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The Economic Impact of Kopi Gunung Kelir Geographical Indication on Farmer Groups in Semarang Regency

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Abstract
Geographical Indications (GI) are promoted as instruments to enhance the competitiveness of region-based products and improve producers' welfare; however, empirical evidence at the local community level in Indonesia remains limited and shows inconsistent economic outcomes. This study examines the impact of GI certification of Kopi Gunung Kelir on the economic conditions and governance of the farmers' association (Gapoktan) in Semarang Regency. A qualitative narrative approach was employed through in-depth interviews, observation of production and quality control practices, and documentation of the GI book of requirements. Data were analyzed using condensation and narrative interpretation with source triangulation. The findings indicate that GI certification encouraged adjustments in production standards, strengthened quality control systems, and improved institutional coordination. Although product quality and market recognition increased, income improvement occurred gradually and was not evenly distributed. The results suggest that the economic effectiveness of GI depends on internal governance capacity and consistent implementation of standards at the community level.

Keywords: Economic Impact, Geographical Indications, Governance, Kopi Gunung Kelir, Quality Control

INTRODUCTION

The protection of regionally-based products has become a strategic concern in efforts to sustain the economic value and cultural identity of producing regions. One of the primary legal instruments employed for this purpose is the geographical indication (GI), a form of intellectual property recognition granted to products whose quality, reputation, and characteristics are closely linked to their geographic origin. This connection is shaped by a combination of natural factors, such as climate, topography, and soil composition, as well as human factors, including local knowledge, traditional production techniques, and processing practices passed down through generations. In this sense, geographical indications do not merely function as legal labels; they embody the regional identity inherent in a product and differentiate it from similar goods produced elsewhere (Direktorat Jenderal Kekayaan Intelektual (DJKI), 2025).

The economic rationale for geographical indication registration centers on the added value it confers upon local products. GI-certified products are widely perceived as possessing guaranteed quality and distinctive characteristics, which can translate into competitive advantages across regional, national, and international markets. Prior studies have demonstrated that geographical indications hold significant potential to increase selling prices, broaden market access, and strengthen the bargaining position of producers, particularly in the agriculture and plantation sectors, which are largely composed of smallholder businesses (Menggala et al., 2021; Vandecandelaere et al., 2020). This economic promise has motivated many developing countries, including Indonesia, to accelerate their GI registration programs as part of broader rural development and trade strategies.

However, the empirical record on geographical indications reveals that their economic impact is far from uniform. The degree to which GI certification translates into concrete economic gains is strongly conditioned by the value chain structure in which producers operate and the institutional capacity they possess (Barus et al., 2026). The success of GIs further requires

collective coordination and effective governance mechanisms to ensure an equitable distribution of economic benefits among stakeholders (Ramaano, 2025; Shahzad & Wang, 2025). From a regional development perspective, GIs are considered effective only when they are integrated with local capacity-building strategies; in isolation, the legal recognition of a geographical indication does not guarantee improved livelihoods for upstream producers (Nurohma, 2020). Cross-country evidence consistently shows that institutional strengthening, production coordination, and fair value distribution within the supply chain are decisive determinants of GI outcomes (Nan et al., 2023; Polater et al., 2024; Sharma, 2023).

A recurring concern in the GI literature is the asymmetric distribution of economic benefits across the supply chain. Several studies have found that downstream actors, processors, traders, and exporters, tend to capture a disproportionate share of the value generated by GI certification, particularly when organizational strengthening and market access improvements have not accompanied the registration process for primary producers(Vandecandelaere et al., 2020). This pattern is evident in Indonesia as well, where studies on coffee and other agricultural commodities suggest that improvements in product quality through GI schemes have not consistently corresponded with direct improvements in farmer welfare (Hanapi et al., 2026; Laksono et al., 2023; Waspiah et al., 2024). This gap between the normative objectives of geographical indications and the lived reality of implementing communities underscores the need for grounded, context-specific analysis.

Beyond legal recognition, obtaining a geographical indication carries tangible operational implications. GI certification entails adherence to binding production and processing standards, covering the use of raw materials, approved processing techniques, and quality control systems, that producers must consistently uphold. The implementation of such standards requires meaningful adjustments to work patterns and production governance within farming communities. Compliance is not merely administrative; it demands sustained changes to everyday practices. The success of a GI therefore hinges, in large part, on producers' capacity to manage and institutionalize these changes over time (DJKI, 2025).

Indonesia presents a particularly fertile context for examining these dynamics. The country's biological and cultural diversity has generated a wide array of distinctive regional products, and by 2025 the DJKI had registered more than 260 products as geographical indications, with agricultural and plantation commodities, including coffee, tea, pepper, rice, salt, and palm sugar, comprising the dominant share (DJKI, 2025). Despite this progress, many potentially eligible local commodities remain without GI protection, reflecting a persistent gap between regional resource potential and effective utilization of the GI legal framework. Within this agricultural landscape, coffee occupies a uniquely strategic position: Indonesia is the world's fourth-largest coffee producer after Brazil, Vietnam, and Colombia, making coffee a vital export commodity and a principal source of income for millions of smallholder farmers (Tampubolon et al., 2023; Tresliyana Suryana et al., 2024). Coffee is also a commodity whose characteristics are highly sensitive to geographic factors, altitude, rainfall, and soil type, producing flavor profiles that are intimately tied to specific production areas and that align naturally with the logic of geographical indication protection (Latunra et al., 2023). Strengthening institutional capacity at the farmer group level is recognized as a critical driver of competitiveness and sustainability within this sector.

Semarang Regency is among the coffee-producing regions of Central Java, with diverse coffee products marketed under varying characteristics and brands across several sub-districts. Robusta coffee production in the regency reached 2,025.50 tons, representing approximately 27.4% of total production across its three main plantation commodities, affirming coffee's status as one of the region's leading agricultural outputs (Pusat Data dan Sistem Informasi Pertanian, 2024). To date, two coffee products in Semarang Regency have received geographical indication certification. This study focuses on Kopi Gunung Kelir, managed by the Farmers' Group

Association (Gapoktan), which was selected for its demonstrated readiness in implementing post-certification processing standards, its consistent quality control practices, and the active engagement of its farmer group members in both production and marketing activities (DJKI, 2025). These attributes make Kopi Gunung Kelir the most representative case for empirically examining the relationship between GI certification and the economic conditions of farming communities.

Despite the growing body of scholarship on geographical indications, most existing studies have focused on cross-country or regional contexts featuring relatively established agribusiness systems. Research that specifically examines the economic impact of GI certification on coffee farming communities at the local level in Indonesia, particularly in Semarang Regency, remains limited. The divergence between global findings and the ground-level realities of GI implementation in smallholder settings represents a critical gap that this study seeks to address.

Against this backdrop, this study aims to analyze the economic impact of the Kopi Gunung Kelir geographical indication on Farmer Group Associations (Gapoktan) in Semarang Regency. The analysis centers on changes in economic conditions following GI certification, tracing how shifts in processing standards and quality control interact with the economic performance of farming communities. The findings are intended to provide an empirical contribution to the development of GI studies in the Indonesian context and to serve as a practical reference for producer communities, regional policymakers, and other stakeholders engaged in the governance of geographical indications.

RESEARCH METHODS

This study used a qualitative approach with narrative research to understand the experiences and changes experienced by coffee farming communities after obtaining geographical indication certification, specifically regarding production management, quality control, and the economic conditions of the Kopi Gunung Kelir Farmers' Group (Gapoktan Kopi Gunung Kelir). The study was conducted in Semarang Regency, focusing on the Kopi Gunung Kelir Farmers' Group (Gapoktan Kopi Gunung Kelir), a producer of geographically indicated coffee. The research focused on the economic dynamics and changes in management practices after geographical indication certification, implemented at the farmer group level (Direktorat Jenderal Kekayaan Intelektual (DJKI), 2025).

Data collection was conducted through in-depth interviews, limited observations, and a documentary study of the robusta coffee geographical indication requirements book. Interviews were used to explore the experiences of farmers and Gapoktan administrators regarding changes in income, work patterns, and the sustainability of their farming businesses. Observations were conducted to observe the implementation of coffee processing and quality control standards, while documentation was used as supporting data for the study (Guest et al., 2017). Data analysis was conducted through a data condensation process, which involved selecting and focusing data relevant to the research objectives, then interpreting it narratively to understand the relationship between geographical indication certification, changes in management practices, and the economic conditions of Gapoktan. Data validity was tested through source triangulation by comparing the results of interviews, observations, and documentation (Alfansyur & Mariyani, 2020).

RESULT AND DISCUSSION

This section presents the findings of qualitative in-depth interviews conducted with three purposively selected informants representing distinct positions within the Kopi Gunung Kelir value chain: the Chair of Gapoktan Gunung Kelir, an active farmer member, and a downstream consumer. The informant selection reflects the multi-actor dynamics of GI implementation, encompassing the institutional, producer, and market dimensions (Belletti et al., 2017; Bramley et al., 2020). Table 1 provides a summary of informant profiles. The findings are organized into four thematic domains corresponding to the principal research objectives: (1) the GI certification process and its institutional foundations; (2) post-certification changes in production and processing standards; (3) quality control governance; and (4) economic and market outcomes.

Tabel 1. Profile of Research Informants

Code	Name	Role	Involvement	GI Familiarity	Interview Mode
I-1	Ngadiyanto	Chair, Gapoktan Gunung Kelir	More than 20 years coffee farming; initiated GI application	High	In-depth interview
I-2	Artiyanah	Active member, Gapoktan Gunung Kelir	6 years as Gapoktan member; active in cultivation and processing	Medium	In-depth interview
I-3	Verangga	Consumer/ buyer	4 years purchasing Kopi Gunung Kelir; aware of GI status	High	In-depth interview

The GI certification of Kopi Gunung Kelir emerged from a collective initiative by the farmer group, pursued in coordination with the regional government and relevant supporting institutions. According to the Gapoktan Chair (I-1), the process centered on the preparation of a product description document (dokumen deskripsi produk) specifying the coffee's defining characteristics, designated production area, and the processing standards to which all members would be bound. This document constitutes the Requirements Book (Buku Persyaratan), which serves as the primary normative reference for all post-certification production activities.

"The process started from the farmer group's initiative to protect the identity of coffee from the Gunung Kelir area. We then collaborated with the regional government and relevant parties to prepare the product description document, which explains the coffee's characteristics, production area, and the processing standards that apply."

(I-1, Gapoktan Chair, Ngadiyanto)

The primary institutional motivation cited by I-1 was twofold: to protect the reputational identity of Kopi Gunung Kelir and to increase the economic value of the commodity for local farmers. This dual objective, simultaneously normative and economic, is consistent with the foundational rationale for GI registration documented in comparative studies (DJKI, 2025; Tregear et al., 2016). The awareness among farmer members of the GI's significance was also evident at the field level: I-2 (Artiyanah) described GI certification as a mechanism that establishes the distinctiveness of origin, differentiating Kopi Gunung Kelir from products of other regions. This understanding, while expressed in general terms, indicates that the institutional purpose of the GI had been communicated across the membership, even if comprehension of its technical requirements varied in depth.

"Geographical indication is a certification showing that this coffee comes from the Gunung Kelir area and has certain characteristics that coffee from other regions does not have."

(I-2, Farmer Member, Artiyanah)

One of the most substantive outcomes of GI implementation was the transition from informal, habit-based production practices to a standardized production regime. Prior to certification, cultivation and post-harvest activities were conducted without binding written standards. Harvesting decisions were driven primarily by household cash-flow requirements and available labor, rather than by cherry ripeness, a pattern that is common in smallholder coffee systems operating outside formal quality schemes (Katya Kule et al., 2025). Post-harvest processing similarly relied on open-ground sun drying, with drying adequacy assessed through tactile judgment rather than moisture measurement.

Following certification, the Requirements Book became the operative standard for all production activities. The most significant practice-level change was the introduction of mandatory selective red cherry picking, which requires farmers to harvest only fully ripened cherries and to exclude non-conforming lots from use of the GI label. Processing standards were also upgraded, with attention to drying procedures and the maintenance of cleanliness during post-harvest handling. Table 2 summarizes the key dimensions of change observed across the pre- and post-certification periods.

Tabel 2. Comparison of Production and Post-Harvest Practices Before and After GI Certification

Dimension	Pre-Certification	Post-Certification
Harvest standard	No binding standard; mixed-picking practiced based on farmer habit and short-term cash-flow needs	Mandatory selective red cherry picking required under Requirements Book (Buku Persyaratan); non-conforming lots excluded from GI label
Post-harvest processing	Traditional open-ground sun drying; drying adequacy judged by tactile assessment; no moisture measurement	Standardized drying procedures with attention to moisture content targets; processing hygiene requirements introduced
Quality control	No collective inspection mechanism; individual farmer discretion at point of sale	Gapoktan-level supervision of production process; regular guidance (pembinaan) sessions to align members with GI quality standards
Production administration	Individual and informal; no centralized data collection at Gapoktan level	Structured data collection by Gapoktan management covering farm origin and production volume; improved traceability
Market positioning	Undifferentiated; limited market reach beyond local buyers	Recognizable geographic identity; expanded market access including out-of-district buyers and café sector

Source: Synthesized from field interviews and observation (2024). I-1 = Gapoktan Chair; I-2 = Farmer Member.

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Importantly, these changes were reinforced through structured training and mentoring (pelatihan dan pendampingan) organized by the Gapoktan. I-2 confirmed that training sessions covered selective cherry picking, drying techniques, and post-harvest handling, the three areas most directly specified in the Requirements Book. This institutional scaffolding is significant: the GI literature consistently identifies training and extension support as a critical condition for the adoption of new production standards at the smallholder level, particularly where prior practice has been informal.

"The Gapoktan periodically provides training and mentoring to farmers regarding cultivation and processing techniques in accordance with the geographical indication standards. The training covers how to selectively pick ripe coffee cherries, the drying process, and post-harvest handling to maintain coffee quality."

(I-2, Farmer Member, Artiyanah)

Despite these advances, I-2 also identified structural constraints that partially impede full compliance. The primary reported challenges were limited access to processing equipment and the increased labor requirements associated with selective picking, both of which raise the cost of compliance for smaller landholders. These findings are consistent with cross-case evidence suggesting that the adoption burden of GI production standards falls disproportionately on resource-constrained producers within a group (Belletti et al., 2017; Biénabe & Marie-Vivien, 2017). GI certification introduced a collective quality control governance structure that had not previously existed within the Gapoktan. I-1 described a system in which the Gapoktan management exercises supervision over member production processes and conducts ongoing guidance (pembinaan) to ensure that quality standards are consistently met. This represents a transition from a purely individual production model, in which quality decisions were made unilaterally at the point of sale, to a collectively governed one in which the group assumes institutional responsibility for product conformity.

"The Gapoktan supervises the production process carried out by farmer group members. In addition, guidance is also provided so that farmers understand the quality standards that must be met."

(I-1, Gapoktan Chair, Ngadiyanto)

Horizontal coordination among members was also emphasized as a key mechanism sustaining quality consistency. I-1 noted that knowledge sharing regarding cultivation and processing techniques occurs regularly within the group, and that Gapoktan coordination ensures alignment with the established standards. This pattern of peer-to-peer knowledge exchange, mediated through organizational coordination, is characteristic of effective GI governance structures identified in the comparative literature (Bernard-Mongin et al., 2021).

"Cooperation among Gapoktan members is considered very important in maintaining the quality of Kopi Gunung Kelir. Farmer group members share information about good cultivation and processing techniques. In addition, the coordination carried out by the Gapoktan helps ensure that all members follow the established production standards."

(I-1, Gapoktan Chair, Ngadiyanto)

However, I-1 also acknowledged that sustaining consistent compliance across all members remains the principal operational challenge, attributing variation partly to unequal access to facilities and knowledge among individual farmers. This internal heterogeneity in compliance capacity is a frequently noted governance challenge in community-based GI systems, particularly in developing-country contexts where infrastructure investment has not kept pace with regulatory upgrading (Shahzad & Wang, 2025). The economic effects of GI certification on Gapoktan members operated through two primary channels: direct price effects and market-access effects. Table 3 summarizes the key economic dimensions before and after certification based on informant accounts.

Tabel 3. Summary of Economic and Market Outcomes Before and After GI Certification

Economic Dimension	Pre-Certification	Post-Certification
Farmgate price trajectory	Unstable; subject to market fluctuation without product differentiation	Upward trend reported by Gapoktan chair (~50% increase cited); greater stability due to clear product identity (I-1)
Price stability	Low; no identity-based market anchor	Improved; GI label provides market anchor that moderates price volatility (I-1, I-2)

Income distribution	Not reported; informal individual transactions	Positive but uneven; income gains not uniformly distributed across all members (I-1)
Market access	Limited to local buyers; limited geographic reach	Expanded to out-of-district buyers; café sector uptake reported (I-2); consumer willingness to pay premium confirmed (I-3)
Consumer confidence	Low awareness of product origin among buyers	GI certification increases buyer trust in authenticity and quality (I-3)

With respect to price effects, I-1 reported that the farmgate price of Kopi Gunung Kelir has increased by approximately 50% relative to the pre-certification period, alongside an improvement in price stability attributable to the product's established market identity. This magnitude of price improvement, if confirmed through quantitative verification, would represent a substantial premium relative to GI cases documented elsewhere in the Indonesian coffee sector (Barus et al., 2026; Tampubolon et al., 2023). However, I-1 also qualified this finding by noting that the income gains have not been uniformly distributed across all Gapoktan members, a pattern consistent with the asymmetric benefit distribution documented in GI value chain research, wherein producers with superior quality, scale, or market access capture a disproportionate share of the premium (Belletti et al., 2017).

"Coffee prices tend to increase by around 50% compared to before. In addition, prices have also become more stable because the product has a clear identity in the market."
(I-1, Gapoktan Chair, Ngadiyanto)

"Although the price increase is not always large and occurs gradually, coffee prices have become more stable because the product has a clear identity in the market."
(I-2, Farmer Member, Artiyanah)

Market access effects were consistently reported across both supply-side informants. I-2 noted that GI certification has facilitated penetration into the café sector and attracted buyers from outside the district, a market segment that was previously inaccessible to Gapoktan members. This market broadening effect aligns with the theoretical premise that GI certification functions as a credence signal that reduces buyer uncertainty and lowers market entry barriers for differentiated regional products (Barus et al., 2026).

"Marketing has become easier because Kopi Gunung Kelir is already known as a product with distinctive characteristics. In addition, the geographical indication identity helps attract buyers from outside the region, and many cafés now use products from Kopi Gunung Kelir."
(I-2, Farmer Member, Artiyanah)

The demand-side perspective, provided by I-3 (Verangga), offers independent corroboration of the market confidence effects reported by producers. I-3 described GI certification as a trust mechanism that verifies the product's origin and quality claims, and expressed willingness to pay a price premium contingent on continued quality maintenance. This consumer disposition is particularly significant in the context of the specialty coffee market, where origin transparency and certification status have been shown to function as key purchase-decision drivers .

"Yes, I am willing to pay a slightly higher price as long as the coffee quality is maintained. In my view, the geographical indication certification provides assurance that the

product comes from a specific region with distinctive characteristics, thereby adding value to the product."

(I-3, Consumer/Buyer, Verangga)

I-3 also independently affirmed the quality consistency of Kopi Gunung Kelir, noting that the sensory profile, described as a distinctive aroma and a balanced acidity-bitterness profile, remained recognizable and stable across purchases. This consumer-perceived consistency serves as external validation of the quality governance changes introduced at the producer level through the GI framework.

"In my view, the quality of Kopi Gunung Kelir is relatively consistent. Each time I buy, the flavor character of the coffee still has the same distinctive features, which gives consumers confidence in the product quality."

(I-3, Consumer/Buyer, Verangga)

Taken together, the findings illustrate that Geographical Indication certification for Kopi Gunung Kelir has functioned primarily as an institutional mechanism for the progressive formalization of production standards and the consolidation of collective governance within the Gapoktan. Observable economic benefits, including farmgate price improvement, enhanced price stability, expanded market access, and strengthened consumer confidence, have materialized in the post-certification period, though their distribution across members remains uneven and their full realization remains constrained by structural factors including unequal access to processing equipment, the elevated labor costs of selective harvesting, and the continued role of intermediaries in the local supply chain.

These findings are broadly consistent with the incremental model of GI-driven value creation documented in the comparative literature, wherein reputational capital and institutional consolidation precede, and provide the necessary foundation for, more substantial income gains at the producer level (Marescotti et al., 2020; Bramley et al., 2020). The evidence also confirms the theoretical proposition that the economic effectiveness of GI certification is contingent on the quality of collective coordination and the organizational capacity of the producer group, both of which remain ongoing rather than completed achievements in the case of Gapoktan Gunung Kelir.

CONCLUSION

Taken together, the findings illustrate that Geographical Indication certification for Kopi Gunung Kelir has functioned primarily as an institutional mechanism for the progressive formalization of production standards and the consolidation of collective governance within the Gapoktan. Observable economic benefits, including farmgate price improvement, enhanced price stability, expanded market access, and strengthened consumer confidence, have materialized in the post-certification period, though their distribution across members remains uneven and their full realization remains constrained by structural factors including unequal access to processing equipment, the elevated labor costs of selective harvesting, and the continued role of intermediaries in the local supply chain. These findings are broadly consistent with the incremental model of GI-driven value creation documented in the comparative literature, wherein reputational capital and institutional consolidation precede, and provide the necessary foundation for, more substantial income gains at the producer level. The evidence also confirms the theoretical proposition that the economic effectiveness of GI certification is contingent on the quality of collective coordination and the organizational capacity of the producer group, both of

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REFERENCES

Alfansyur, A., & Mariyani. (2020). Seni Mengelola Data : Penerapan Triangulasi Teknik , Sumber Dan Waktu pada Penelitian Pendidikan Sosial. *Historis*, *5*(2), 146–150.

Barus, R., Nasution, H. F., & Jufri, M. (2026). When Certification Matters More Than Productivity: Geographical Indications and the Social Construction of Coffee Prices Among Smallholder Farmers in Rural Indonesia. *Baileo: Jurnal Sosial Humaniora*, *3*(2), 524–541. https://doi.org/10.30598/baileofisipvol3iss2pp524-541

Belletti, G., Marescotti, A., & Touzard, J.-M. (2017). Geographical Indications, Public Goods, and Sustainable Development: The Roles of Actors' Strategies and Public Policies. *World Development*, *98*, 45–57. https://doi.org/10.1016/j.worlddev.2015.05.004

Bernard-Mongin, C., Balouzat, J., Chau, E., Garnier, A., Lequin, S., Lerin, F., & Veliji, A. (2021). Geographical Indication Building Process for Sharr Cheese (Kosovo): "Inside Insights" on Sustainability. *Sustainability*, *13*(10), 5696. https://doi.org/10.3390/su13105696

Biénabe, E., & Marie-Vivien, D. (2017). Institutionalizing Geographical Indications in Southern Countries: Lessons Learned from Basmati and Rooibos. *World Development*, *98*, 58–67. https://doi.org/10.1016/j.worlddev.2015.04.004

Direktorat Jenderal Kekayaan Intelektual (DJKI). (2025). *Data Statistik Indikasi Geografis Indonesia Tahun 2025*.

Hanapi, S., Khaliqi, M., Alfayanti, A., Malau, L. R. E., Laksono, P., Hutapea, Y., Permadi, D. B., & Ulya, N. A. (2026). Smallholder coffee farmers' preferences for partnership scheme attributes: a case of geographical indication coffee in Semende, Indonesia. *Cogent Food & Agriculture*, *12*(1). https://doi.org/10.1080/23311932.2026.2616069

Katya Kule, E., Kyohangirwe, A., Midamba, D. C., & Byakatonda, J. (2025). Determinants of adoption of climate-smart agricultural technologies among smallholder coffee farmers in Western Uganda. *Cogent Social Sciences*, *11*(1). https://doi.org/10.1080/23311886.2025.2588856

Laksono, P., Arina, Ashari, D., & Hanapi, S. (2023). Smallholder Farmers' Perception on Coffee Production under Geographical Indication Scheme. *E3S Web of Conferences*, *444*, 02022. https://doi.org/10.1051/e3sconf/202344402022

Latunra, A. I., Pasinta, T. D., Umar, M. R., & Ardiansyah. (2023). Bantaeng Geographical Indication Arabica Coffee Coffea Arabica: Does Altitude Affect the Quality of the Coffee Bean? *Jurnal Penelitian Pendidikan IPA*, *9*(11), 10499–10505. https://doi.org/10.29303/jppipa.v9i11.5136

Menggala, S. R., Vanhove, W., Muhammad, D. R. A., Rahman, A., Speelman, S., & Van Damme, P. (2021). The Effect of Geographical Indications (GIs) on the Koerintji Cinnamon Sales Price and Information of Origin. *Agronomy*, *11*(7), 1410. https://doi.org/10.3390/agronomy11071410

Nan, D., Shahbaz, P., Haq, S. ul, Nadeem, M., & Imran, M. (2023). The Economies' Ability to Produce Diversified and Complex Goods to Meet the Global Competition: Role of Gross Value Chain, Institutional Quality, and Human Capital. *Sustainability*, *15*(8), 6513. https://doi.org/10.3390/su15086513

Nurohma, N. (2020). Perlindungan Indikasi Geografis Untuk Melindungi Produk-Produk Masyarakat Lokal. *JATISWARA*, *35*(2). https://doi.org/10.29303/jtsw.v35i2.250

Polater, A., Yumurtacı Hüseyinoğlu, I. Ö., Kingshott, R. P., & Schepis, D. (2024). Drivers of geographical indication food supply chain performance: a B2B network perspective.

Journal of Business & Industrial Marketing, *39*(7), 1433–1451. https://doi.org/10.1108/JBIM-06-2023-0313

Pusat Data dan Sistem Informasi Pertanian. (2024). *Buku Outlook Komoditas Perkebunan: KOPI*. https://satudata.pertanian.go.id/assets/docs/publikasi/Buku_Outlook_Kopi_2023_lengkap.pdf

Ramaano, A. I. (2025). The essence of geographic information systems (GIS) in sustainable tourism, public leadership and inclusive community participation in remote-African rural societies. *Journal of Responsible Production and Consumption*, *2*(1), 27–49. https://doi.org/10.1108/JRPC-10-2023-0013

Shahzad, S., & Wang, B. (2025). Geographical Indications and Sustainable Development: Bridging Policy Gaps in Pakistan's GI Framework for Socio-Economic Growth. *Sustainability*, *17*(11), 5114. https://doi.org/10.3390/su17115114

Sharma, M. G. (2023). Supply chain, geographical indicator and blockchain: provenance model for commodity. *International Journal of Productivity and Performance Management*, *72*(1), 92–108. https://doi.org/10.1108/IJPPM-05-2021-0288

Tampubolon, J., Ginting, A., Nainggolan, H. L., & Tarigan, J. R. (2023). Indonesian Coffee Development Path: Production and International Trade. *Asian Journal of Agricultural Extension, Economics & Sociology*, *41*(12), 316–328. https://doi.org/10.9734/ajaees/2023/v41i122335

Tresliyana Suryana, A., Saleh, Y., Gita Dewi, T., & Sulistyawati Purwaning Rahayu, H. (2024). Global competitiveness of coffee products: A comparative study of Indonesia and Vietnam. *Coffee Science*, *19*, 1–11. https://doi.org/10.25186/.v19i.2237

Vandecandelaere, E., Teyssier, C., Barjolle, D., & Fournier, S. (2020). Strengthening Sustainable Food Systems through Geographical Indications: Evidence from 9 Worldwide Case Studies. *Journal of Sustainability Research*, *2*(4). https://doi.org/10.20900/jsr20200031

Waspiah, W., Niravita, A., Naelufar, R., Putri, N. M., & Eka Saputra, D. (2024). From Bean to Benefit: How Indonesian Intellectual Property (IP) Law Protects the Coffee Farmers in Indonesia? *Jambe Law Journal*, *7*(2), 429–453. https://doi.org/10.22437/home.v7i2.443