and sell GB	Buy GB from farmers and small-scale traders	+ +	- -
			Storage	+ +	- -
			Sell and distribute GB to the regional trader	+ +	- -
	Regional trader	Buy and sell GB	Buy GB from large-scale traders and farmers	+ +	- -
			Quality control in moisture content	+ +	- -
			Storage	+ +	- -
			Sell and distribute GB to processing factories	+ +	- -
Processing industry	Local processor	Processing GB	Buy GB from a regional trader	+ +	- -
			Produce ground and instant coffee	+ +	- -
			Sell coffee to retails	+ +	- -
	Multinational company	Processing GB	Buy GB from a regional trader	+ +	- -
			Produce instant coffee	+ +	- -
			Sell coffee to retails	+ +	- -
	Domestic roasteries	Processing green beans	Buy GB from small-scale traders and farmers	- -	+ +
			GB grading	- -	+ +
			Produce roasted, and ground coffee	- -	+ +
			Sell coffee to café, restaurants, resort	- -	+ +
Marketing	Retail	Selling to consumers	Sell instant (sachet, ready to drink) and ground coffee to end users	+ +	- -
	Café	Selling to consumers	Sell brewed, roasted, and ground coffee to end users	- -	+ +

Notes: GB = Green beans; Actors presence = + + present, - - not present, + - partly present

As previously mentioned, there are two leading chains in this Robusta coffee research: the processing industry chain and the chain for roasteries (Figure 3). The main difference between the two value chains is the treatment from harvesting to processing. In the value chain for roasteries, the roastery is the lead firm that intervenes by applying specific standardization and grading criteria to the Bogor Robusta coffee, primarily harvested using the red picking method. Roasteries in this chain are Third Wave Coffee & Roastery and Kopitalis Coffee Roaster, a local roaster located in Bogor City. Red picking harvesting takes longer because harvesting is done gradually within one harvest period, as there is a waiting period until the coffee fruit is ripe and ready to be picked. The roastery applies standardization and grading in purchasing green beans, such as moisture content, without defects, mold-free, and buying in small quantities to maintain quality. In Bogor Regency, green beans originating from red picking harvesting are valued at a higher price by small-scale collectors, namely Rp38,500 – Rp45,000, while random picking green beans are Rp24,000 – Rp28,000. Per 150 grams, red-picked ground coffee is also higher at Rp35,000 compared to regular ground coffee, which is priced at Rp20,000. Therefore, the coffee standardization intervention by roasteries and cafes increases the added value that affects the selling price of green beans along the value chain. This supports the research of Mulyati and Indrawan (2021), which states that the existence of local organizations can support the improvement of performance in coffee value chain governance. It also supports the research of Tresliyana et al. (2015) and Suryana et al. (2022) which stated that in the plantation commodities sector, domestic processing industries provide added value and enhance product competitiveness. In this chain, more complex transactions occur because consumers request product specifications, but the requested product specifications are still simple, so farmers still have the authority to manage production activities. Only 2–3 farmers choose to participate in this roastery chain.
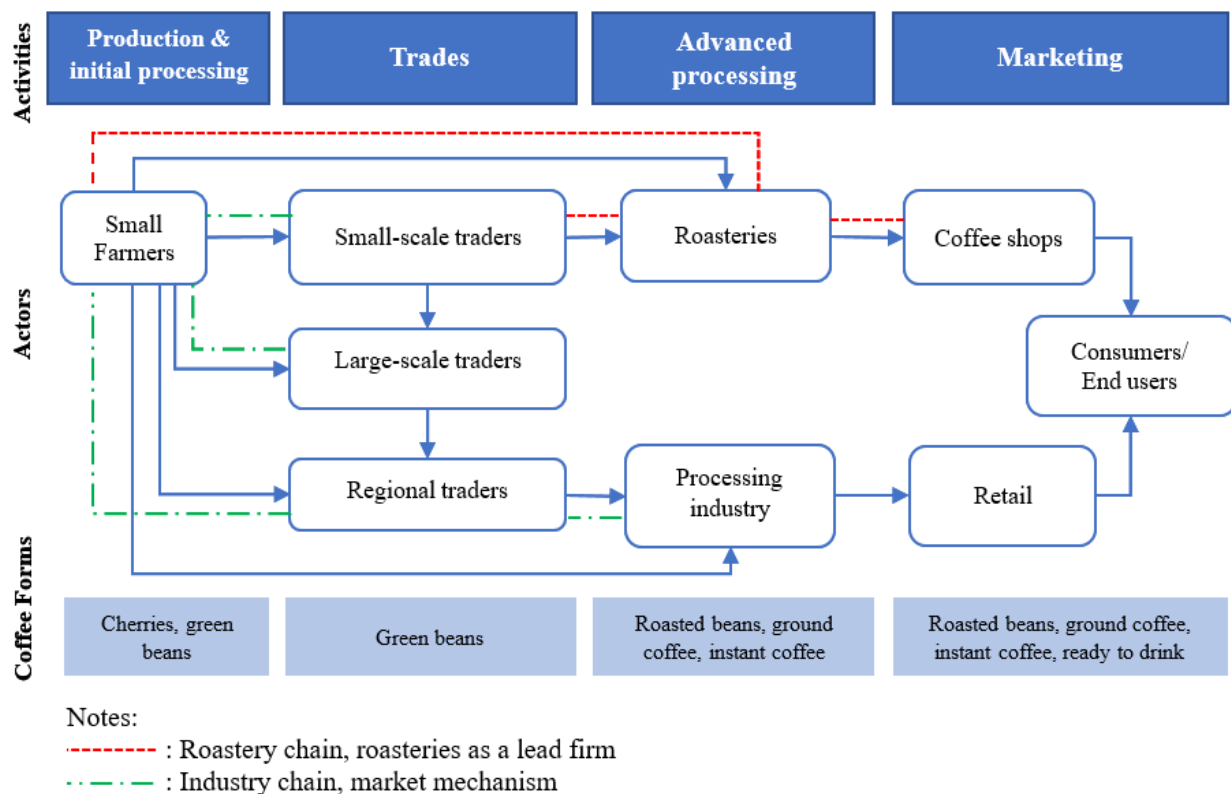

Figure 3. Actors and activities in the robusta value chain of sukamakmur district

The industry value chain does not include the activities of red picking and sorting. Farmers who harvest using random picking methods are oriented towards quantity and want to sell their coffee to collectors immediately. The percentage of farmers participating in the processing industry chain is 90,63%. They sell green beans through middlemen, especially small-scale collectors. The buying and selling system between farmers and subsequent value chain actors is not in the form of partnerships or work contracts, so there is no commitment, and the market mechanism determines prices. Farmers can choose whom they sell to based on their considerations, such as price and payment system. Small-scale collectors apply a cash payment system, while large-scale collectors offer a payment system upfront, and farmers owe their harvest. Large-scale collectors perform socio-economic functions by offering credit to farmers. If these actors do not exist, small farmers will have difficulty accessing credit, so, unsurprisingly, 54 percent of farmers choose to sell to large-scale collectors. Intermediaries do not pay much attention to the quality of the green beans produced because the processing industry does not demand specific quality standards and grading as long as the moisture content is within the 8–12% range. Large-scale collectors carry out moisture content quality checks in the area, and they will dry the green beans again if the moisture content from the farmer's coffee beans is not yet suitable. As of this research, cooperatives were not involved in the Robusta commodity chain in West Java. A cooperative only lasted for five years before closing in 2022 due to capital shortage and the inactivity of its members in operational activities. The difference between channels can be seen in Table 2 and Figure 3. The government plays a crucial role in value chain development by providing necessary support, such as infrastructure development, technical assistance, access to finance, and policies that promote fair competition and equitable benefits for all actors in the value chain. In Bogor Regency, the local government's involvement in value chain development provides seedlings and fertilizer subsidies, but the program stopped in 2016. Now, farmers obtain seedlings from a self-seeding system from coffee beans they produce themselves and do not apply fertilizer.

In determining the type of value chain governance, it is also necessary to analyze several variables that form the basis for determining the type of governance in the Robusta coffee value chain. These variables include the complexity of transactions, the ability to codify

transactions, and the capabilities within the supply base (Gereffi et al. 2005). Combining these three variables will determine the type of governance that emerges within the Robusta coffee value chain.

1. Complexity of Transactions

In transactions between actors in the value chain, there are activities of exchanging information and knowledge necessary for buying and selling coffee. The specifications of coffee vary depending on the location and position in the supply chain. Farmers produce coffee according to the demand of the next actor in the chain. The ability of farmers to meet the product characteristics is the result of information exchange obtained from collectors or roasteries.

From the field results, all actors agree that the information and knowledge required for buying and selling transactions with collectors are relatively simple (Table 3). More than half of the farmers who sell their green beans to collectors share information about the price and demand for green beans. The activities required for producing and selling green beans are relatively simple and require relatively low costs. Almost all farmers conduct random picking because the processing industry does not set standards for red picking, as the industry will use these green beans as a blend for instant coffee. Although the industry sets a standard moisture content of 8–12%, this is not mandatory because if the green beans from farmers do not reach that number, the regional collectors will sun-dry or re-dry them. Regarding the degree of dependence, producers have a wide range of buyers, while purchasers draw on various resources. At the same time, prices are usually discussed and decided upon during the ordering process before coffee is commissioned.

In contrast to the industry, roasteries and cafes have standards and grading, including red picking, low moisture content, no defective beans, and no mold. According to Suryana and Burhanuddin (2021), the growth of roasteries and cafes is mainly due to the increasing demand for specialty coffee produced from high-quality coffee beans with unique roasting and brewing methods. Exchanging information is important in implementing good governance. For example, the successful Indonesian coffee shop chain Kopi Kenangan coordinates involves, and shares knowledge with coffee suppliers to ensure that the

coffee standards meet the quality assurance and desired standards (Cahayani et al. 2022). Miranda et al. (2023) mentioned that the diversity of downstream industries could provide farmers an alternative in determining the coffee distribution to obtain higher prices in Bogor Regency. However, less than 10% of farmers choose this chain in the research location. Based on Table 3, the transaction complexity percentage index is 40%. Since the index is 0–50%, it can be concluded that the transaction complexity value falls into the low category.

2. Codifiability of Information

In this study, codifiability refers to how information and knowledge obtained during transactions can be made into technical standards and adopted. When the exchange of information related to the coffee purchase and production is simple, it leads to low complexity in information codifiability. All farmers, collectors, and downstream industries agree that information codifiability is mainly in the easy and moderate range (Table 4).

In the Robusta value chain, actors share information and knowledge about production, processing, and product quality. This helps them understand and produce coffee products. However, due to the coffee industry's simple nature of green bean production, farmers, intermediaries, and other actors do not establish specific technical standards. The coffee bean is relatively standard, no customization is required, and the supplier defines it without specific requests from certain customers. Due to this, there is no need for extensive collaboration between the buyer and supplier in defining the coffee product, and there is no partnership in this chain. Table 4 shows that the index percentage of information codifiability is 71.22%. Since the index is above 50%, it can be concluded that information codifiability is in the high category. Only roasteries and some industries apply specific technical standards for fine Robusta green beans, but there are no written SOPs or technical standards at the location. The example of actors who apply the standard is the farmers and processors in Enrekang Regency, who follow the CAFE Practices program from Starbucks. These actors adopt the CAFE Practices standards codified by Starbucks and are required to practice according to the protocols to improve the productivity and quality of their coffee, which will ultimately increase their income (Sudirman et al. 2021).

Table 3. Transaction complexity in the Robusta coffee value chain

Value Chain Actors	Score				
	Very Complex	Complex	Moderate	Basic	Very Basic
Farmers	0	0	0	32	0
Collectors	0	0	0	6	0
Processing Industry	0	0	0	1	0
Roasteries and Cafes	0	0	0	2	0
Total	0	0	0	41	0
Total Score	0	0	0	82	0
Index Percentage (%)			40.00		

Table 4. Information codifiability in the Robusta coffee value chain

Value Chain Actors	Score				
	Very Easy	Easy	Moderate	Difficult	Very Difficult
Farmers	0	18	14	0	0
Collectors	0	3	3	0	0
Processing Industry	0	1	0	0	0
Roasteries and Cafes	0	1	1	0	0
Total	0	23	18	0	0
Total Score	0	92	54	0	0
Index Percentage (%)			71.22		

3. Capability of Suppliers

The overall ability and skills of actors in the Robusta value chain to meet the required coffee specifications were evaluated in Table 5 and found to be sufficient. Farmers could produce coffee cherries and green beans according to the demands of intermediaries and the industry. Intermediaries were also able to collect and deliver green beans on time. The processing industry was considered capable of producing ground and instant coffee with the desired quality requested by retailers and end consumers. The risks faced by the buyer are low. This is because coffee's requirements are easily achievable, and the suppliers have proven capacity. Based on Table 4, the index of supplier capability was 60%. Therefore, suppliers' actual and potential capabilities in meeting the requirements, quantity, and quality standards requested by buyers can be classified as high.

Based on the analysis of the three variables that make up the governance structure, the governance structure of the Robusta coffee value chain can be determined. Referring to Gereffi's approach to governance types (Figure 1), the combination of (1) low transaction complexity, (2) high information codifiability obtained from transactions, and (3) high supplier capabilities in meeting buyer standards makes the governance structure of the Robusta coffee value chain in this study is market governance (Figure 4). Market governance represents the first fundamental form of governance for value chains. It emerges when transactions are simple, and suppliers can produce products with minimal buyer involvement (Gereffi et al. 2008). Both parties have low costs of switching to new partners, even if market linkages persist over time with repeat transactions.

This is consistent with the results of the actor mapping and value chain activities analysis that reinforce the determination of the governance structure, namely, of the two chains, the percentage of farmers participating in the industry chain is much higher than in the roastery chain. Then, the industry chain focuses more on quantity, does not specify green bean quality standards, the processing activities are simple, product flow is fast, no partnerships or contracts with suppliers or consumers, and market prices determine the mechanism. Meanwhile, partnership and farmers' participation are essential in governing the value chain. Arifin (2010) and Clay et al. (2018) conclude that farmer involvement in regulatory authorities, associations or certification partnerships can directly impact higher producer prices in coffee markets, where commodities are differentiated. Suryana and Suryana (2023) suggest that product differentiation in the coffee industry allows actors within the value chain to hinder the entry of competitors to protect their coffee, particularly regarding quality governance. Additionally, the presence of a long-term vision among actors as a critical element of good governance will provide more equitable incentives.

Table 4. Information codifiability in the Robusta coffee value chain

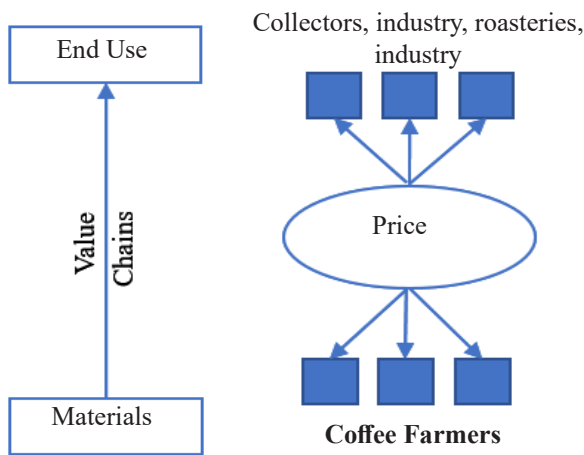| Value Chain Actors	Score				
	Very Capable	Capable	Moderate	Incapable	Very Incapable
Farmers	0	0	32	0	0
Collectors	0	0	6	0	0
Processing Industry	0	0	1	0	0
Roasteries and Cafes	0	0	2	0	0
Total	0	0	41	0	0
Total Score	0	0	123	0	0
Index Percentage (%)			60.00		

Figure 4. Market governance in robusta coffee value chain of Sukamakmur district

This governance structure is different from the coffee value chains in Mandailing, North Sumatra, and Bondowoso, East Java which have Modular governance structures (Mulyati and Indrawan, 2021; Aisyah, 2022) as well as coffee value chains in Enrekang, South Sulawesi; Bangli, Bali; and Sumedang, West Java; which have Relational governance structure (Vicol et al. 2018). Similarly, Rwandan coffee has evolved into Relational governance since the mid-1990s (Behuria, 2020). This can be explained by the fact that these studies focused on Arabica coffee, exported as specialty or single-origin coffee, with criteria according to importer standards. The lead firm for Arabica coffee is a global exporter, international coffee processing company, or global coffee shop network. Meanwhile, in this study, Robusta coffee is intended for the domestic processing industry, as ground coffee or as an ingredient in instant coffee, so high standardization and grading are unnecessary. Developing coffee products with specific requirements and standards is part of the value chain governance carried out by lead firms. As Krisnamurthi et al. (2023) suggest, rules and standards are developed to drive, coordinate, and normalize the value chain.

Managerial Implication

Regarding value chain development, the government could facilitate collaboration and partnership among different actors in the value chain to foster a more participatory and inclusive governance system and intervene to upgrade the value chain. Additionally, the government can provide technical assistance and capacity building to strengthen the institutional capacity of smallholder farmers and other actors in the value chain to obtain maximum rents.

Theoretically, market governance makes transactions simple, and suppliers can produce product autonomy with minimal buyer involvement and coordination. Price serves as the primary governing mechanism within the relationship. Thus, market governance can create opportunities for small-scale coffee producers to participate in the value chain. With reduced barriers to entry and a focus on competition, it becomes easier for new actors to enter the market, fostering inclusivity and potentially providing a platform for economic growth and development at the grassroots level.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The actors involved in the value chain of Robusta coffee in Sukamakmur District, Bogor Regency, West Java are farmers, small-scale collectors, large-scale collectors, regional traders, coffee processing companies, coffee roasting companies, retailers, and cafés. Governance in the Robusta coffee value chain is categorized as market governance with low information complexity, high information codifiability, and high supplier capability. Producers are able to create goods with minimal buyer involvement and coordination. More than half of the farmers and traders share information about green bean prices and demand. There is no partnership among actors, and pricing decisions are based on market mechanisms. Furthermore, actors in the Robusta value chain share information and knowledge about production methods, processing, and product quality, where the specifications for Robusta coffee requested by consumers are still simple. The transactions in the Robusta value chain are simple, and by the market mechanism, product specifications are easily codified, and supplier capabilities are high.

Recommendations

The Robusta coffee value chain development in Bogor Regency requires all actors' support. One alternative is establishing partnerships with downstream actors to improve coordination among value chain actors and give producers better access to information and technology. In addition, intervention from lead firms regarding coffee quality is needed because cooperation between farmers and lead firms often leads to product innovations, which can increase the added value of Robusta coffee products. Furthermore, the role of local

government as a facilitator is necessary to support the creation of formal relationships among all actors in the Robusta coffee value chain. Effective value chain governance is expected to help firms improve efficiency, reduce costs, and increase innovation while benefiting consumers and society.

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