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GREEN MARKETING AS A STRATEGIC DRIVER OF GREEN ECONOMY TRANSFORMATION: A CASE STUDY OF PESANTREN ANNUQAYAH

Nur Hasan Zaifullah[1*], Maksum[2]
[1,2]Universitas Annuqayah, Indonesia
zaifullahnurhasan@gmail.com
maksummuktie89@gmail.com
** Corresponding Author*

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Abstract

Green marketing is rarely examined in faith-based institutions, even though pesantren can drive grassroots sustainability. This study examines how green marketing drives green economy transformation at Pondok Pesantren Annuqayah, Guluk-Guluk, Sumenep, Indonesia. It also assesses the educational impact of this effort on sustainable economic practices in the surrounding community. We used a qualitative case study. Data came from in-depth interviews with 28 purposively selected informants, participatory observation, and document analysis, and were analyzed using the Miles et al. interactive model. The pesantren has institutionalized green marketing across its business units, most fully in the student canteen. It applies four dimensions: green product, green price, green place, and green promotion. Supporting infrastructure strengthens these dimensions. The program has also fostered sustainability-oriented entrepreneurship among alumni and spread green behavior into the community. The main theoretical contribution is a theologically embedded green marketing mix. Green product is governed by the prohibition of harm (la dharar), green price reflects sufficiency (qana'ah), green place follows mutual assistance (ta'awun), and green promotion is mediated by kyai authority. Pesantren managers can use this model to align pricing, sourcing, and communication with religious ethics. Policymakers can use it to engage religious leaders as partners in community-level green economy programs.

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INTRODUCTION

The intensification of global environmental challenges has fundamentally reshaped economic and institutional paradigms across all sectors, compelling organizations to incorporate ecological sustainability as a core dimension of strategic planning and operational practice (Rahman & Nguyen-Viet, 2023). Within the broader sustainability discourse, two interrelated frameworks have gained considerable scholarly and policy traction: green economy, understood as a model of economic organization that generates sustained social well-being while significantly reducing environmental risk and ecological scarcity (D'Amato et al., 2017; Loiseau et al., 2016); and green marketing, a strategic approach embedding environmental responsibility throughout product development, pricing, distribution, and promotional activities, organized around four core dimensions of green product, green pricing, green place, and green promotion (Chung, 2020; Dangelico & Vocalelli, 2017; Fatimah & Chrismardani, 2022; Manongko, 2018). Together, these frameworks provide an actionable basis for institutional transformation toward sustainability, generating measurable economic, social, and environmental benefits including poverty reduction, employment creation,

and reduced greenhouse gas emissions (D'Amato et al., 2017; Nekmahmud & Fekete-Farkas, 2020; V. W. Putri et al., 2020). Meta-analytic evidence further indicates that green marketing improves the performance of small and medium enterprises, with green promotion emerging as the most critical antecedent (Oduro & Matarazzo, 2025).

While this global sustainability agenda is increasingly embedded in national policy frameworks, its translation into grassroots economic institutions, particularly those operating outside the conventional corporate sector, remains uneven. Indonesia's Islamic boarding school (pondok pesantren) sector illustrates this translation gap clearly. In Indonesia, Islamic boarding schools constitute a distinctive institutional category with profound implications for the national sustainability agenda. Pesantren have historically functioned as multidimensional social institutions, serving simultaneously as centers of religious education, community leadership, cultural preservation, and local economic activity (Maulida & Ali, 2023; Mutawally, 2023). With an estimated population of over 43,000 pesantren institutions nationwide (Kemenag RI, 2025), their collective influence on Indonesian society, culture, and local economies is both extensive and deeply embedded. Despite their institutional significance, however, pesantren continue to face persistent economic vulnerabilities, including limited financial autonomy, heavy dependence on philanthropic donations and governmental support, inadequate income diversification, and restricted access to capital resources (Juhaidi et al., 2023). These structural weaknesses are frequently compounded by economic practices that fail to account for environmental sustainability, including high energy consumption patterns, inadequate waste management systems, and indiscriminate natural resource use, thereby undermining both institutional resilience and the well-being of surrounding communities (Diavano, 2022; Ginsberg & Bloom, 2004). Addressing these interconnected economic and environmental challenges requires innovative institutional strategies capable of leveraging pesantren's unique social positioning.

The alignment between green marketing principles and Islamic ethical values provides a particularly robust normative foundation for sustainability-oriented transformation within pesantren institutions. Islamic jurisprudence and theology consistently emphasize human responsibility for environmental stewardship, as reflected in the Quranic injunction to act as vicegerents (khalifah) of the Earth (Q.S. Baqarah: 30) and in the principle of maslahah, which prioritizes the common good over narrow individual or institutional interests (Dita et al., 2020). Reviews of Muslim engagement with environmental issues likewise show that Islamic environmentalism is widely articulated in Indonesia, although its translation into everyday practice remains uncertain (Koehrsen, 2021). Islamic values of stewardship, the avoidance of wastefulness, and cooperation have also been argued to facilitate the transition toward a circular economy (Javaid, 2022).

Critically, these theological principles do not merely complement green marketing frameworks in a general sense, they reconstitute the operative logic of each marketing mix dimension within an Islamic institutional context. Green product development is governed by the Islamic prohibition of harm (la dharar), directing product design away from environmental damage; green pricing reflects sufficiency ethics (qana'ah), prioritizing affordability and sufficiency over profit maximization; green place prioritizes community-benefiting localized supply chains aligned with the principle of mutual assistance (ta'awun); and green promotion is uniquely mediated through kyai religious authority, which carries normative behavioral influence in Islamic

educational communities that commercial advertising cannot replicate. This theologically embedded reinterpretation of the 4Ps constitutes the primary differentiating theoretical contribution of this study relative to prior green marketing research conducted in commercial contexts. Empirical research has confirmed this alignment, demonstrating that green marketing frameworks resonate meaningfully within Islamic educational and organizational contexts and can serve as effective vehicles for translating religious environmental ethics into concrete economic behavior (Dita et al., 2020; Irfany et al., 2024; Mawftiq & Segara Gustanto, 2023). Studies of Muslim consumers in Indonesia and Malaysia likewise identify religious values as a significant influence on environmental concern and green purchase intention, and a systematic review found religiosity to be the most frequently reported determinant of Muslims' green purchase behavior (Ghazali et al., 2018; Hassan, 2014; Lestari et al., 2025).

This theological reconstruction of the marketing mix is not merely a matter of cultural framing; it directly addresses the structural barriers that most commonly undermine green marketing adoption in developing countries. Where price sensitivity typically discourages consumers from choosing environmentally responsible alternatives (Nekmahmud & Fekete-Farkas, 2020), the ethic of qana'ah reframes sustainability as a matter of sufficiency and restraint rather than premium consumption, addressing the price barrier at its normative root rather than through subsidy or marketing appeal alone. Where limited environmental awareness constrains demand-side adoption, the prohibition of harm (la dharar) supplies a pre-existing moral vocabulary through which environmental responsibility can be taught and internalized, rather than introduced as an unfamiliar external value. Where institutional inertia limits supply-chain reform, the principle of mutual assistance (ta'awun) provides a ready normative basis for localized, community-benefiting distribution arrangements. And where conventional green promotion relies on advertising credibility that institutions in developing countries often lack the resources to build, kyai authority substitutes an existing and durable source of trust. Evidence from emerging economies similarly shows that income and education shape green buying intentions (Kaur et al., 2022), which is consistent with the affordability barrier discussed above. Islamic theological principles thus do not simply run parallel to green marketing objectives; they function as an alternative adoption mechanism suited to institutional and economic conditions under which conventional green marketing strategies are known to struggle.

A systematic review of existing literature reveals significant gaps at the intersection of green marketing, Islamic educational institutions, and sustainable economic development. Empirical green marketing research has predominantly concentrated on commercial sectors, including hospitality management (Chung, 2020), small and medium enterprises (V. W. Putri et al., 2020), consumer goods purchasing behavior (Fatimah & Chrismardani, 2022), and corporate environmental communication and greenwashing (Rahman & Nguyen-Viet, 2023). Pesantren-related sustainability research, conversely, has focused on ecological education programs (Aulia et al., 2024; Irawan, 2022; Subaidi et al., 2023; Widianto et al., 2023), green economy policy alignment with Islamic principles (Mawftiq & Segara Gustanto, 2023), and pesantren-based economic empowerment (Ithriyah et al., 2022), without systematically examining green marketing as an integrated institutional strategy for driving green economy transformation. Even studies conducted at Annuqayah itself have examined environmental conservation and agrarian strengthening rather than green marketing

(Nailur Ridha & Abdul Wahid, 2022). Crucially, none of this literature treats religious authority itself as a theoretically legitimate mechanism of green marketing communication. Although studies of kyai leadership in eco-pesantren show its role in shaping ecological piety and conservation practice (L. D. Putri et al., 2023; Subaidi et al., 2023), they do not frame it as a marketing communication mechanism.

Where commercial green promotion relies on advertising credibility and brand trust (Rahman & Nguyen-Viet, 2023), kyai authority operates through a different epistemic basis: normative legitimacy grounded in religious knowledge and communal trust accumulated over generations. This distinction positions kyai-mediated promotion not as an informal substitute for marketing communication but as a structurally different, and within its institutional context potentially more effective, mechanism that existing commercial-sector green marketing frameworks are not designed to account for.

In developing nations, green marketing adoption faces distinctive structural constraints including price sensitivity, limited environmental awareness, and institutional inertia (Nekmahmud & Fekete-Farkas, 2020), challenges that the pesantren context partly mitigates through the substitution of religious normative authority for commercial persuasion. Green marketing research in developing country institutional contexts remains underexplored (Braik et al., 2024), and the application of green marketing as an integrated strategy within faith-based educational settings has not yet been systematically examined. This gap is particularly consequential given two realities: the scale of Indonesia's pesantren sector positions these institutions as potential grassroots engines of community-level sustainable development, and the absence of empirically grounded models of green marketing adoption in faith-based educational contexts limits both academic understanding and practical replication across the wider pesantren network.

Building on the identified research gap, this study addresses two primary research questions: (1) How is green marketing implemented as a strategic driver of green economy transformation at Pondok Pesantren Annuqayah, Guluk-Guluk, Sumenep? (2) What is the educational impact of the pesantren's green marketing programs on the development of sustainable economic practices within the surrounding Guluk-Guluk community?

This study addresses these questions through an in-depth qualitative case study of Pondok Pesantren Annuqayah, located in Guluk-Guluk District, Sumenep Regency, Madura. Founded in 1887, Pesantren Annuqayah is one of the oldest and most institutionally significant Islamic boarding schools in the Madurese archipelago, and it has implemented a notable range of integrated sustainability initiatives in recent years. These include a student-managed waste management laboratory with documented monthly revenues from recycled paving block production (Amin et al., 2025), a campus-wide plastic-free education policy (As'ary & Maksum, 2024), solar panel installations operational since 2018 (Pesantren Annuqayah, 2025), an organic conservation garden serving as both a biodiversity site and an experiential learning environment (Nailur Ridha & Abdul Wahid, 2022), and formally institutionalized green marketing practices within its cooperative and canteen operations (As'ary & Maksum, 2024). These initiatives collectively constitute a rich and empirically productive site for examining how green marketing functions as an institutional mechanism of green economy transformation within a faith-based educational setting, and for generating transferable insights applicable to comparable institutions across Indonesia and the wider Muslim

world.

Theoretically, this study contributes to the expanding literature on sustainability management in faith-based institutional contexts and provides an empirically grounded conceptual model of green marketing adoption that is transferable to pesantren institutions nationally and internationally. Practically, the findings offer actionable insights for pesantren administrators, sustainability policymakers, and community development practitioners who seek to leverage Islamic educational institutions as culturally legitimate and institutionally capable catalysts for inclusive and environmentally responsible economic transformation.

RESEARCH METHODS

This study employs a qualitative research design with a case study approach, selected for its capacity to generate deep contextual understanding of social phenomena that resist quantification and require interpretive analysis within their natural settings (Creswell & Creswell, 2017). A qualitative approach is particularly appropriate for this investigation, as the study aims to examine institutional practices, educational processes, and community economic dynamics that are inherently context-dependent and embedded in the cultural and religious fabric of a specific Islamic institution (Oktaviany et al., 2025).

Research Setting

The research was conducted at Pondok Pesantren Annuqayah, located in Guluk-Guluk District, Sumenep Regency, Madura, East Java Province, Indonesia. This site was purposively selected based on three primary considerations: the pesantren's documented and ongoing commitment to environmental sustainability evidenced through multiple institutionalized programs; the operational presence of formal green marketing practices within its business and cooperative units; and the accessibility of diverse and knowledgeable informants representing all key institutional roles within the pesantren community.

Research Informants

Research informants were identified through purposive sampling to ensure the inclusion of individuals with direct knowledge of and responsibility within the pesantren's sustainability programs. Informants were selected based on the following inclusion criteria: (1) direct involvement in or responsibility for sustainability, green marketing, or green economy programs at Pesantren Annuqayah; (2) a minimum of one year of active association with the pesantren; and (3) willingness to participate voluntarily and provide informed consent. Individuals were excluded if they had been associated with the pesantren for fewer than one year, had no direct engagement with sustainability-related activities, or were unavailable for interview during the data collection period. A total of 28 informants participated across five categories, as detailed in Table 1.

The adequacy of the 28-informant sample rests on thematic and category-based saturation rather than statistical representativeness. Given the narrow and specific aim of the study (understanding green marketing implementation within a single, well-defined institutional site) and the purposive inclusion of informants across all six functionally relevant categories (kyai, administrators, santri, partner institutions, and community members), data collection continued until no substantively new themes emerged within each informant category. This category-based saturation, rather than aggregate sample size alone, supports the analytical adequacy of the informant

composition for addressing the study's two research questions (Guest et al., 2020; Hennink et al., 2017).

Table 1. Informant Matrix

No.	Informant Category	n	Relevance to RQ1	Relevance to RQ2	Interview Duration (Avg.)	Primary Analytical Method
1	Kyai / Senior Leaders (pengasuh)	4	Strategic green marketing vision & institutional policy	Sustainable economy leadership direction	60 minutes	Thematic coding + triangulation with documentation
2	Pesantren Administrators (pengurus)	6	Business unit operational management	Internal economic impact monitoring	50 minutes	Thematic coding + triangulation with observation
3	Active Students (santri)	10	Green consumer behavior & norm adoption	Reception of green marketing education	35 minutes	Thematic coding + triangulation with observation
4	Partner Institution Representatives	5	Collaborative sustainability governance	External program partnership impact	45 minutes	Thematic coding + cross-informant comparison
5	Community Members (Guluk-Guluk)	3	-	Community economic spillover effects	30 minutes	Thematic coding + cross-informant comparison
Total		28				

This informant composition ensured a comprehensive, multi-perspectival dataset spanning the pesantren's internal operations and its external community relationships.

Data Sources

The study draws on both primary and secondary data. Primary data were obtained directly through in-depth interviews with research informants. Secondary data were derived from institutional documents, pesantren administrative records, program activity reports, and peer-reviewed academic literature pertaining to Pesantren Annuqayah and its sustainability-related programs.

Data Collection Techniques

Observation

Participatory observation was conducted across key operational sites within Pesantren Annuqayah, including the student canteen, the waste management laboratory, the conservation garden, and the solar energy installation. Researchers maintained systematic field notes documenting observable practices, environmental conditions, and social interactions relevant to green marketing and green economy activities (Creswell & Creswell, 2017). The observation principle consistently followed was that researchers recorded only what was directly seen, heard, or experienced, without interjecting personal opinion or premature interpretation.

In-depth Interviews

Semi-structured in-depth interviews were conducted with all 28 informants throughout the 2024 data collection period (Creswell & Creswell, 2017). Interview guides were constructed around the two core research questions while preserving flexibility for informants to raise contextually relevant themes not anticipated in the original protocol. Interviews with kyai and senior administrators addressed institutional motivation, policy formulation, and strategic direction, while interviews with santri and community members focused on behavioral changes, educational impact, and perceived

community outcomes (Yin, 2018).

Documentation

Documentary evidence was systematically collected and analyzed, encompassing internal pesantren regulations, cooperative operating procedures, program activity records, and academic literature directly related to the pesantren's sustainability initiatives (Arikunto, 2006). These documents also included activity reports, records of facility inaugurations, and installation records for the solar power system, which are cited in the text as institutional documentation (2025).

Data Analysis

All data were analyzed using the interactive model developed by Miles et al. (2018), comprising three iterative and concurrent analytical stages. The first stage is data condensation, involving systematic coding, thematic categorization, and the elimination of extraneous material from the raw data corpus. The second stage is data display, wherein condensed data were organized into structured thematic frameworks to facilitate pattern identification and comparative analysis. The third stage is conclusion drawing and verification, in which analytical conclusions were formulated and cross-checked against the complete dataset to ensure accuracy, internal consistency, and empirical grounding.

Operationally, data condensation involved open coding of interview transcripts and field notes to generate initial descriptive codes, which were then grouped into second-order categories aligned with the study's two research questions. During data display, these categories were organized into matrices cross-referencing informant category against the four green marketing mix dimensions and the infrastructure-support theme, allowing patterns of agreement and divergence across informant groups to be systematically identified. Conclusion drawing and verification proceeded through iterative comparison of emergent themes against the raw data corpus and against data obtained through observation and documentation, with any thematic inconsistency across informant categories treated as a prompt for re-examination rather than resolved by majority interpretation alone. Data triangulation was implemented at two levels: source triangulation, achieved by comparing accounts of the same practice (for example, the personal container policy) across kyai, administrators, santri, and community informants; and method triangulation, achieved by cross-checking interview accounts against field observation records and institutional documentation. Discrepancies identified through this process, such as between administrators' accounts of policy compliance and directly observed canteen practice, were resolved through follow-up clarification with the relevant informants.

Data Validity

Two principal strategies were employed to ensure the credibility and trustworthiness of research findings. First, persistent and prolonged observation was maintained throughout the data collection period. Second, data triangulation was systematically applied by cross-referencing information obtained from different informant groups (specifically kyai, administrators, santri, partner institutions, and community members) as well as across different data collection methods, thereby minimizing individual subjectivity and strengthening the internal validity of the study's conclusions (Miles et al., 2018).

Prolonged engagement was operationalized through repeated field presence at Pesantren Annuqayah across the 2024 data collection period, encompassing multiple visits to the canteen, waste management laboratory, and conservation garden to observe

seasonal and operational variation in green marketing practices. To further strengthen credibility, preliminary thematic findings were shared with a subset of key informants, including canteen management and senior administrators, for member checking, allowing informants to confirm, clarify, or contest the researchers' interpretation of their accounts prior to finalization of the analysis (Birt et al., 2016).

Research Ethics

Prior to data collection, formal written research permission (izin penelitian) was obtained from the pesantren's Senior Leadership Council (Dewan Pengasuh Annuqayah). All informants received a written and verbal participant information sheet explaining the research purpose, their voluntary participation rights, data confidentiality assurances, and the right to withdraw at any time without consequences. Informed consent was documented in signed consent forms. For student informants under 18 years of age, additional consent was secured from their respective dormitory supervisors (pengurus asrama). All identifying information is anonymized in the presentation of findings, with participants referred to by role-based codes (e.g., KY-1 for kyai informants, AD-2 for administrator informants, ST-3 for student informants).

As a qualitative single-case study, this research is methodologically oriented toward analytical rather than statistical generalization (Flyvbjerg, 2004; Yin, 2018): its findings are intended to generate a transferable theoretical model rather than to represent the population of Indonesian pesantren. This design choice necessarily limits claims about the prevalence of similar practices across other institutions, a limitation addressed further in the concluding section.

RESULTS AND DISCUSSION

The findings of this study are organized along two primary analytical dimensions corresponding to the two research objectives. The first concerns the mechanisms and outcomes of green marketing implementation as a strategic driver of green economy transformation within Pondok Pesantren Annuqayah. The second addresses the educational impact of the pesantren's green marketing programs on the formation of sustainable economic practices within the broader Guluk-Guluk community. The discussion integrates empirical evidence gathered through field observation, in-depth interviews, and documentary analysis with relevant theoretical frameworks and recent empirical literature.

Implementation of Green Marketing as a Strategic Driver of Green Economy Transformation at Pondok Pesantren Annuqayah

Institutional Architecture: Annuqayah Business Center as the Structural Foundation

The implementation of green marketing at Pondok Pesantren Annuqayah is not incidental or piecemeal but is anchored within a formal institutional structure known as the Annuqayah Business Center (ABC). This body serves as the central governance mechanism for all commercial and sustainability-oriented activities within the pesantren, overseeing multiple business units including Document Center Annuqayah (DCA), Kebun Assalam, Annuqayah Mini Market (AMM), and a catfish aquaculture program (Ithriyah et al., 2022). In addition, the pesantren operates a cooperative encompassing a Sharia Financial Service Unit (UJKS), Warung Assalam, and a branded drinking water enterprise (AMDK). This institutional architecture reflects a deliberate organizational commitment to integrating economic activity with sustainability principles, consistent with Manongko's (2018) argument that effective green marketing

requires comprehensive and systemic organizational alignment rather than isolated environmental initiatives. The existence of a dedicated business governance body distinguishes Pesantren Annuqayah from many comparable institutions and provides the structural precondition for coherent green economy transformation. This finding aligns with broader literature demonstrating that institutional formalization of sustainability governance significantly enhances the consistency and impact of green marketing strategies (Chung, 2020; V. W. Putri et al., 2020).

Green Marketing Mix Implementation (4Ps)

Green Product: Reorienting Goods and Services Toward Environmental Responsibility

The green product dimension of Pesantren Annuqayah's marketing strategy is most comprehensively realized within the student canteen unit (Kantin Lubangsa Utara), where a phased transition from conventional food service to a sustainability-oriented model has been implemented since 2012. In its current form, the canteen provides food products that prioritize health-oriented ingredients while systematically eliminating single-use plastic packaging. The most significant product-level innovation is the mandatory personal container policy, which requires all buyers to bring their own reusable food containers when purchasing meals. This policy effectively transforms the product offering from a packaged commodity into a zero-waste service experience, directly embodying the green product definition proposed by Dangelico & Vocalelli (2017), wherein products are designed and processed to minimize environmental impact across production, distribution, and consumption.

This product innovation reflects the comprehensive green marketing approach described by Majeed et al. (2022), wherein packaging reform, ingredient quality, and environmental messaging collectively shape consumer purchasing decisions through the mediating mechanism of green brand image, a dynamic observable in the gradual normalization of container-based purchasing among the pesantren's student population.

Green Pricing: Maintaining Affordability Within a Sustainability Framework

A critical finding of this study concerns the relationship between green marketing adoption and pricing outcomes at the student canteen. Contrary to the common assumption that environmentally responsible production necessarily increases consumer costs, the canteen has maintained stable and accessible pricing throughout its green marketing transition, with meals priced from a minimum of Rp4,000 per portion. This pricing stability is achieved through operational efficiency gains derived from waste reduction, elimination of single-use packaging expenditure, and optimized inventory management, thereby internalizing environmental savings as cost reductions rather than passing them to consumers as premiums. This finding resonates with the green pricing literature, which distinguishes between premium green pricing strategies and efficiency-based pricing strategies that achieve sustainability without sacrificing market accessibility (Manongko, 2018; Setiyaningrum & Udaya, 2015).

This pricing efficiency outcome is consistent with Braik et al.'s (2024) empirical finding that green marketing practices in developing country food service contexts generate operational cost savings through waste reduction and supply chain optimization, savings that can be passed to consumers as price stability rather than green premiums. Chen and Chang (2012) established that green perceived value, the consumer's assessment that a green product's benefits justify its price, is a critical antecedent of green purchase intentions. The canteen's success in maintaining price

parity while delivering perceived environmental and health benefits directly addresses this value dimension, ensuring that green marketing adoption was not perceived as economically penalizing by cost-sensitive student consumers. Evidence from an emerging market also shows that willingness to pay a premium for green products depends on brand-related perceptions such as loyalty and perceived quality (Nguyen et al., 2025), which helps explain why price parity matters for cost-sensitive student consumers. The pesantren's approach also reflects the Islamic sufficiency ethic of qana'ah, a satisfaction-oriented orientation toward economic activity that restrains the pursuit of profit maximization, consistent with the theologically-grounded pricing logic identified in the introduction of this study.

This pricing outcome nonetheless raises an unresolved tension for the pesantren's business units. Qana'ah-based pricing sustains affordability and consumer trust, but it structurally caps the margin available for reinvestment in green infrastructure, staff training, and resilience against the supply shocks documented later in this section. Canteen management indicated that price stability has, at times, been maintained by absorbing cost increases internally rather than passing them to consumers, a practice that is sustainable in the short term but raises questions about the unit's longer-term financial resilience if raw material costs continue to rise. This reflects a broader dilemma in the sufficiency-ethics literature: qana'ah-oriented pricing is normatively coherent with Islamic economic principles, but its financial sustainability over an extended horizon depends on efficiency gains, such as those achieved through waste reduction, continuing to outpace cost pressures elsewhere in the supply chain. The pesantren's experience suggests that qana'ah-based green pricing is financially viable only when paired with continuous operational efficiency innovation, rather than as a standalone pricing philosophy.

Green Place: Building Sustainable and Localized Supply Chains

The green place dimension of Pesantren Annuqayah's green marketing strategy is expressed through a deliberate effort to shorten and localize its supply chains, thereby reducing the carbon footprint associated with long-distance material transportation. The student canteen sources food ingredients preferentially from local farmers and, where possible, from the pesantren's own agricultural operations through the conservation garden. This localized procurement model reduces transportation-related emissions, supports the economic livelihoods of surrounding farming communities, and reinforces the pesantren's broader commitment to community-based economic development. The approach is consistent with the green distribution literature, which identifies spatial proximity between production and consumption as a key lever for reducing supply chain environmental impacts (Manongko, 2018). Furthermore, the integration of pesantren-managed agricultural sites into the supply chain creates a closed-loop system in which institutional food production, distribution, and waste management are functionally interconnected.

Green Promotion: Environmental Education as Integrated Marketing Communication

Green promotion at Pesantren Annuqayah operates through a distinctively educational register that reflects the institution's identity as a center of learning. Rather than relying on conventional advertising media, the pesantren deploys environmental education as its primary promotional mechanism, utilizing seminars, communal discussions, religious lectures (pengajian), and sustained institutional messaging to

communicate the value and importance of sustainable consumption. The endorsement of sustainability initiatives by senior religious figures (kyai and masyayikh) constitutes a particularly powerful promotional signal within the pesantren community, as religious authority functions as a decisive source of behavioral influence in Islamic educational contexts (Dita et al., 2020). Studies of eco-pesantren in Banten and West Java likewise report that kyai teaching and leadership are central to forming ecological devotion (L. D. Putri et al., 2023; Subaidi et al., 2023), and research at Annuqayah documents the reverence that santri extend to their kyai (Muttaqin et al., 2024). This alignment between Islamic faith values and eco-friendly consumption choices is also documented in Muslim consumer contexts. Irfany et al. (2024) found that, among Indonesian Muslim Generation Z consumers, religiosity shapes attitudes toward environmentally friendly halal products and that these attitudes influence purchase intention. Alotaibi & Abbas (2023) showed that Islamic religiosity raises green food purchase intention through environmental well-being, and research on Muslim students suggests that green marketers should frame environmental conservation as a religious responsibility (Khan & Kirmani, 2018). A comparable pattern is observable within the pesantren's student community.

The effectiveness of this institutional communication approach is theoretically grounded in findings by Correia et al. (2023), who documented that the attentiveness of consumers to environmental messaging significantly predicts green purchasing behavior, particularly among individuals with pre-existing environmental attitudes, a characteristic systematically cultivated among santri through the pesantren's immersive residential education. In green marketing theory, Chen and Chang (2012) identify green trust as the key mediator between environmental messaging and purchase intention. In the pesantren context, kyai religious authority constitutes an intrinsic trust mechanism, one grounded not in commercial credibility but in theological legitimacy, that renders green promotion uniquely effective within this institutional setting

The community of Annuqayah's clerics has publicly championed the plastic-free campus policy as both an ecological and a religious imperative, framing environmental stewardship as an expression of Islamic values of khalifah and amanah (Pesantren Annuqayah, 2025). This integration of religious legitimation with sustainability messaging represents a culturally grounded promotional strategy that leverages the institution's unique authority structure to accelerate behavioral change. The strategy aligns with Manongko's (2018) concept of educating customers as a core green marketing strategy, wherein organizations communicate not only that they are environmentally responsible but also why such responsibility is morally and practically necessary.

Implementation Challenges and Institutional Adaptive Responses

The path toward comprehensive green marketing adoption at Pesantren Annuqayah encountered significant obstacles across all four marketing mix dimensions, and the pesantren's experience of navigating these challenges offers important lessons for comparable institutions.

Green Product barriers: In the initial phase of the green marketing transition, the mandatory personal container policy generated measurable resistance among santri, manifested as a decline in canteen patronage. Informants reported that many students initially perceived the requirement to bring and wash their own containers as an inconvenient burden that disrupted habitual purchasing patterns. A subset of students

also expressed skepticism about the environmental rationale, indicating insufficient prior awareness of waste-related issues. Additionally, seasonal supply inconsistency in locally-sourced ingredients posed a product-level challenge, occasionally requiring procurement from non-local sources during agricultural off-seasons.

Green Pricing barriers: Although the canteen successfully maintained price stability through packaging cost savings, the commitment to locally-sourced ingredients created supply chain vulnerabilities during raw material price fluctuations. Canteen managers reported that during harvest shortfalls, they faced difficult trade-offs between maintaining affordable prices and sustaining green procurement practices, occasionally requiring substitution that affected both cost structures and product consistency.

Green Place barriers: Local production volumes were not always sufficient to meet peak demand periods, requiring the canteen to occasionally source from distant wholesalers and thereby temporarily expanding its transportation carbon footprint. Developing a reliable and diversified local supplier network remains an ongoing institutional challenge.

Green Promotion barriers: While kyai-mediated promotion proved highly effective within the institutional community, its reach was inherently limited to the pesantren's internal population. Extending the promotional impact of green marketing education to the broader Guluk-Guluk community required additional outreach mechanisms beyond in-person religious instruction, revealing the limits of authority-based promotion for external audiences.

These resistance patterns are consistent with findings in the broader green marketing literature, which identifies habitual behavior inertia, inconvenience perception, and low environmental salience as primary barriers to sustainable consumer behavior adoption (Chung, 2020; Rahman & Nguyen-Viet, 2023). The pesantren responded to resistance not through policy relaxation but through sustained educational engagement, repeated environmental communication by religious figures, and peer modeling among environmentally committed santri. This patient, education-centered adaptive strategy gradually shifted the normative environment within the pesantren community, transforming initially resisted policies into normalized and socially expected behaviors.

A further risk, not directly raised by informants but evident from the structural centrality of kyai authority to green promotion, concerns leadership succession. Because green promotion at Pesantren Annuqayah is substantially mediated through the personal religious authority of specific kyai and masyayikh rather than through formalized institutional policy alone, the durability of this promotional mechanism may be contingent on continuity of religious leadership. This concern is consistent with evidence from eco-pesantren in West Java, where kyai leadership has been identified as a key factor in conservation initiatives (Subaidi et al., 2023). Should leadership transition occur, the normative force of green promotion messaging could weaken unless environmental stewardship has, by that point, been institutionalized into pesantren governance structures, curriculum, and organizational routine independent of any individual leader's personal endorsement. This risk is partially mitigated at Pesantren Annuqayah by the fact that green practices are also embedded in formal policy (the mandatory container regulation) and physical infrastructure (the waste laboratory, solar installation) that would persist independent of any single kyai's tenure. However, the promotional and motivational dimension of green marketing, as distinct from its policy and infrastructure dimensions, remains comparatively more exposed to

leadership-dependent variation, an issue meriting explicit attention in future institutional succession planning and future research.

Progressive Adoption: Behavioral Normalization and Waste Reduction Outcomes

The institutional resilience of Pesantren Annuqayah's green marketing strategy is reflected in the progressive growth of participation throughout the implementation period. By mid-2023, participation in the personal container policy at the student canteen had reached a substantial majority of regular buyers, representing a significant behavioral shift across the student community following more than a decade of consistent implementation (As'ary & Maksum, 2024). This progressive adoption trajectory (characterized by initial resistance followed by gradual normalization) is consistent with Rogers' (2003) diffusion of innovations framework, which identifies a characteristic S-curve pattern in which early adoption lag gives way to accelerating uptake as behaviors become normatively embedded within a community. Concurrently, the volume of waste disposed of outside the pesantren perimeter declined significantly, and the quantity of organic waste processed into compost increased correspondingly, indicating systemic improvements attributable to the combined effect of green marketing policies and environmental education.

This pattern of progressive adoption is consistent with Majeed et al. (2022), who found that sustained green marketing approaches, when reinforced by environmental awareness programs, produce cumulative effects on consumer intention and behavior change over time. Correia et al. (2023) found that green marketing communication effectiveness varies significantly by individual green attitude levels, suggesting that the pesantren's strategy of building environmental attitudes through religious instruction first, then layering green consumption norms, follows an educationally sound sequence for producing durable behavioral change.

Green Economy Operational Infrastructure Support

The four dimensions analyzed above describe Pesantren Annuqayah's green marketing mix in the strict sense: consumer-facing commercial strategies concerning what is offered (product), at what cost (price), through which channels (place), and how it is communicated (promotion). The programs discussed in this section (the waste management laboratory, the solar energy system, and the conservation garden) are analytically distinct from this marketing mix. They are not consumer-facing commercial strategies but institutional infrastructure: the material and operational conditions that make the pesantren's green marketing claims credible and sustainable over time. Conflating the two risks overstating the scope of green marketing itself; this study therefore treats infrastructure programs as structural enablers of green economy transformation that operate alongside, rather than within, the 4P framework.

This finding extends recent research by G. Chen et al. (2024), who demonstrated that green marketing practices achieve superior sustainable performance outcomes when integrated with eco-innovation mechanisms and circular economy infrastructure, precisely the combination embodied in Pesantren Annuqayah's parallel investment in its waste management laboratory, solar energy system, and conservation garden alongside its green marketing mix.

The Waste Management Laboratory: Circular Economy Innovation in Practice

One of the most institutionally distinctive and economically significant green economy initiatives at Pesantren Annuqayah is the student-managed waste

management laboratory, a facility dedicated to the collection, sorting, processing, and valorization of institutional waste streams. Within this facility, santri are trained to categorize waste according to material type, process organic waste into compost fertilizer for use in the conservation garden, and convert plastic waste into commercially valuable products, most notably paving blocks. Administrative records confirm monthly revenues from paving block sales reaching Rp5,000,000 (Amin et al., 2025; Pesantren Annuqayah, 2025), demonstrating a commercially viable circular economy model embedded in an educational institution. The laboratory received formal recognition with its inauguration by the Vice President of the Republic of Indonesia, underscoring its significance as a model of circular economy practice within a pesantren context (Amin et al., 2025). This reflects the logic of waste valorisation, in which residues are transformed into valuable material through collaboration among stakeholders (Leder et al., 2020). It also contrasts with campus recycling schemes in other developing-country institutions, where weak policy implementation and poor waste segregation leave most waste unrecovered (Mbama et al., 2023).

The waste management laboratory exemplifies the circular economy moderation effect documented by G. Chen et al. (2024): circular economy practices amplify the sustainability performance returns of green marketing investment by converting operational waste outputs into productive economic inputs, thereby creating institutional value chains aligned with green economy principles. This circular economy logic, wherein waste outputs from one process become productive inputs for another, directly aligns with established green economy principles (D'Amato et al., 2017; Loiseau et al., 2016).

Renewable Energy Transition: Solar Panel Infrastructure

Since 2018, Pesantren Annuqayah has progressively incorporated solar energy infrastructure into its operational facilities, with photovoltaic panels installed across selected school buildings and dormitory areas to partially meet institutional electricity demand (Pesantren Annuqayah, 2025). Renewable energy has likewise been identified as one component of green pesantren governance (Kasanah et al., 2023). This transition to renewable energy represents a structural commitment to reducing dependence on fossil fuel-based electricity generation, consistent with the energy dimension of green economy as articulated by international sustainability frameworks (Loiseau et al., 2016). The solar panel initiative also functions as a tangible pedagogical resource, enabling santri to directly observe and engage with renewable energy technology.

The Assalam Conservation Garden: Integrating Environmental Conservation and Experiential Learning

The conservation garden (Kebun Assalam) functions as Pesantren Annuqayah's primary site of environmental conservation and ecological education, serving dual purposes. As a conservation area, it protects and maintains biodiversity, manages local watershed resources, and models sustainable land stewardship practices. As an educational facility, it provides santri with a living laboratory for experiential learning about organic agriculture, ecosystem management, and the relationship between environmental health and sustainable livelihoods (Nailur Ridha & Abdul Wahid, 2022). Similar integration of conservation practice, ecology teaching, and waste recycling into organic fertiliser has been documented in other pesantren (Irawan, 2022). Produce from the garden is integrated into the pesantren's food supply chain, directly reinforcing the

localized sourcing orientation of its green place strategy.

Educational Impact of Green Marketing on Sustainable Economic Development in Guluk-Guluk

Behavioral Transformation Among Santri as Primary Educational Outcome

The most immediately observable educational impact of Pesantren Annuqayah's green marketing programs is a demonstrable shift in environmental consciousness and consumption behavior among the santri population. Through sustained exposure to institutional green marketing policies, environmental education seminars, and the daily practice of sustainability-oriented behaviors, santri have progressively internalized ecological responsibility as a normative dimension of their personal conduct. Informants across all categories consistently reported that santri who had engaged with the pesantren's green marketing programs exhibited markedly different environmental attitudes and behaviors compared to those without such exposure, including greater willingness to reduce plastic use, more careful waste sorting practices, and heightened awareness of the connection between individual consumption decisions and collective environmental outcomes.

This behavioral transformation pattern aligns with Aulia et al.'s (2024) findings from a comparable Indonesian eco-pesantren study, which identified that systematic environmental modeling through institutional policy, curriculum integration, and participatory activities progressively reshapes student ecological behavior, a process accelerated in the Pesantren Annuqayah context by the additional motivational layer of kyai-mediated religious framing. This behavioral transformation reflects the broader educational function of green marketing identified in the literature, wherein marketing strategies that incorporate environmental education create lasting attitudinal and behavioral change rather than merely influencing discrete purchasing decisions (Manongko, 2018; Prieto-Sandoval et al., 2022; Widianto et al., 2023).

Sustainability-Oriented Entrepreneurship: From Education to Economic Innovation

Beyond individual behavioral change, the green marketing education provided by Pesantren Annuqayah has catalyzed entrepreneurial innovation among alumni and advanced students. Several santri have leveraged competencies developed through participation in the waste management laboratory, the conservation garden, and the canteen's green marketing operations to initiate independent sustainability-oriented business ventures. Alumni informants confirmed the establishment of small-scale organic food enterprises, production of handcraft items from recycled materials, and waste management consultancy services for neighboring communities. While comprehensive quantitative data on the full scope of alumni entrepreneurship remain a priority for future research documentation, interview evidence consistently confirmed the existence and growth of this entrepreneurial spillover effect across multiple alumni cohorts.

This entrepreneurial spillover is consistent with Prieto-Sandoval et al. (2022), who documented that institutional sustainability education, when combining conceptual green marketing instruction with hands-on participation in sustainable consumption practices, generates entrepreneurial transfer effects extending beyond the original learning context.

Community Economic Spillover: Expanding the Green Economy Ecosystem in Guluk-Guluk

The educational impact of Pesantren Annuqayah's green marketing programs extends beyond the institutional boundary to encompass the surrounding community of Guluk-Guluk. Community informants reported that santri alumni returning to their home communities frequently serve as agents of sustainability education and behavioral modeling, transmitting environmental practices to family members, neighbors, and local enterprises. The pesantren's active outreach through community seminars, open environmental programs, and collaborative initiatives with partner institutions has directly educated a broader audience in sustainable consumption and green economy principles. The visible success of the waste management laboratory, particularly the conversion of plastic waste into commercially viable paving blocks, has inspired comparable initiatives among local community organizations and small businesses in the Guluk-Guluk area. These spillover effects are consistent with Widianto et al.'s (2023) finding that pesantren eco-education generates community diffusion extending beyond institutional boundaries and confirms that pesantren green marketing education contributes to the formation of a broader green economy ecosystem at the community level.

Economic Efficiency, Financial Autonomy, and the Green Economy Dividend

From a financial perspective, green marketing implementation has delivered measurable economic benefits. Reduced packaging expenditure at the canteen and revenue from the waste management laboratory have lowered variable operating costs and created new income streams, while the solar energy system has, according to institutional records, reduced recurrent electricity expenditure, together contributing to the pesantren's broader agenda of financial self-sufficiency (Amin et al., 2025; As'ary & Maksum, 2024; Pesantren Annuqayah, 2025). These financial gains directly address the structural economic vulnerabilities of pesantren institutions identified in the research literature, demonstrating that green economy adoption is a financially rational as well as an ethically compelling institutional strategy (Juhaidi et al., 2023; Mutawally, 2023).

CONCLUSION

This study set out to answer two questions: how green marketing is implemented as a strategic driver of green economy transformation at Pondok Pesantren Annuqayah, and what educational impact this implementation has had on sustainable economic development in the surrounding Guluk-Guluk community. The findings show that Pesantren Annuqayah has institutionalized green marketing through a coherent 4P strategy under the governance of the Annuqayah Business Center, most fully realized in its student canteen through a mandatory personal container policy, stable and efficiency-based pricing, localized ingredient sourcing, and education-centered promotion mediated by religious authority, supported by infrastructure investment in waste processing, solar energy, and a conservation garden. This implementation has produced measurable educational effects: internalized environmental behavior among santri, entrepreneurial spillover among alumni into sustainability-oriented ventures, and behavioral diffusion into households and small enterprises in the surrounding Guluk-Guluk community, together indicating the emergence of a community-level green economy ecosystem anchored in the pesantren.

Theoretically, this study's principal contribution is a theologically embedded green marketing mix model, in which each dimension of the conventional 4P framework

is reconstituted through Islamic ethical principles: green product through the prohibition of harm (la dharar), green price through the ethic of sufficiency (qana'ah), green place through the principle of mutual assistance (ta'awun), and green promotion through kyai religious authority as a normatively grounded trust mechanism. This model extends existing green marketing frameworks (Chung, 2020; Manongko, 2018; Polonsky, 1994) by showing that, within faith-based institutions, religious identity is not incidental to green economy adoption but constitutes a distinctive strategic resource: one that addresses price sensitivity, low environmental awareness, and weak promotional credibility more directly than conventional commercial green marketing strategies typically can.

This study has three limitations that should guide future research. First, as a single-case study, its findings support analytical rather than statistical generalization; comparative case studies across pesantren with different organizational scale, governance structure, and regional context are needed to test the model's transferability. Second, evidence of community-level economic spillover in this study remains qualitative and testimonial; future research should develop quantitative instruments to measure alumni enterprise formation rates and household-level economic outcomes attributable to pesantren green economy programs. Third, this study's cross-sectional design cannot establish the long-term durability of observed behavioral change, particularly given the succession-related risks to kyai-mediated promotion identified above; longitudinal research following santri cohorts and tracking leadership transitions would help clarify whether green marketing outcomes persist independent of specific religious leadership. Future studies should also examine how digital communication channels might extend the reach of pesantren green promotion beyond its immediate institutional community to achieve regional-scale green economy transformation.

Statement On Ai Use

The authors used Claude (Claude Sonnet 5.5, Anthropic) for revision planning, English language editing of the abstract and selected sentences and formatting inconsistencies. The tool was not used for data collection or analysis. The authors reviewed and verified all AI-assisted content and take full responsibility for the final manuscript.

Conflicts Of Interest

The authors declare no conflict of interest.

Author Contributions

Conceptualization, methodology, and formal analysis, NHZ and M; investigation and writing, original draft, NHZ; writing, review and editing, and supervision, M. All authors have read and agreed to the published version of the manuscript.

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