

Beyond the Label: Income-Based Heterogeneity in Consumer Valuation of Geographical Indication (GI) Coffee in Indonesia

Arif Yustian Maulana Noor*

Department of Socio-Economic, Faculty of Agricultural, Universitas Brawijaya, Malang,
Indonesia

*Corresponding Author Email: arifyustian@ub.ac.id

Riyanti Isaskar

Department of Socio-Economic, Faculty of Agricultural, Universitas Brawijaya, Malang,
Indonesia

Email: riyanti.fp@ub.ac.id

Fahriyah

Department of Socio-Economic, Faculty of Agricultural, Universitas Brawijaya, Malang,
Indonesia

Email: fahriyah.fp@ub.ac.id

Novi Haryati

Marketing and Consumer Behaviour Group, Wageningen University, Droevendaalsesteeg 4,
6708 PB Wageningen, Belanda

Email: novi.haryati@wur.nl

Qurrotu Ainin Nadhifah

Department of Socio-Economic, Faculty of Agricultural, Universitas Brawijaya, Malang,
Indonesia

Email: nadiva2303@gmail.com

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Abstract

Purpose: This study investigates how Indonesian consumers value geographical indication (GI) labels on coffee products and examines whether preferences and willingness to pay differ across income groups. It addresses a key research gap concerning consumer-side valuation of GI certification in emerging markets, where trust mechanisms are shaped by both institutional and relational factors. **Design/methodology/approach:** A discrete choice experiment (DCE) was conducted with 435 active coffee consumers between August and September 2024. Four attributes—GI label, coffee variety, product form, and price—were

systematically varied using an orthogonal random design. Data were analyzed using a conditional logit model (clogit) estimated through the survival package in R, with separate estimations for overall and income-segmented samples. **Findings:** The results show that both formal (official GI logo) and informal (seller claim) labels significantly increase consumer utility, with the official GI logo producing the strongest effect. Middle-income consumers exhibit the highest willingness to pay for GI-certified coffee, indicating that certification credibility resonates most strongly within this aspirational market segment. Price sensitivity remains highest among low-income consumers, while high-income consumers rely more on experiential and brand-based cues. **Research limitations/implications:** The study focuses on stated preferences in a hypothetical context, which may differ from revealed behavior. Future research could integrate sensory evaluation and real-purchase experiments to enhance external validity. **Practical implications:** Findings provide actionable guidance for agribusiness stakeholders, suggesting that GI promotion strategies should emphasize consumer education, affordable product segmentation, and integration of digital traceability to strengthen domestic market adoption. **Originality/value:** This research is the first to empirically quantify income-based heterogeneity in consumer valuation of GI-labeled coffee in Indonesia. It extends theoretical understanding of trust mechanisms in hybrid markets and informs both GI policy and agribusiness marketing strategies in emerging economies.

Keywords: Geographical Indication, Consumer Preferences, Discrete Choice Experiment, Willingness To Pay, Coffee Market Segmentation, Income Based

Introduction

Geographical indications (GIs) have become one of the most influential market signals in shaping consumer valuation of agri-food products, especially for commodities where quality and authenticity are difficult to verify at the point of purchase. GI labels communicate embedded information about provenance, production methods, and cultural heritage, functioning as a powerful trust mechanism in markets characterized by information asymmetry (Crespo-Moncada et al., 2025; Nirosha et al., 2025). Across various food and beverage categories, GIs often command price premia by assuring product authenticity and connecting consumption to place-based narratives (Neilson et al., 2018; Tan et al., 2024). Within the global coffee market, GI serves not only as a differentiation tool but also as a cultural and economic asset that strengthens value capture for producing regions (Ashardiono & Mardani, 2024). However, the success of GI-based differentiation depends on consumer perception and segment targeting. Premium coffee markets, in particular, are often shaped by high-income consumers who exhibit stronger preference for quality cues and symbolic consumption (Maciejewski et al., 2019; Liu et al., 2019). This raises a crucial question about the extent to which GI labeling drives valuation across different income strata in emerging coffee markets like Indonesia, where premiumization trends are intensifying but consumer understanding of certification remains uneven (Putro et al., 2025).

Despite a growing body of literature on coffee consumer behavior, important knowledge gaps remain regarding how consumers interpret and prioritize product attributes, especially those related to certification and origin. Earlier studies consistently reported positive willingness to pay (WTP) for sustainability and ethical certifications such as Fair Trade, Rainforest Alliance, or organic labels (Merbah et al., 2024; Rossi et al., 2024). Yet, the relative importance of GI labels compared to other extrinsic attributes such as brand, price, and convenience has received less systematic attention. Moreover, findings across contexts suggest that consumer

preferences for labeling are highly heterogeneous, influenced by demographic, cultural, and income-related factors (Abdu et al., 2021). Existing evidence also indicates that price sensitivity and information salience significantly shape valuation outcomes in discrete choice settings (Mohammadi et al., 2017; Soekhai et al., 2018). However, many studies have focused on global or Western markets, while domestic consumer behavior in major producing countries like Indonesia remains understudied. This lack of localized evidence limits understanding of how consumers in emerging markets internalize GI-related information and how their valuation patterns differ from those observed internationally.

In the Indonesian context, most GI research has emphasized the institutional, regulatory, and supply-side dimensions rather than consumer perception and valuation. Previous studies identified that the implementation of GI certification for coffee has contributed to improved traceability, enhanced regional reputation, and opportunities for collective branding (Neilson et al., 2018; Tan et al., 2024). Nonetheless, translating these benefits into measurable consumer demand has been less straightforward due to inconsistent label recognition and limited marketing outreach (Crespo-Moncada et al., 2025). Furthermore, the domestic market exhibits a dual trajectory, rapid growth of specialty coffee culture in urban centers and persistent dominance of traditional coffee consumption in rural and lower-income areas (Ashardiono & Mardani, 2024). These dynamics highlight a potential segmentation problem—whether the perceived value of GI-certified coffee is concentrated among upper-income consumers or shared more broadly. Income plays a central role in shaping consumer valuation of credence attributes, including GI certification, especially in emerging markets where purchasing power, price sensitivity, and label literacy vary widely across socioeconomic groups. Prior research consistently identifies income as one of the most stable predictors of heterogeneity in willingness to pay for certified or origin-linked products (Cerjak et al., 2020; Chen et al., 2023). Accordingly, using income as the primary segmentation variable allows this study to capture structured differences in how consumers interpret, trust, and financially prioritize GI labels. Empirical studies quantifying Indonesian consumers' WTP for GI labels, especially in relation to income differences, remain sparse. While a few experiments have explored organic or sustainability attributes in coffee (Putro et al., 2025), systematic analyses comparing the effectiveness of official GI logos against informal seller claims within domestic markets are still lacking.

Building on these gaps, this study contributes to the literature by advancing a structured discrete choice experiment (DCE) that isolates the consumer valuation of GI labels in the Indonesian coffee market. The research introduces three distinct innovations relative to prior studies. First, it distinguishes between formal and informal certification signals by comparing consumer responses to an official GI logo, a seller claim, and an unlabeled baseline. This differentiation captures varying levels of information credibility and institutional trust (Tan et al., 2024). Second, it situates GI labeling within a realistic market context by combining it with intrinsic (variety, form) and extrinsic (price) attributes in an orthogonal design. This approach allows estimation of attribute trade-offs and quantification of monetary value using marginal willingness-to-pay analysis (Liu et al., 2019; Rossi et al., 2024). Third, it explores heterogeneity by income segments to assess whether higher-income consumers exhibit systematically greater valuation of GI attributes compared to middle- or lower-income groups. By adopting the conditional logit model under the random utility framework, the analysis aligns with

current methodological standards for stated preference research (Hensher, Rose, & Greene, 2015) and extends the discussion on market segmentation for GI-certified coffee.

The objectives of this study are to estimate consumers' preferences and WTP for GI-labeled coffee products and to identify heterogeneity in these valuations across income groups. By empirically modeling the interaction between certification credibility, price sensitivity, and purchasing power, the study contributes to the growing scholarship on consumer behavior in origin-linked products. The results expand the understanding of how GI labels operate within domestic markets of producing countries and complement existing international studies on consumer response to certification schemes (Merbah et al., 2024; Abdu et al., 2021). In doing so, this research not only refines theoretical insight into the signaling value of GIs but also provides actionable knowledge for marketers, cooperatives, and policymakers seeking to strengthen GI-based differentiation strategies in Indonesia's coffee sector.

The implications of this research are twofold. From a managerial perspective, understanding how different income groups perceive and value GI certification helps firms design segmentation strategies and communication campaigns that align with consumer expectations. If middle-income consumers demonstrate a comparable or even higher valuation of GI-labeled products than wealthier consumers, this finding challenges traditional assumptions of premium-market exclusivity and underscores the potential for broader domestic positioning of GI-certified coffee. From a policy standpoint, credible consumer valuation evidence can guide public and institutional efforts to reinforce the integrity and visibility of GI logos, thereby enhancing both consumer trust and producer incentives to maintain compliance. More broadly, by providing robust econometric evidence of consumer preferences, this study bridges the gap between certification policy and market behavior, supporting the long-term sustainability and competitiveness of Indonesia's coffee industry (Salamanca et al., 2025).

Literature Review

Consumer preference in differentiated food markets is grounded in the view that utility is derived from product attributes and the information signals that reveal them. Contemporary applications build on attribute-based and random utility traditions to explain how credence cues, such as origin and certification, reshape perceived quality, risk, and trust in purchase contexts with information asymmetry. Recent syntheses emphasize that preferences are constructed in situ and moderated by experience, income, and literacy about labels, which implies heterogeneity that is systematic rather than noise (Hensher, Rose, & Greene, 2015; Spiller et al., 2019; Glenk & Colombo, 2019). In coffee, attribute hierarchies increasingly place extrinsic information—origin, certifications, and convenience—alongside intrinsic cues, with status and identity effects salient in urban, middle-class segments (Joo et al., 2021; Grashuis, 2022).

Discrete choice experiments provide a well-established framework to recover these preferences by observing repeated choices over experimentally varied profiles. Methodological advances since 2015 underscore the importance of design realism, opt-out options, and orthogonality/level balance to mitigate hypothetical bias and dominance patterns, while stratified estimation accommodates panel structure and segment heterogeneity (Hensher, Rose, & Greene, 2015; de Bekker-Grob, Donkers, & Veldwijk, 2020).

Studies also show that presenting visual aids improves comprehension of complex labels and reduces variance in responses for credence attributes (Marette, Roosen, & Blanchemanche, 2019). For agri-food certifications, DCEs remain the dominant approach to estimate trade-offs among price, quality signals, and convenience in a way that maps directly to managerial and policy decisions (Grebitus, Lusk, & Nayga, 2020). To reduce potential hypothetical bias and narrow the gap between stated and actual behavior, the DCE was designed using realistic price levels that reflect prevailing retail prices and included an opt-out alternative to mimic real market conditions. These design features are recommended in the stated-preference literature to enhance external validity and reduce over-stated willingness to pay in hypothetical settings.

The conversion of estimated taste parameters into monetary terms through marginal willingness to pay is central to interpreting certification value. Under a linear price specification, mWTP emerges from the ratio of an attribute's coefficient to the negative of the price coefficient, enabling comparison across labels and formats on a common currency scale. Recent contributions caution that mWTP is sensitive to model specification, scale heterogeneity, and price framing, advocating robust designs and segment-wise estimation to stabilize money-metric measures (Hensher, Rose, & Greene, 2015; Scarpa, Thiene, & Train, 2020). For credence labels, mWTP captures not only perceived quality but also reductions in uncertainty and search costs, which often explains sizeable premia even when intrinsic sensory differences are modest (Glenk & Colombo, 2019; Grebitus, Lusk, & Nayga, 2020).

Empirically, coffee markets show consistent but context-dependent premia for origin and certification signals. Post-2015 evidence reports positive WTP for Fairtrade, organic, and traceability marks, moderated by income, sustainability attitudes, and café culture exposure (van Loo et al., 2015; Müller & Ruf, 2018; Grashuis, 2022). Studies in emerging Asia document strong responsiveness to convenience formats and credible labels, with middle-income consumers particularly reactive to verifiable quality signals while remaining price aware (Hoang et al., 2019; Chen et al., 2023). Experimental work highlights that simplified, salient logos outperform text-heavy claims when label literacy is uneven, reinforcing the need to distinguish formal marks from informal assertions in design and analysis (Marette, Roosen, & Blanchemanche, 2019). For geographical indications specifically, recent reviews and country cases find that verified GI logos enhance authenticity perceptions, mitigate information frictions, and can elevate producer value capture, but effectiveness depends on institutional credibility and consumer recognition in domestic markets (Durand & Fournier, 2018; Barjolle, Jeanneaux, & Sylvander, 2020; Belletti & Marescotti, 2021). Evidence from producer countries indicates that GI benefits are uneven unless downstream communication and retail execution translate legal status into consumer-facing signals, and that segment heterogeneity—often along income and experience—conditions the realized premium (Cavicchi et al., 2018; Barone et al., 2022). These insights motivate an income-segmented DCE that pits formal GI logos against softer seller claims and competing coffee attributes, and that reports mWTP to inform both policy and agribusiness strategy in a rapidly evolving Indonesian market.

Methods

Sample and Survey

This study adopted a non-probability sampling approach to identify participants who represented the population of active coffee consumers in Indonesia. Such an approach was considered appropriate given the exploratory and behavioral focus of this research, where the emphasis was on respondents' familiarity with coffee consumption rather than random population coverage. The participants were required to be regular coffee drinkers, consuming coffee several times a week either at home, in cafés, or through retail purchases. This ensured that respondents had sufficient experience and understanding of coffee attributes, allowing them to make meaningful choices when presented with alternative product profiles. The use of a targeted sampling strategy aligns with methodological standards for stated preference studies in consumer behavior research, which prioritize relevance and awareness over representativeness in the traditional statistical sense (Bryman, 2016; Hair et al., 2020).

The data collection was conducted during August to September 2024 using an online survey administered through Populix, a reputable digital research platform widely used for academic and commercial studies in Indonesia. Populix was selected because it maintains a verified respondent database and allows researchers to filter participants according to behavioral characteristics, including frequency of coffee consumption and purchasing habits. The platform's credibility, user authentication system, and automatic response validation procedures supported data accuracy and minimized potential sampling errors or fraudulent entries. A short pilot test with 30 respondents was first conducted to refine question wording, confirm clarity of the choice sets, and ensure that the layout was easily understood across different devices.

To guarantee the relevance of the sample, screening questions were embedded at the beginning of the survey. These items verified whether respondents were routine coffee consumers, familiar with packaged or branded coffee, and had previously purchased coffee either through physical stores or online platforms. Individuals who did not meet these criteria were automatically excluded from participation. This procedure helped ensure that the final respondents had sufficient market awareness and product experience, consistent with recommendations from choice modeling literature (Hensher, Rose, and Greene, 2015). The online questionnaire was self-administered and designed to be completed in approximately ten to twelve minutes. It consisted of three integrated sections, beginning with an introductory explanation of the study purpose and ethical consent, followed by the discrete choice experiment containing eight randomized choice tasks generated through orthogonal design, and concluding with socio-demographic questions on gender, education, marital status, and income. Participation was voluntary and confidential, and all responses were screened for consistency and response time to maintain data integrity. The final dataset comprised 435 valid observations, reflecting a diverse and demographically balanced sample of Indonesian coffee consumers.

Experimental Design

The experimental design of this study was structured based on a rigorous two-step approach involving a preliminary literature review and an exploratory survey with potential coffee consumers. The selection of attributes and their corresponding levels was informed by previous DCE studies in agri-food markets, particularly those addressing GI products and

coffee differentiation. Prior research has shown that labeling and certification attributes are crucial determinants of consumer preference and WTP (Teuber, 2010; Loureiro & McCluskey, 2000). Similarly, variety and processing form have been widely recognized as key sensory and convenience attributes influencing coffee choice (Ponte, 2020; Lee et al., 2022). Price, as a mandatory attribute in DCE design, was included to capture trade-off behavior and to allow for monetary valuation of non-price attributes (Lancaster, 1966; Louviere et al., 2000). A short pilot survey involving 30 consumers across Surabaya and Sidoarjo confirmed the salience and comprehension of these attributes, ensuring that all selected features were meaningful and realistic within the local specialty coffee market.

Four attributes were finalized for the experimental design: GI label, variety, form, and price per 500 grams. The GI label attribute consisted of three levels, namely no label, seller claim, and official GI logo—representing an ascending order of formality in quality assurance, as justified by previous studies on consumer trust in certification systems (Tregear et al., 2007; Belletti et al., 2017). The variety attribute included Mix, Robusta, and Arabica, reflecting the most common market segments in Indonesia’s coffee industry and their distinct flavor and reputation profiles (Neilson et al., 2020). The form attribute comprised roasted beans and ground coffee, representing consumers’ preference trade-off between freshness and convenience (Samoggia & Riedel, 2018). Price levels were set at IDR 70,000, 80,000, and 90,000 per 500 grams, based on the prevailing retail prices of medium- to premium-quality locally branded coffee, ensuring realistic decision contexts (Bank Indonesia, 2024).

Table 1

Attribute and Level

Attribute	Level
Label	No Label; Seller claim; Official GI Logo
Variety	Mix; Robusta; Arabica
Form	Bean Roasted; Ground
Price for 500 gram (IDR)	70,000; 80,000; 90,000

The DCE questionnaire was constructed using the support.CEs package in R, which allows for the generation of statistically efficient random designs with orthogonality and level balance. The random design approach ensures that each attribute varies independently across choice sets, minimizing multicollinearity and enabling unbiased estimation of main effects (Aizaki & Nishimura, 2008). Each respondent was presented with two product alternatives plus one “opt-out” option, representing the choice of not purchasing any of the products. The inclusion of an opt-out alternative follows established DCE practice to simulate real market conditions where consumers can decide not to buy if neither product is appealing (Adamowicz et al., 1998). This design enhances external validity by preventing forced choices and capturing true preference heterogeneity.

To improve comprehension and reduce cognitive bias, each choice set was accompanied by illustrative images of the coffee packaging consistent with the assigned attribute combinations. Visual aids have been shown to improve the reliability of responses by reducing misinterpretation, particularly in multi-attribute experiments involving labeling and certification cues (Lusk & Schroeder, 2004). The final questionnaire consisted of eight randomized choice sets per respondent, each structured to balance cognitive load and

response accuracy. The experimental design thus combined methodological rigor and contextual realism, ensuring the robustness of consumer preference estimates for GI-certified coffee.



Figure 1. One example of the choice set in the DCE Questionnaire

Data Analysis

The data analysis in this study was based on the discrete choice modeling framework derived from random utility theory (RUT), which assumes that individuals choose the alternative that provides the highest utility among a set of available options. Each respondent in the experiment faced several hypothetical choice tasks, where each alternative coffee product was characterized by a combination of attributes and levels. To estimate the probability of choosing a specific alternative, the study employed the conditional logit (clogit) model using the “survival” package in R, following the specification introduced by McFadden (1974). This approach is suitable for analyzing choice data with grouped observations, as it accounts for repeated choices made by the same individual within multiple choice sets.

The utility that respondent i derives from alternative j in choice situation t is represented as:

$$U_{ijt} = \beta'X_{ijt} + \varepsilon_{ijt}$$

where U_{ijt} is the total utility associated with the coffee alternative, X_{ijt} is a vector of observable attributes, β is a vector of parameters to be estimated, and ε_{ijt} is a random error term assumed to follow a Type I Extreme Value distribution. The probability that respondent i selects alternative j from the available choice set C is modeled as:

$$P_{ijt} = \exp(\beta'X_{ijt}) / \sum_{k \in C} \exp(\beta'X_{ikt})$$

which expresses the likelihood that an alternative with higher systematic utility is chosen over others in the same choice set. A positive coefficient (β) implies that an attribute positively contributes to consumer utility, while a negative coefficient reflects a reduction in the likelihood of choice.

The estimation procedure was implemented using the `clogit()` function from the `survival` package, which fits a stratified conditional logistic regression model. Each stratum corresponds to a single choice task, and the dependent variable indicates whether an alternative was chosen (coded as 1) or not (coded as 0). The model includes attribute-level dummy variables for categorical factors such as labeling, variety, and coffee form, while price is entered as a continuous variable to capture its marginal impact on utility. Clustered robust standard errors were computed to account for within-respondent correlations, improving the reliability of inference.

The marginal willingness to pay (mWTP) for each non-price attribute was calculated as the ratio of the attribute's coefficient to the negative of the price coefficient, following the standard formula:

$$mWTP_k = -(\beta_k / \beta_p)$$

where β_k is the coefficient for attribute k and β_p is the coefficient of the price variable. This transformation provides an interpretable monetary measure of how much consumers value a specific attribute improvement, such as the addition of a GI label or a preferred coffee type. The analysis was performed both for the overall sample and for separate income-based subgroups to identify preference heterogeneity. Income segmentation was selected because it reflects fundamental structural differences in consumers' purchasing power and premium-product accessibility, two determinants that strongly influence responses to certification labels. Compared with psychographic variables such as sustainability values or label familiarity, income offers an objective and theoretically grounded basis for segmentation widely adopted in studies of differentiated food markets. This makes income a suitable variable to detect systematic heterogeneity in WTP for GI labels. Model performance was evaluated using log-likelihood statistics and the significance of estimated parameters.

Findings

This section presents the empirical findings from the discrete choice experiment (DCE) designed to analyze Indonesian consumers' preferences for GI-labeled coffee. The results are organized to reflect both the overall sample and the segmented estimations by income group, providing a nuanced view of heterogeneity in consumer behavior.

Table 2

Respondent Profile

Variable	Category	Frequency	Percentage
Gender	Female	303	69.66
	Male	132	30.34
Education	Primary/Junior High	3	0.69
	High School	190	43.68
	Diploma/Bachelor	234	53.79
	Postgraduate	8	1.84
Marital Status	Married	326	74.94
	Single	109	25.06
Income Group	Low (< IDR 3 million / < ≈ USD 190)	142	32.64
	Middle (IDR 3–7 million / ≈ USD 190–445)	153	35.17
	Upper (> IDR 7 million / > ≈ USD 445)	140	32.18

Table 2 presents the demographic characteristics of the respondents, revealing a diverse yet balanced sample composition. The majority were female participants, indicating an active female involvement in coffee purchasing decisions. Most respondents had at least a high-school or tertiary education, suggesting a relatively informed consumer base. The predominance of married individuals reflects a mature consumer group, while the income distribution shows a nearly even spread across low-, middle-, and upper-income brackets. This distribution implies that the sample adequately captures preferences across different socioeconomic segments, making the subsequent discrete choice estimations representative of varied market strata.

Table 3

Conditional Logit Estimates (Overall Sample)

Level Attribute	Coeff (SE)	OR
ASC	2.15*** (0.20)	8.62
Seller claim (No label)	0.81*** (0.04)	2.25
Official GI logo (No label)	1.46*** (0.05)	4.30
Robusta (Mix)	0.13*** (0.04)	1.14
Arabica (Mix)	0.19*** (0.05)	1.21
Ground (Bean)	0.72*** (0.04)	2.06
Price (500 gram)	-0.21* (0.02)	0.81

Notes: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Baselines: GI label = *None*; Variety = *Mix*; Form = *Roasted beans*. A positive coefficient indicates higher utility relative to its baseline; for price, the coefficient is expressed for a Rp10,000 increase (p-values unchanged by rescaling).

Table 3 reports the conditional logit results for the overall sample. The results show that certification and labeling attributes strongly influence consumers' utility. Products with either a seller claim or an official GI logo are substantially more preferred than unlabeled coffee, with the official GI logo generating the highest marginal utility. Coffee presented in ground form also attracts significantly higher preferences compared to roasted beans, reflecting a likely convenience motive. Among varieties, both Robusta and Arabica outperform the mixed blend baseline, although the magnitude of preference is modest. The negative coefficient for price confirms the expected inverse relationship between price and choice probability, indicating price sensitivity among consumers even within the specialty coffee context.

Table 4

Conditional Logit Estimates by Income Segment

Level Attribute	Low		Middle		Upper	
	Coeff (SE)	OR	Coeff (SE)	OR	Coeff (SE)	OR
ASC	2.51*** (0.25)	12.33	1.34*** (0.41)	3.82	1.62** (0.75)	5.06
Seller claim (No label)	0.80*** (0.05)	2.22	0.84*** (0.09)	2.32	0.82*** (0.17)	2.28
Official GI logo (No label)	1.50*** (0.06)	4.48	1.49*** (0.10)	4.45	0.97*** (0.19)	2.64
Robusta (Mix)	0.14*** (0.05)	1.15	0.18** (0.09)	1.20	-0.14 (0.17)	0.87
Arabica (Mix)	0.14** (0.05)	1.15	0.35*** (0.09)	1.42	0.21 (0.17)	1.23
Ground (Bean)	0.68*** (0.05)	1.97	0.73*** (0.08)	2.08	1.12*** (0.15)	3.06
Price (500 gram)	-0.26* (0.03)	0.77	-0.12 (0.05)	0.89	-0.14 (0.09)	0.87

Notes: *** p<0.01; ** p<0.05; * p<0.1. Baselines identical to Table 1. The negative price coefficients indicate reduced odds of choosing an alternative as price increases; effects are strongest (most negative) for the Low-income segment.

Table 4 disaggregates preferences by income segments, uncovering distinct behavioral patterns. The valuation of quality signaling through GI labels remains consistently positive across all income groups, although the magnitude is notably smaller among higher-income respondents for the official logo. This may suggest that wealthier consumers rely less on formal certification, potentially due to greater product knowledge or brand familiarity. Conversely, low- and middle-income consumers display stronger reliance on quality labels, implying that certifications effectively build trust within these groups. The preference for ground coffee increases progressively with income, suggesting an association between convenience-oriented consumption and purchasing power. While Robusta and Arabica varieties are positively valued among low- and middle-income groups, the upper-income group exhibits an attenuated or even negative response toward Robusta, aligning with a more selective taste profile. Price sensitivity is most pronounced among the low-income group, as indicated by the strongest negative price coefficient, whereas higher-income consumers appear less deterred by price increases.

Table 5

Marginal Willingness to Pay (mWTP) by Income Segment (Rp)

Level Attribute	Overall	Low	Middle	Upper
Seller claim (No label)	37,684	30,884	70,909	57,973
Official GI logo (No label)	67,898	58,123	125,758	68,332
Robusta (Mix)	6,138	5,459	15,480	-9,916
Arabica (Mix)	9,043	5,277	29,512	14,771
Ground (Bean)	33,665	26,375	61,726	78,818

Note: Exchange rate used: **1 USD = 15,762 IDR**, corresponding to the **average monthly rate for August 2024**, sourced from **Bank Indonesia's JISDOR exchange rate database (accessed November 3, 2025)**.

Table 5 translates these utility estimates into marginal willingness-to-pay (mWTP) values. Across the entire sample, consumers express a strong monetary premium for products carrying the official GI logo, followed by the seller claim label, underscoring the economic significance of geographical certification. The mWTP estimates reveal that middle-income consumers are willing to pay the highest additional amount for GI-certified and labeled coffee, reflecting a convergence of purchasing power and perceived authenticity. High-income consumers also value ground coffee substantially, indicating a preference for practicality and modern consumption formats. Interestingly, while Robusta maintains a small positive valuation among lower-income groups, it turns negative among the upper-income segment, suggesting a symbolic shift toward Arabica as a marker of quality and refinement. Collectively, the mWTP patterns illustrate differentiated valuation structures driven by income heterogeneity and attribute salience, highlighting the strategic role of GI labeling in reinforcing consumer trust and market segmentation within Indonesia's coffee sector.

Discussion and Conclusion

The empirical findings of this study offer several important insights into the behavioral mechanisms underlying consumers' preferences for GI-certified coffee in Indonesia. The results demonstrate that GI labeling—both in its formal (official logo) and informal (seller claim) forms—plays a dominant role in shaping consumer utility and willingness to pay. Across the overall sample, the official GI logo consistently generated the highest positive coefficient, signifying a strong trust effect embedded in institutional certification. This finding is broadly consistent with international evidence indicating that official geographical indications enhance perceived authenticity and quality assurance (Mariani et al., 2015; Van Ittersum et al., 2019). However, the results also reveal that informal seller claims retain a significant positive valuation, suggesting that in developing markets where formal GI literacy is still limited, reputation-based signals and interpersonal trust can complement or partially substitute for institutional labels. Similar patterns of dual trust have been observed in other emerging contexts (López & Méndez, 2021).

In emerging markets such as Indonesia, informal seller claims and official GI labels influence consumer valuation through different yet complementary trust channels. Seller claims activate relational trust, which is shaped by habitual purchase patterns, perceived honesty of vendors, and social familiarity. In contrast, official GI logos signal institutional trust, derived from regulatory verification and formal quality assurance. This study shows that both signals raise utility, but the official GI logo delivers a substantially larger effect. Practically, this implies that informal claims can be mobilized as an entry-level communication tool for consumers with low label literacy, while GI logos consolidate trust among more informed buyers who seek stronger and more standardized assurances.

The strong positive valuation of ground coffee across all segments indicates a clear preference shift toward convenience-oriented consumption. As disposable incomes rise and urban lifestyles intensify, Indonesian consumers appear to value practicality as a proxy for modernity and quality. This result reinforces recent findings from Asian coffee markets that link convenience with aspirational consumption patterns among younger and middle-income consumers (Kim et al., 2020; Wijaya & Prabowo, 2023). It also reflects the broader structural transformation of Indonesia's coffee culture, from traditional brewed beverages toward branded, ready-to-prepare products. Interestingly, both Robusta and Arabica varieties

received positive but relatively small coefficients, implying that consumers perceive coffee variety as less decisive than labeling cues in determining product quality. This contrasts with the results from European and Latin American markets, where variety and origin often dominate choice architecture (Donnet et al., 2019; Liu & Chen, 2022). The Indonesian pattern suggests that consumers' cognitive weighting of attributes prioritizes trust and convenience over taste differentiation, possibly due to the relatively young stage of specialty coffee literacy within the domestic market.

When disaggregated by income, the study uncovers distinct behavioral patterns that enrich the understanding of segmentation in emerging premium coffee markets. Among low-income consumers, the strongest marginal disutility is associated with price, reflecting high price sensitivity and lower tolerance for premium attributes. Nevertheless, this group still demonstrates significant positive valuation for both GI logo and seller claims, confirming that even budget-constrained consumers recognize and appreciate quality signals when clearly communicated. This observation resonates with earlier research emphasizing that lower-income consumers in developing countries can display aspirational consumption behavior—seeking affordable authenticity and status through symbolic labels (Ateş & Bayraktar, 2017). The willingness to pay a moderate premium for GI attributes among low-income consumers suggests that GI-based differentiation, if coupled with tiered pricing strategies, could penetrate mass-market segments rather than remaining confined to luxury niches.

In the middle-income segment, the results reveal the highest willingness to pay for GI-labeled coffee, particularly for the official logo. This finding carries both theoretical and managerial significance. Theoretically, it challenges the assumption that upper-income consumers are the sole drivers of demand for certification-based differentiation (Cerjak et al., 2020). Middle-income consumers in Indonesia appear to be the most responsive to formal certification, reflecting a balance between affordability and an increasing desire for authenticity and traceability. This outcome is consistent with findings from other emerging markets, such as Vietnam and Thailand, where middle-income consumers demonstrated strong preferences for certified and origin-linked agricultural products (Nguyen et al., 2021; Kongsom et al., 2022). The behavioral mechanism here may be tied to rising education levels, digital literacy, and social exposure, which enhance awareness of product quality narratives. From a market strategy standpoint, this group represents the most strategic target for GI-branded coffee, as they are willing to pay notable premiums without being detached from domestic retail channels.

Conversely, among upper-income consumers, the results suggest a nuanced and somewhat counterintuitive pattern. Although this segment maintains positive valuation for GI-labeled coffee, the magnitude of their coefficients and willingness to pay are lower than those of the middle-income group. This may indicate that affluent consumers rely less on certification logos and more on direct experiential cues such as brand reputation, taste sophistication, or exclusivity. Such patterns are consistent with research on luxury and specialty coffee markets, where elite consumers prioritize intrinsic quality and authenticity experienced firsthand, rather than externally validated signals (Halkier & Jensen, 2020; Murakami et al., 2023). Additionally, the negative or insignificant valuation for Robusta among this group aligns with the established association between higher income and preference for Arabica varieties, reflecting taste-based segmentation consistent with international specialty coffee trends

(Aung & Myint, 2021). These patterns highlight the importance of differentiating marketing messages—formal certification appeals may be more persuasive among aspirational middle-class consumers, whereas upper-income consumers might respond better to brand storytelling and sensory experience.

An overarching implication of these findings is that GI labeling in Indonesia functions not merely as a certification mark but as a market communication device whose effectiveness depends on the interplay of consumer literacy, trust, and income. The strong trust effect observed in this study corroborates the argument that institutional labeling remains a cornerstone for enhancing product credibility in markets with asymmetric information (Hassan et al., 2022). Yet, the parallel strength of informal claims points to the persistent relevance of relational trust and social signaling in emerging economies, where certification institutions are still consolidating legitimacy. This coexistence extends hybrid-market debates by showing how formal certification can be layered onto longstanding relational norms in everyday coffee purchases, rather than replacing them outright (Karaosman et al., 2018; Zhao et al., 2022).

From a methodological standpoint, the study also underscores the robustness of discrete choice experiments using conditional logit estimation under survival-based frameworks. The consistency of coefficients and logical sign patterns across income strata validates the use of this approach for analyzing preference heterogeneity in multi-attribute coffee markets. Moreover, the explicit inclusion of an opt-out option strengthens external validity by mimicking realistic consumer decision environments, as recommended by recent methodological studies (Determann et al., 2019; Kragt & Nguyen, 2020).

In theoretical terms, these results contribute to the expanding discourse on consumer heterogeneity in origin-linked product valuation. The alignment of middle-income consumer behavior with formal certification trust models reinforces emerging evidence that middle-class expansion in developing economies is reshaping traditional segmentation hierarchies in premium food markets (Chen et al., 2023). Meanwhile, the contrast between formal and informal trust channels deepens understanding of how institutional development interacts with cultural consumption patterns to mediate the effectiveness of certification signals. The findings thus bridge two domains of literature: the economics of information in labeling (Caswell & Mojduszka, 2019) and the sociology of consumption in post-traditional markets (Halkier & Jensen, 2020).

These income-segmented results confirm the central role of middle-income consumers as the anchor market for GI-certified coffee, combining sufficient purchasing power with high receptiveness to certification-based differentiation. Low-income consumers demonstrate latent potential for inclusive GI marketing through simplified communication and smaller packaging formats, while upper-income consumers may demand more personalized, experiential engagement beyond labeling. These differentiated insights advance not only the academic understanding of certification effectiveness but also provide practical pathways for policy and marketing alignment in promoting Indonesia's geographical indication system.

Overall, these patterns confirm that institutional GI certification already serves as a credible anchor in Indonesia's premium coffee market, but its contribution to choice and WTP is

mediated by income-specific differences in how consumers interpret certification signals. These income-based patterns underline the need for segmentation-sensitive GI strategies that differentiate positioning, pricing, and communication across low-, middle-, and upper-income consumers rather than assuming a single 'GI consumer' in the domestic market. Together, these results illustrate that GI-based differentiation has broad domestic appeal but requires income-sensitive marketing and communication strategies to achieve optimal market penetration. From an agribusiness perspective, the most immediate and realistic actions for small coffee producers involve low-cost practices that directly support consumer trust. These include improving the visibility and consistency of the GI logo on packaging, simplifying short origin and production narratives, and offering smaller and more affordable packaging sizes to reach middle- and lower-income segments. These steps require limited financial investment yet can deliver substantial gains in market recognition and perceived credibility. More resource-intensive initiatives—such as digital traceability, QR-based information systems, or national-level GI promotion campaigns—remain valuable but are often beyond the capacity of individual smallholder groups. Such initiatives should be pursued gradually and primarily through support from cooperatives, local governments, or development partners. By distinguishing between immediate, high-impact actions and longer-term initiatives, these recommendations better reflect the practical constraints of small producers while still aligning with broader goals for strengthening Indonesia's GI system and coffee sector competitiveness.

Theoretical Implications

The findings of this study contribute to the theoretical advancement of consumer behavior and labeling economics by reinforcing the explanatory power of random utility theory in emerging markets with hybrid trust systems. The evidence that both formal GI certification and informal seller claims positively influence consumer utility supports the notion that credibility cues operate along a continuum of institutional and relational trust, rather than as discrete substitutes. This challenges the traditional dichotomy between formal and informal markets and extends signaling theory to contexts where certification literacy and social embeddedness interact. Furthermore, the differentiated preferences across income groups provide empirical validation for income-based heterogeneity models within discrete choice frameworks, emphasizing that consumer valuation of credence attributes is shaped by socio-economic position and symbolic consumption motives. These insights enrich existing frameworks of attribute-based utility formation and suggest that future theoretical models of consumer preference in agri-food markets must account for the coexistence of formal credibility and social trust in developing economies.

Practical and Social Implications

From a practical standpoint, the results provide clear guidance for agribusiness firms, cooperatives, and policymakers seeking to strengthen the competitiveness of Indonesia's GI-certified coffee sector. The strong consumer response to the official GI logo suggests that investment in certification visibility, retail education, and consistent labeling can significantly enhance market trust and product differentiation. Middle-income consumers—identified as the most responsive segment—represent a key strategic target for GI marketing, calling for pricing and communication strategies that emphasize authenticity and regional identity while remaining accessible. For smallholder cooperatives, the findings imply that aligning production and packaging with GI standards can increase domestic market access and value

capture, especially when combined with storytelling and traceability tools such as QR-coded labels. Socially, the study underscores the role of GI certification as a mechanism for inclusive rural development. By linking consumer trust to verified origin and local identity, GI systems can strengthen rural livelihoods, preserve cultural heritage, and support equitable participation of producers in higher-value markets. Expanding consumer awareness through education campaigns and digital platforms can democratize access to quality information, enabling informed purchasing decisions and reducing market asymmetry. These efforts align with broader sustainability goals by fostering transparent, fair, and locally grounded agrifood systems that benefit both producers and consumers in Indonesia.

Limitations and Suggestions for Future Research

This study is limited by its reliance on stated preference data, which may not fully reflect actual market behavior. Future research should consider combining discrete choice experiments with revealed preference or experimental auction methods to enhance external validity. The analysis also focused primarily on income segmentation, leaving room to explore other determinants such as environmental concern, brand familiarity, or cultural identity that may further explain heterogeneity in consumer valuation. Methodologically, applying advanced models such as mixed logit or latent class analysis could capture unobserved preference variation more effectively. Extending similar research across different regions or commodities would also provide comparative insights into how geographical indication (GI) certification influences consumer trust and willingness to pay in diverse agri-food contexts.

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