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Adaptive Green Human Resource Management for Green Innovation in a Coastal Fishing Community: A Qualitative Case Study of Indonesia's Red-White Fishing Village Program

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Declaration

Ethics approval and consent to participate. Universitas Palangka Raya, Indonesia, does not currently operate a formal Institutional Review Board (IRB) or Research Ethics Committee for non-medical social science research. Therefore, no institutional ethics approval or formal ethics waiver was available for this study. The research was conducted under an official research authorization issued by the Faculty of Economics and Business, Universitas Palangka Raya. This research authorization permitted fieldwork but did not constitute institutional ethics approval. Written informed consent was obtained from all participants before data collection. Participation was voluntary; participants could withdraw at any time without consequence, and confidentiality and anonymity were maintained throughout the study. No medical procedures, clinical interventions, or sensitive personal data were involved.

The study was conducted in accordance with internationally recognized ethical principles for research involving human participants and the institutional research governance procedures of Universitas Palangka Raya, including voluntary participation, written informed consent, confidentiality, anonymity, and participants' right to withdraw at any stage without consequence.

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Adaptive Green Human Resource Management for Green Innovation in a Coastal Fishing Community: A Qualitative Case Study of Indonesia's Red-White Fishing Village Program

Abstract

Green Human Resource Management (GHRM) is widely recognized as a strategic approach to environmental sustainability and green innovation, yet research has concentrated on formal organizations, leaving GHRM in resource-constrained coastal communities of developing countries largely unexamined. This study develops an adaptive GHRM model explaining how environmentally oriented human resource practices foster green innovation within Indonesia's Red-White Fishing Village (Kampung Nelayan Merah Putih, KNMP) program. A qualitative single embedded case study was conducted in Tanjung Putri Village, Central Kalimantan. Data were collected through in-depth interviews with the village head, BUMDes management, and the Merah Putih Village Cooperative board, complemented by a focus group discussion involving fishers, micro-entrepreneurs, women's groups, and youth, plus field observation and document analysis. Abductive Gioia-style analysis of 2,712 transcript lines (520 coded references) yielded 15 first-order concepts, eight second-order themes, and four aggregate dimensions. The findings reveal six adaptive GHRM dimensions: green literacy, green skills, green leadership, green work culture, green operational systems, and green incentives. Unlike conventional organizational GHRM, the model emphasizes trust-based recruitment, contextual training, collective performance management, and non-monetary social recognition, which stimulate frugal green innovations, such as solar-powered fishing boats, sustainable fish processing, waste management, and fisheries ecotourism. These findings are synthesized into the Eco-Governance Talent Loop (ETL) model, capturing the dynamic interaction among adaptive GHRM, social capital, institutional collaboration, and sustainability outcomes. This study extends GHRM theory beyond formal organizations by integrating the Ability–Motivation–Opportunity framework with community-based environmental governance, advancing sustainable blue economy transitions in small-scale fisheries.

Keywords: Adaptive Green Human Resource Management; green innovation; frugal innovation; coastal community

1. Introduction

The importance of environmental sustainability has transitioned from being a peripheral concern to a central focus on the management agenda, with human resource management (HRM) assuming a critical role in this transformation (Jabbour & Santos, 2008; Renwick et al., 2012). Green human resource management (GHRM), defined as the strategic alignment of HRM policies and practices aimed at enhancing employees' environmental competencies, fostering pro-environmental behavior, and facilitating engagement with environmental initiatives, has been demonstrated to enhance environmental performance, encourage green behavior among employees, and promote green innovation in various sectors such as manufacturing, hospitality, and services (Dumont et

al., 2017; Kim et al., 2019; Singh & Rangnekar, 2020; Tang et al., 2017). However, despite three decades of research in this area, the empirical foundation remains narrow. Existing systematic reviews consistently highlight the concentration of GHRM research within formal organizations, particularly in large corporations, and predominantly in developed and industrializing nations (Amrutha & Geetha, 2020; Ren et al., 2018; Yong et al., 2020a). The applicability of GHRM principles in informal, community-based economic contexts devoid of traditional HR structures, employment contracts, or professional management remains a significant theoretical and practical question.

This study is of great practical importance as informal and community-based ventures are the main source of employment in developing areas. Small-scale fisheries, in particular, sustain the livelihoods of millions but face significant obstacles like marine degradation, climate change, and market exclusion (Cohen et al., 2019). Governments in these regions are increasingly rolling out large territorial development projects relying heavily on the human and institutional capacities addressed by Global Human Resource Management (GHRM). Indonesia, a major archipelagic and fisheries-producing nation, has prioritized the blue economy in its development plans. For example, through the Red-White Fishing Village program (Kampung Nelayan Merah Putih, KNMP), Indonesia seeks to enhance over a thousand fishing communities by supporting cooperative enterprises, household welfare, and coastal environmental conservation. Nevertheless, initial research indicates that KNMP's advancement is hindered not primarily by infrastructure issues but by human skill gaps, such as limited ecological awareness, ingrained environmentally harmful norms, a lack of environmental regulations in local businesses, and a gap between environmental efforts and economic gains.

Considering these circumstances, three interconnected research voids propel the current investigation. Firstly, an adaptation gap in context: GHRM frameworks designed for formal employment contexts, encompassing green recruitment, training, performance evaluation, and rewards, necessitate systematic adaptation for settings governed by communal decision-making, kinship obligations, and informal structures (Ren et al., 2018). Secondly, a mechanism gap: While the association between GHRM practices and green innovation is well established at the organizational level, the specific mechanisms through which GHRM catalyzes innovation in resource-constrained environments, where innovation tends to be incremental rather than revolutionary, are inadequately elucidated (Hossain, 2018; Radjou et al., 2012). Third, an evidence gap: the scarcity of qualitative, process-focused studies that theorize these mechanisms from grassroots perspectives, compared with survey-based methodologies, limits the development of contextually relevant theories in the field (Gioia et al., 2013; Pratt, 2009).

The primary focus of this research is to investigate the adaptation and institutionalization of green human resource management (GHRM) to stimulate green innovation within a coastal fishing community engaged in the KNMP program. The study is guided by three specific sub-questions: (1) Identification of relevant GHRM dimensions and indicators suitable for a fishing community context, (2) Examination of the implementation of adaptive GHRM practices that promote green

innovation, and (3) Exploration of the internal and external factors that facilitate or impede the embedding of community GHRM, aiming to develop a cohesive model.

To address these inquiries, a qualitative research approach is employed, specifically a single embedded case study according to the methodology outlined by Yin, (2018). The selected research site is Tanjung Putri Village in Kotawaringin Barat District, Central Kalimantan, recognized as a KNMP site characterized by pronounced environmental susceptibility and the recent establishment of local economic institutions, such as a village-owned enterprise (BUMDes) and the Merah Putih Village Cooperative. Data collection methods included in-depth interviews with key stakeholders, a community focus group session, continuous field observations, and document analysis. The data were analyzed through an abductive approach using a three-stage coding process and presented following a Gioia-style data structure inspired by (Corbin & Strauss, 2010; Gioia et al., 2013).

The research offers three key contributions to the field. Initially, it broadens the GHRM theory by introducing community-based GHRM, outlining six adaptive dimensions and five adaptive practices specific to community contexts, diverging from traditional corporate GHRM strategies. Secondly, it presents a theoretical framework on the interplay between GHRM and green innovation in resource-constrained settings, emphasizing frugal and incremental innovation and elucidating the mediating roles of social capital, institutional collaboration, and economic value creation. These insights are integrated into the Eco-Governance Talent Loop model, which is underpinned by eight testable propositions. Lastly, the study scrutinizes structural obstacles beyond the purview of GHRM, such as reliance on intermediaries, institutional fragmentation, poverty, and enforcement inefficiencies, highlighting the constraints of community GHRM and linking it with current discourse in the blue economy sector regarding fair opportunities for small-scale fisheries.

2. Theoretical Background

2.1 Green human resource management: concept, practices, and outcomes

Green Human Resource Management (GHRM) is defined as the deliberate alignment of human resource management principles, policies, and procedures with the environmental objectives of an organization (Renwick et al., 2012). This framework encompasses a set of core practices that cover the entire employment lifecycle: green recruitment and selection, green training and development, green performance management, green compensation and rewards, and green involvement (Jabbour & De Sousa Jabbour, 2016; Tang et al., 2017). Extensive research has established a strong link between these GHRM practices and outcomes such as environmental performance and pro-environmental behaviors in the workplace. Dumont et al., (2017; Guerci et al., (2016; Kim et al., (2019; and Paillé et al., 2013) have demonstrated various mechanisms through which GHRM influences green behavior and environmental outcomes.

Scholarly reviews emphasize that the impact of GHRM is not merely about enforcing compliance but rather about transforming values, organizational climate, and culture (Amrutha & Geetha, 2020; Roscoe et al., 2019; Yong et al., 2020b). Despite the wealth of evidence supporting the effectiveness of GHRM practices, critiques have highlighted a limited focus on contextual factors in existing research. Ren et al. (2018) urged investigations that consider broader institutional,

cultural, and economic contexts beyond the predominant large-firm settings in the literature. Similarly, Yong et al. (2020) pinpointed the absence of studies examining GHRM in small businesses, informal economies, and developing countries. Therefore, this research aims to address these identified gaps by exploring the application of GHRM in diverse organizational contexts.

2.2 Theoretical lenses: natural resource-based view and the AMO framework

Two complementary lenses anchor our inquiry. The *NRBV extends* the resource-based view by arguing that capabilities rooted in the firm's relationship with the natural environment — pollution prevention, product stewardship, and sustainable development —contribute to sources of sustained advantage (Hart, 1994; Hart & Dowell, 2011). Applied to GHRM, the NRBV frames green human capital—environmentally oriented knowledge, skills, and motivation—as a valuable, rare, and difficult-to-imitate resource. In a community setting, we propose that the analog of green human capital is collectively held: traditional ecological knowledge, trust networks, and cooperative work norms function as community-level green resources whose value depends on institutional arrangements that can mobilize them.

The *ability–motivation–opportunity* (AMO) framework (Appelbaum et al., 2001) is the dominant mid-range theory explaining how HRM bundles produce performance: practices work when they simultaneously build ability (skills, knowledge), motivation (incentives, recognition), and opportunity (structures for participation). GHRM scholarship has widely adopted AMO to organize green practice bundles (Renwick et al., 2012). Two features make AMO particularly generative here. First, it is agnostic about organizational form and therefore portable—in principle—to community settings. Second, recent debate suggests that the three components are not equipotent, with motivation and opportunity often outweighing ability in explaining green outcomes; a community setting characterized by strong collective norms but weak formal training infrastructure offers a strategic site for probing this asymmetry.

2.3 GHRM, green innovation, and the frugal innovation pathway

Green innovation denotes new or significantly improved products, processes, and practices that reduce environmental burden while sustaining economic value (Chen & Chang, 2013). Firm-level evidence indicates that GHRM fosters green innovation directly and through green transformational leadership and knowledge-based mechanisms (Singh et al., 2020), and that green training and culture stimulate employee green creativity (Chen & Chang, 2013; Roscoe et al., 2019). Yet the innovation imagery underlying this literature — R&D-driven, capital-intensive, technologically sophisticated—travels poorly to resource-constrained communities. The literature on frugal innovation offers a corrective: under severe resource constraints, innovation is characteristically low-cost, incremental, improvisational, and anchored in immediate local problems (Hossain, 2018; Radjou et al., 2012). Therefore, we treat frugal green innovation — costly, locally devised environmental solutions such as solar retrofits, low-input processing, and community waste valorization — as the theoretically expected modal form of green innovation in our setting and ask how GHRM practices enable or suppress it.

2.4 Beyond the firm: social capital, collective action, and the blue economy

Transposing GHRM to a community requires importing theory about how communities govern shared resources and coordinate collective behavior. (Ostrom, 1992) analysis of common-pool resource governance demonstrates that communities can craft durable self-governing institutions when rules are congruent with local conditions, monitoring is credible, and participants share norms of reciprocity. Social capital — networks, norms, and trust-enabling cooperation — is the connective tissue of such arrangements: (Pretty & Ward, 2001) show that bonding and bridging social capital condition the emergence and persistence of community environmental management. In the Indonesian coastal context, gotong royong (institutionalized mutual assistance) and village women's (PKK) and youth organizations embody accumulated social capital and constitute latent infrastructure for environmental governance.

Finally, the blue economy frames the stakes. The concept promises ocean-based growth that is environmentally sustainable and socially equitable, but critical scholarship warns that competing interpretations can marginalize small-scale fishers unless capability-building and equity are designed in (Bennett et al., 2019; Cohen et al., 2019; Voyer et al., 2018). A community-adapted GHRM, we argue, is one concrete mechanism for the human-capability leg of a just blue economy transition.

2.5 Sensitizing framework

Consistent with an abductive case study logic (Eisenhardt, 1989; Gioia et al., 2013), we did not derive hypotheses. Instead, the constructs above — the GHRM practice bundle, AMO, NRBV-style green resources, frugal innovation, social capital, and common-pool governance — served as sensitizing concepts orienting data collection and interpretation, while the coding process remained open to emergent, context-specific categories. The resulting theory-building objective was a grounded, integrative model of community GHRM and green innovation, which is presented in Section 4.6.

3. Method

3.1 Research design

We adopted a qualitative, interpretive, single embedded case study design (Yin, 2018). A single-case design is warranted when the case is revelatory and provides unusual access to a phenomenon previously inaccessible to inquiry (Yin, 2018) — here, the earliest phase of GHRM institutionalization within a flagship national program, observed before formal systems crystallize. The case is bounded geographically (Tanjung Putri Village, Kotawaringin Barat District, Central Kalimantan, Indonesia), temporally (fieldwork conducted across 2024–2025), and organizationally, with embedded units of analysis comprising the village government, the village-owned enterprise (BUMDes), the Merah Putih Village Cooperative, and community livelihood groups. Embedding multiple units within a single case permits within-case comparisons of how differently positioned actors experience the same institutionalization process (Eisenhardt, 1989; Yin, 2018). The epistemological stance is abductive: theory-informed sensitizing concepts (Section 2.5) guided attention, while coding remained open to categories the concepts did not anticipate (Gioia et al., 2013).

3.2 Case selection and context

Tanjung Putri is a coastal village whose economy rests on capture fisheries, small-scale brackish-water aquaculture, petty trade, and emerging paludiculture, set within a mangrove-estuarine ecosystem experiencing cumulative degradation: accumulating plastic waste in waterways (much of it transported from upstream), coastal abrasion, and fish catches that informants report have declined markedly over the past decade. The village was formally designated a KNMP candidate site, prompting the establishment of the Merah Putih Village Cooperative alongside the existing BUMDes. The case was purposively selected on three criteria: (1) formal KNMP designation, making it a policy-relevant site; (2) co-presence of acute environmental problems and nascent green initiatives, maximizing variation in the phenomenon of interest; and (3) negotiated access to the full set of institutional actors, enabling triangulated, multi-perspective data collection.

3.3 Participants and data collection

Participants were purposively selected for their expertise in village governance, enterprise management, and community livelihoods. The study employed four primary data collection methods. Initially, semi-structured in-depth interviews were conducted with key individuals, such as the village head, BUMDes director, BUMDes supervisory board, and Merah Putih Village Cooperative board members. These interviews, lasting 60–90 minutes, covered various topics, including environmental issues, leadership, governance, incentives, and perceptions of the KNMP program. Following this, a 120-minute focus group discussion was held with community members from different sectors. Additionally, around 40 hours of observation, both participants and non-participants, were conducted to document community activities, while documentary sources, such as development plans, records, and program documents, were consulted for contextual information and to validate findings (Bowen, 2009).

Table 1. Data sources and collection techniques

Technique	Source: Participants	Focus	Output
In-depth interview	Village Head, Tanjung Putri	Governance, leadership, KNMP implementation, and environmental priorities	Verbatim transcript
In-depth interview	Director, BUMDes (village-owned enterprise)	Enterprise operations, waste problems, green initiatives, and innovation	Verbatim transcript
In-depth interview	Supervisory Board, BUMDes.	Oversight, value chain, processing practices, packaging	Verbatim transcript
Group interview	Board of Merah Putih Village Cooperative (chair, secretary, treasurer, and members)	Institutional roles, capacity constraints, and training needs	Verbatim transcript
Focus group discussion	Community members: fishers, micro-entrepreneurs, PKK women's group, youth (~120 min)	Collective norms, environmental perceptions, and aspirations	Verbatim transcript
Observation (~40 hours)	Gotong royong, PKK waste collection, fishing preparation, waste disposal, and village meetings	Enacted practices, social interaction, and decision-making	Structured field notes
Document study	Village development plan, BUMDes/cooperative records, KNMP program, and regulatory documents.	Institutional history, plans, and formal arrangements	Document memos

Note. Interview and FGD corpus: five primary transcript sources, 2,712 transcript lines, and 520 coded references.

Prior to data collection, this doctoral research was officially authorized through a research permission letter issued by the Faculty of Economics and Business, Universitas Palangka Raya. Permission to conduct the fieldwork was subsequently obtained from the relevant local government authority responsible for the study site before interviews, focus group discussions, observations, and document collection commenced. All interviews and the focus group were audio-recorded with informed consent and transcribed verbatim in Indonesian, producing a corpus of 2,712 transcript lines across five primary sources. Data collection and analysis proceeded iteratively; collection concluded when successive analysis rounds generated no new codes or category properties, consistent with the saturation logic articulated by Saunders et al., (2018). Quotations presented in this article were translated into English by the bilingual research team, with back-checking against the originals to preserve meaning; culturally embedded terms (e.g., gotong royong, pengepul) are retained in Indonesian and glossed.

3.4 Data analysis

The study employed a grounded theory methodological approach, as outlined by Corbin & Strauss, (2015) and Corbin & Strauss, (2010), utilizing data-structure conventions introduced by Gioia et al. (2013) and computer-assisted qualitative data analysis software. During the open coding phase, 520 coded references were generated from line-by-line transcript analysis, resulting in 15 first-order concepts denoted in informant-centric terms such as "waste management problems" and "spontaneous green innovation". Discrepancies in coding were resolved through consensus discussions between two researchers, with a third researcher intervening when necessary. Axial coding involved the comparison and consolidation of first-order concepts into eight theorist-centric second-order themes, reflecting the adaptive logic of community Green Human Resource Management (GHRM). Selective coding integrated these second-order themes into four overarching dimensions, including adaptive community-based GHRM, frugal and incremental green innovation, collaborative green institutional ecosystem, and local wisdom-based fisheries sustainability. The comprehensive data structure is detailed in Table 2 (Section 4.1), with the transition from data structure to dynamic model, a critical step in grounded theory methodology, expounded upon in Section 4.6 following the framework of Gioia et al. (2013).

3.5 Trustworthiness

We pursue trustworthiness following the four criteria of Lincoln (1990). *Credibility* was addressed through the triangulation of sources (five informant groups occupying different institutional positions), methods (interviews, focus group, observation, and documents), and analysts (independent parallel coding); prolonged engagement with the site across the fieldwork period; and through member checking, in which preliminary interpretations were presented back to village and enterprise leaders for verification and refinement. *Transferability* by a detailed description of the case context (Sections 3.2 and 4.1), enabling readers to judge resonance with other settings. *Dependability* rests on a documented audit trail linking raw transcripts, codes, categories, analytic memos, and successive versions of the emerging model. *Confirmability* was strengthened through reflexive team debriefings that surfaced and recorded interpretive assumptions — particularly the

risk of romanticizing local wisdom or overstating community agency — and through deliberate negative-case analysis, in which data contradicting the emerging framework (e.g., structural constraints unresponsive to GHRM intervention) were retained and theorized rather than discarded (Miles et al., 2014). These contradicting data materially shaped the boundary conditions reported in Section 5.4.

3.6 Research ethics

Universitas Palangka Raya in Indonesia currently lacks a formal Institutional Review Board (IRB) or Research Ethics Committee for overseeing non-medical social science research. As a result, there was no institutional ethics approval or formal waiver for this study. The research was authorized by the Faculty of Economics and Business at Universitas Palangka Raya, allowing fieldwork but not serving as ethics approval. Participants were informed about the study's purpose and procedures beforehand, and written informed consent was obtained for interviews and focus groups. Participation was voluntary, with the option to withdraw at any time without repercussions, ensuring confidentiality and anonymity throughout. The study did not involve medical or clinical procedures or sensitive personal data but still followed internationally accepted ethical principles for human research.

The study was conducted in accordance with internationally recognized ethical principles for research involving human participants and the institutional research governance procedures of Universitas Palangka Raya, including voluntary participation, written informed consent, confidentiality, anonymity, and participants' right to withdraw at any stage without consequence.

4. Findings

4.1 Case profile and data structure overview

At the start of the fieldwork, Tanjung Putri presented a paradoxical profile. On one side stood visible environmental stress, plastic waste accumulating in waterways and at the temporary disposal site, coastal abrasion, and declining catches, coupled with institutional immaturity: the Merah Putih Village Cooperative had been legally established only months earlier and was not yet operational, and its board was uncertain of its role relative to the BUMDes. On the other side stood substantial latent assets: robust social capital expressed in gotong royong; traditional, generations-old, low-input fish-processing practices; an emerging pattern of spontaneous frugal innovation; and village leadership publicly committed to environmental improvement. This asset–constraint duality frames all subsequent findings.

Table 2 presents the data structure. Fifteen first-order concepts (with reference counts from the 520 coded segments) consolidate into eight second-order themes and four aggregate dimensions. Three first-order concepts dominated the corpus — waste management problems (53 references), limited green literacy (47), and dependence on the pengepul middleman system (44)—signifying that the community's central struggles are simultaneously environmental, cognitive, and economic. Conversely, the high salience of social capital and gotong royong (41) and traditional sustainable fishing practices (42) marks the assets on which an adaptive GHRM can be built. The findings below follow the three research questions: the adaptive GHRM dimensions (RQ1, Section 4.2), the practices linking GHRM to green innovation (RQ2, Section 4.3), enabling and constraining

conditions with a cross-informant analysis (RQ3, Sections 4.4–4.5), and the integrative ETL model with theoretical propositions (Section 4.6).

Table 2. Data structure: first-order concepts, second-order themes, and aggregate dimensions

First-order concepts (references)	Second-order themes	Aggregate dimensions
Limited green human capital (38); informal green role modeling (18); social capital & gotong royong (41)	Value-based green recruitment & selection	Adaptive community-based GHRM
Limited green literacy (47); limited green human capital (38); waste management problems (53); eco-packaging challenges (26)	Contextual green training & development	Adaptive community-based GHRM
Traditional sustainable fishing practices (42); social capital & gotong royong (41)	Collective green performance management	Adaptive community-based GHRM
Social capital & gotong royong (41); fisheries ecotourism potential (24)	Non-monetary green rewards	Adaptive community-based GHRM
Spontaneous green innovation (31); eco-packaging challenges (26); fisheries ecotourism potential (24); early digital technology adoption (22).	Green innovation enablement	Frugal & incremental green innovation
Institutional fragmentation (33); dependence on middlemen / pengepul (44)	Green institutional governance	Collaborative green institutional ecosystem
Dependence on middlemen / pengepul (44); eco-packaging challenges (26)	Green value chain transformation	Collaborative green institutional ecosystem
Coastal environmental degradation (37); waste management problems (53); traditional sustainable fishing practices (42).	Environmental degradation response	Local wisdom-based fisheries sustainability

Note. Fifteen first-order concepts were identified in open coding (some inform multiple themes); additional concepts — limited government capacity-building support (29) and financial constraints (35)—inform the enabling/constraining analysis in Section 4.4. Reference counts in parentheses are from the 520 coded segments.

4.2 RQ1: Six adaptive dimensions of community GHRM

Green literacy. Environmental awareness in Tanjung Putri is real but shallow: informants across all groups recognized waste, abrasion, and declining catches as problems, yet causal understanding and technical knowledge were thin, and long-standing norms rendered problematic practices unremarkable. The BUMDes director captured the pattern precisely: "Awareness exists, but technical knowledge is lacking. People know waste is a problem, but they do not know what to do with it." The community FGD similarly located much of the plastic burden upstream — "Plastic waste is abundant, especially from outside the village. There is no management system yet; it is just collected at the temporary disposal site"—a partly accurate attribution (riverine transport is substantial) yet also functions to externalize responsibility. GHRM as a concept was unknown to all informants; green practice was understood in fragments ("planting trees," "not littering") rather than as a system. The first adaptive dimension of community GHRM is green *literacy*: locally anchored knowledge linking everyday livelihood behavior to environmental and welfare outcomes.

Green skills. A pronounced knowledge–practice gap characterized technical capability. No informant had formal training in waste sorting and valorization, eco-friendly packaging, or the maintenance of green technology, and enterprise-level environmental management was absent from BUMDes and cooperative operations. Informants were emphatic that the deficit was one of applicable skill, not motivation, and equally emphatic about the required pedagogy: "We need training that is direct practice, not lectures — for example, how to set up a waste bank, how to make eco-friendly packaging" (BUMDes supervisory board). The packaging problem illustrates the skill–market interface: eco-friendly packaging materials degrade quickly when products go unsold, and, as the supervisory board observed, local consumers judge products heavily by packaging appearance — so adopting green packaging requires simultaneous skills in materials, shelf-life management, and marketing.

Green leadership. Environmental leadership operated informally through trust and example rather than position and instruction. The village head was consistently identified as the pivotal mobilizing actor, and legitimacy flowed from perceived integrity: "BUMDes officials are chosen because they are trusted by the community and care about the environment, not because of diplomas" (village head). Yet leadership commitment remained largely rhetorical at the system level — environmental objectives had not been translated into budget priorities or governance routines — and informants noted that the inconsistency between leaders' words and their personal waste behavior eroded credibility. Importantly, leadership was distributed: PKK women's groups organizing routine waste collection and youth activists exercised environmental leadership without formal authority, indicating that community green leadership is a property of a network of actors rather than a single office.

Green work culture. The strongest asset dimension was cultural. Gotong royong remained vigorous — "Mutual cooperation is still strong here; when there is an activity, residents are united" (community FGD)—and traditional fish processing embodied generations-old low-input practice: "We process salted fish without preservatives, only salt and sun. It has been done that way for generations" (BUMDes supervisory board). At the same time, equally entrenched counter-norms normalized river disposal and waste burning, producing a contest between established problematic routines and emergent pro-environmental norms championed by women and youth. Community GHRM must therefore work *with* the cultural grain: institutionalizing green practice as an extension of gotong royong and local wisdom rather than as an external corporate import.

Green operational systems. The weakest dimension across all informants was the systemic dimension. No environmental standard operating procedures existed in the BUMDes or cooperative; no waste collection, segregation, or processing system operated at the village scale; environmental responsibilities were unassigned; and no monitoring or accountability mechanism tracked environmental performance. Ad hoc collective action (periodic PKK clean-ups) produced accumulations of collected waste with nowhere to go—effort without system. The institutional dimension of GHRM — SOPs, role clarity, and monitoring—also emerged from the data as a first-order bottleneck rather than an administrative afterthought.

Green incentives. Finally, environmental behavior was economically unrewarded, and informants were candid that unrewarded behavior decays: sorting waste yielded no income; sustainable restraint in fishing carried immediate livelihood costs. Yet the incentive logic that resonated locally was not individual monetary reward but collective, status-based recognition: "Winning a green village award is more of a source of pride than money. It lifts the village's name" (community FGD). Community GHRM incentives, therefore, combine social recognition (awards, public acknowledgment), collective assistance (equipment, market access), and — critically — economic mechanisms that convert environmental behavior into livelihood value, as addressed under RQ2.

4.3 RQ2: Adaptive GHRM practices and the frugal green innovation pathway

The second research question concerns how GHRM practices, reconstructed for a community setting, foster green innovation. Five adaptive practices emerged, a systematic transformation of their corporate counterparts.

(1) Value-based green recruitment and selection. In the absence of an employment relationship, "recruitment" in Tanjung Putri means selecting officers for village institutions (BUMDes, cooperatives) and identifying change agents. Selection criteria invert the corporate order: community trust and demonstrated environmental concern dominate, formal credentials are tertiary, and the process runs through participatory deliberation *(musyawarah)*. The output is legitimacy—officers whom the community will actually follow—which our data show is a scarce resource on which all subsequent practices depend.

(2) Contextual green training and development. Effective capability building in this setting is practical, hands-on, and anchored in concrete local problems (waste banks, packaging, simple green technology, fisheries ecotourism), delivered with sustained accompaniment *(pendampingan)* rather than single-shot workshops. Informants reported that prior abstracts and lecture-format government training left little residue. The design principle is adult experiential learning oriented to problems the community has already named (Jabbour & Santos, 2008).

(3) Collective green performance management. Performance is construed collectively: "BUMDes performance is judged by its benefit to the village, not only profit and loss. If the environment is clean, that is also performance" (village head). Evaluation units are the village and its institutions, rather than individuals; indicators span environmental, economic, social, and institutional value; and the appropriate process is participatory, transparent evaluation in community forums — a configuration congruent with gotong royong culture and sharply divergent from individual appraisal.

(4) Non-monetary green rewards. Consistent with the incentive findings above, recognition-based and collective rewards (green village awards, certificates, publicly announced nominations, collective equipment, and market-access assistance) carry more motivational force than individual financial payments — a pattern consistent with intrinsic motivation theory (Ryan & Deci, 2000) and the status economy of a close-knit community.

(5) Green innovation enablement. The primary connection between GHRM and innovation lies in the intentional promotion of cost-effective experimentation. This involves providing access to basic technologies, technical support, and the documentation and replication of successful

practices. Notably, instances of spontaneous eco-friendly innovation in this context demonstrate the feasibility of this approach, emerging in response to economic constraints rather than as formal initiatives. For example, installing a solar panel on a boat to reduce diesel consumption illustrates this trend. Other emerging innovations include improved fish-processing techniques, digital marketing trials, for-profit waste management initiatives, and plans for sustainable fisheries-based tourism. These innovations are characterized by their cost-effectiveness, gradual development, utilization of local resources, and being driven by immediate economic demands. The adaptive role of GHRM is to transform these spontaneous innovations into a structured process by enhancing literacy and skills to improve solution quality and safety, fostering a culture that encourages experimentation, establishing operational frameworks to document and disseminate successful practices, and implementing incentives to ensure innovators benefit from their creations (Hossain, 2018; Radjou et al., 2012).

4.4 RQ3: Enabling and constraining conditions

Internal enablers. Three internal conditions moderate GHRM effectiveness. Social capital and gotong royong supply the participation infrastructure through which any collective practice must run. Local wisdom and traditional ecological knowledge—sustainable processing techniques and seasonal and ecological knowledge held by fishers—provide a legitimate, indigenous foundation for green practice, implying integration rather than replacement. Transformational village leadership mobilizes both: where the village head and respected figures visibly champion an initiative, participation follows; where they do not, initiatives stall.

External enablers. Four external conditions function as enablers: the KNMP program itself (infrastructure and start-up capital); government training, accompaniment, and regulation; access to simple green technologies; and markets that reward sustainable products. Informants repeatedly framed external accompaniment as catalytic in the early phase—necessary to ignite capability but designed to be withdrawn as local capacity matures.

Constraints. Four significant constraints have been identified and are forthrightly presented as they delineate the boundaries of the model. The first constraint concerns value-chain reliance, as fishers engage with liaisons known as peepul who dictate prices, thereby constraining profit margins and hindering sustainable investment opportunities. Second, institutional fragmentation arises from the unclear delineation of roles among BUMDes, cooperatives, and micro-enterprises, leading to inefficiencies and dispersion of administrative resources. Third, limitations in financial resources and infrastructure, such as the absence of waste management systems and insufficient capital, impede even modest eco-friendly ventures. Lastly, a detrimental cycle of capability decline is observed, where environmental deterioration heightens awareness without corresponding skill development, resulting in inaction despite growing concerns.

4.5 Cross-informant analysis

To probe the robustness of the dimensional findings, we constructed a cross-informant display matrix (Miles et al., 2014) that contrasted the five informant groups across the six GHRM dimensions and qualitatively characterized each cell (strong/moderate/nascent) based on coded evidence (Table 3). Three patterns stand out. First, green work culture and social capital are strong

across every informant group—the one universal asset. Second, green operational systems are nascent across every group—the universal deficit, confirming institutionalization as the binding constraint. Third, capability is stratified by institutional position: the village head and BUMDes leadership exhibit comparatively developed literacy and leadership, whereas the newly formed cooperative is nascent on nearly every dimension, indicating that undifferentiated, community-wide interventions would misallocate effort; the cooperative requires intensive institutional accompaniment that the village government does not.

Table 3. Cross-informant display matrix of adaptive GHRM dimensions

GHRM dimension	Village Head	BUMDes Director	BUMDes Supervisory Board	Cooperative Board	Community FGD
Green literacy	Strong	Strong	Moderate	Nascent	Moderate
Green skills	Moderate	Moderate	Moderate	Nascent	Nascent
Green leadership	Strong	Strong	Moderate	Nascent	Moderate
Green work culture	Strong	Strong	Strong	Strong	Strong
Green operational systems	Moderate	Nascent	Nascent	Nascent	Nascent
Green incentives	Moderate	Moderate	Moderate	Nascent	Moderate

Note. Qualitative characterizations (strong/moderate/nascent) are derived from coded interviews, FGDs, observations, and documentary evidence; the matrix supports pattern comparison, not measurement (Miles et al., 2014).

4.6 Toward an integrative model: the Eco-Governance Talent Loop

Selective coding integrated the four aggregate dimensions into a grounded process model, the *Eco-Governance Talent Loop* (ETL), so named because it links eco-governance (institutionalized green systems), talent development (community green human capital), and green innovation in a self-reinforcing cycle (Figure 1). The model's core storyline, distilled from the data, runs as follows. A resource-constrained community context (limited formal human capital, finance, technology, and infrastructure, coexisting with high social capital, local wisdom, and latent leadership) is the *input*. Internal conditions (social capital, local wisdom, and transformational leadership) *moderate*, and external conditions (KNMP program, government accompaniment, technology, and market access) *enable* the core process: the five adaptive GHRM practices of Section 4.3. These practices operate through three *mediating mechanisms* —stronger social capital and participation, frugal green innovation, and institutional coordination—to produce three *outcomes*: incremental green innovation, fisheries sustainability, and community welfare. Outcomes then *feed back*: successful innovations raise motivation for green practice; sustained fisheries improve welfare; improved welfare deepens social capital and support for GHRM — closing the loop and making institutionalization self-reinforcing rather than dependent on perpetual external push.

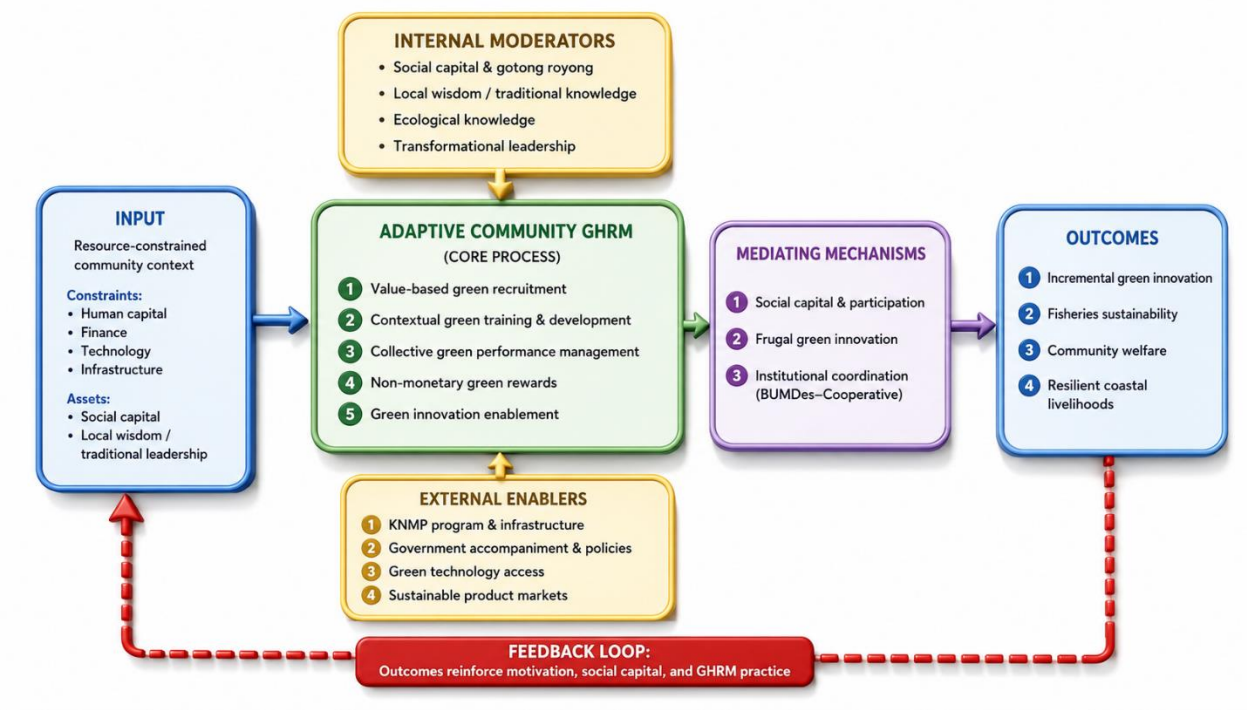


Fig 1. The Eco-Governance Talent Loop model of community GHRM and green innovation
Source: source: developed by researchers

The model is formalized into eight theoretical propositions (Table 4), each grounded in the coding evidence and falsifiable in subsequent research.

Table 4. Theoretical propositions of the EGTL model

No.	Theoretical proposition
P1	The lower a community's green literacy, the more environmentally harmful practices are normalized as routine, and the harder GHRM is to institutionalize; contextually anchored green literacy is therefore the cognitive requirement of community GHRM.
P2	Limited managerial capacity among village institutional officers (especially in newly formed bodies such as cooperatives) is the principal internal bottleneck to GHRM institutionalization, as institutions cannot yet perform their learning, coordination, and operational functions.
P3	External accompaniment (government agencies, universities, and NGOs) functions as an early-phase catalyst that converts partial green practices into a community learning system; its effect decays into dependence unless deliberately phased toward local self-management.
P4	Environmental standard operating procedures and clear role assignment act as stabilization mechanisms: without them, green practices remain fragmented and episodic; with them, practices become routine, measurable, and accountable.
P5	Green behaviors persist when they generate direct economic or welfare returns (waste value, energy savings, product premiums, and health benefits); absent such returns, behaviors decay regardless of awareness — economic incentive alignment determines behavioral stickiness.
P6	Social capital — gotong royong, women's and youth organizations, and respected local figures — accelerates the diffusion of green practices through role modeling and norm reinforcement, substituting for the formal enforcement mechanisms that communities lack.

No.	Theoretical proposition
P7	Institutional integration between the BUMDes and the cooperative (clear division of function, coordinated value-chain roles) is a necessary condition for organizing the human, programmatic, and enterprise resources of community GHRM; fragmentation renders implementation burdens unrealistic.
P8	When green ability, motivation, and opportunity are jointly established, latent blue economy potential (fisheries, processing, and ecotourism) becomes the channel through which frugal green innovations — in products, technologies, and business models — emerge and reinforce community sustainability.

Note. Propositions are grounded in the axial and selective coding evidence and are stated in falsifiable form for subsequent comparative and quantitative testing.

5. Discussion

5.1 Community-based GHRM as a theoretical extension

The study's first theoretical claim is that GHRM can be meaningfully reconstructed for informal community settings, but only through systematic transformation of its practice logic—a transformation we label community-based GHRM. Where corporate GHRM selects credentials, community GHRM selects trust and demonstrated environmental values through participatory deliberation; where corporate GHRM trains through formal curricula, community GHRM builds capability through problem-anchored practice with sustained accompaniment; where corporate GHRM appraises individuals, community GHRM evaluates collective benefit in participatory forums; and where corporate GHRM pays for green performance, community GHRM rewards through social recognition and collective assistance. This is not a dilution of GHRM but a re-grounding: each transformation preserves the underlying AMO function (building ability, motivation, and opportunity) while replacing the formal-organizational carrier with an institution the community already possesses — musyawarah, gotong royong, and the village status economy. This finding answers the calls of Ren et al. (2018) and Yong et al. (2020) to extend GHRM beyond large-firm settings and provides the informal-economy variant the literature has lacked.

The case also speaks to the internal weighting of the AMO framework. Consistent with the recent argument that motivation and opportunity often outweigh ability, our evidence shows that in a high-social capital community, the motivational substrate (norms, status, reciprocity) is abundant, whereas the opportunity infrastructure (SOPs, systems, role clarity) is the binding constraint, and ability sits in between — willingly acquired when training is contextual, quickly lost when it is not. Community GHRM design should therefore be sequenced opportunity-first: institutionalize simple systems that convert existing motivation into routine practice, then build skill inside those systems. This inverts the training-first instinct of most development programming.

Three further mechanisms observed in the case connect to the established theory. The reciprocity dynamics through which villagers reward trusted, environmentally committed leadership with participation mirror social exchange accounts of GHRM effects, transposed from the employment relationship to the community relationship. The trust- and network-based selection of institutional officers instantiates, at the community level, the socially complex and causally ambiguous resources that the NRBV identifies as sources of advantage (Hart, 1995; Hart & Dowell, 2011): Tanjung Putri's gotong royong and traditional ecological knowledge are precisely the valuable, rare, and hard-to-imitate green resources on which a sustainable community strategy can be built.

Finally, the observed risk that KNMP-mandated structures (a cooperative established by program requirement before any operational purpose existed) remain ceremonial echoes institutional-theory warnings about symbolic adoption and decoupling under coercive pressure — a risk our model addresses by insisting that external mandates be coupled to locally legitimate leadership and concrete economic function.

5.2 Frugal innovation as the modal GHRM–green innovation pathway

The second claim concerns the mechanism. Firm-level research links GHRM to green innovation through leadership, culture, and knowledge processes (Chen & Chang, 2013; Roscoe et al., 2019; A. Singh & Rangnekar, 2020), with innovation implicitly imagined as capital- and R&D-intensive. Our case shows that in resource-constrained communities, the pathway runs through frugal innovation: the community innovates already — solar boat retrofits improvised to escape diesel costs, preservative-free processing inherited across generations — but spontaneously, individually, and without diffusion. Adaptive GHRM converts spontaneous frugality into systematic frugality: literacy improves problem framing, contextual training raises solution quality, collective performance management and recognition legitimize experimentation, and operational systems document and replicate what works. This specifies, for the informal economy, the microprocess behind the GHRM–green innovation correlation and integrates the GHRM and frugal innovation literatures (Hossain, 2018; Radjou et al., 2012) which have to date developed in isolation.

5.3 GHRM and the just blue economy transition

Third, the ETL model provides operational content to the human-capability dimension of blue economy policy. Critical blue economy scholarship warns that ocean-growth agendas can bypass or dispose of small-scale fishing communities unless equity and capability are designed in (Bennett et al., 2019; Cohen et al., 2019; Voyer et al., 2018). Our findings identify what "designing capability in" concretely requires at the village scale: trust-based institutional staffing, problem-anchored training with accompaniment, collective evaluation, recognition-based incentives, and — decisively — value-chain interventions (cooperative aggregation and direct market access) that let communities capture the economic returns of green practice. The peepul finding is pivotal here: as long as liaisons capture the margin, the motivational loop of the ETL model cannot close, regardless of the quality of training and leadership. GHRM and market-institution reform are therefore complements, not substitutes.

5.4 Boundary conditions: What community GHRM cannot do

The pursuit of rigor necessitates the delineation of the constraints of the model, with our examination of counterfactual scenarios revealing inherent limitations that impede the efficacy of adaptive GHRM. Factors such as poverty and immediate economic pressures inherently elevate the costs associated with voluntary constraint irrespective of ethical considerations. Furthermore, the absence of robust regulatory mechanisms results in sustainable practices being disadvantaged in competitive settings. The perpetuation of the peepul system can be attributed to reliance on credit mechanisms rather than deficiencies in cooperative capabilities. Instances where program mandates surpass the absorptive capacities of local entities, exemplified by premature cooperative initiatives, underscore the challenges faced in implementation. Additionally, the

erosion of intergenerational transfer of traditional ecological knowledge due to overarching socioeconomic transformations underscores the inadequacy of solely community-level interventions. These empirical findings resonate with critical evaluations of GHRM deployment in emerging markets, where financial limitations, productivity demands, and external influences often mitigate the impact of HRM-oriented initiatives. Theoretical implications suggest that the ETL model functions as a meso-level apparatus contingent upon macro-level factors such as regulatory enforcement, access to credit, pricing mechanisms, and market policies. Advocating beyond this framework for GHRM would mirror the criticisms leveled against corporate GHRM for propagating unwarranted expectations.

6. Implications

6.1 Theoretical implications

The study (1) introduces community-based GHRM as a construct with specified dimensions, practices, and boundary conditions, opening a research program on GHRM in informal and semi-formal economies; (2) reweights AMO for collectivist, high-social capital settings, proposing opportunity-first sequencing; (3) integrates GHRM with frugal innovation theory to specify the innovation mechanism under resource constraints; and (4) extends the NRBV by treating community social capital and traditional ecological knowledge as collectively held green resources whose mobilization depends on institutional design.

6.2 Practical implications

The research outcomes suggest a structured approach for rural establishments and their facilitators: initiate by engaging in a participatory process grounded in trust to designate institutional leaders; collaboratively develop uncomplicated environmentally-focused standard operating procedures (SOPs) and delineate roles between village-owned enterprises (BUMDes) and cooperatives before commencing instructional sessions; provide training intertwined with practical application addressing locally identified issues (e.g., waste management, packaging, solar panel maintenance, and processing); conduct a comprehensive and transparent evaluation; offer recognition and communal support as incentives; and give precedence to one key intervention in the value chain — cooperative amalgamation for direct market entry — to ensure that sustainable practices yield economic benefits. Furthermore, the cross-referenced data suggest tailored assistance: intensive guidance for emerging cooperatives, structural support for BUMDes, and dissemination aid for initiatives led by the Women's Empowerment and Family Welfare Organization and youth to promote cultural shifts.

6.3 Policy implications

Three modifications are proposed for KNMP and similar national initiatives. The first adjustment involves reallocating financial resources from physical assets to enhance human and institutional capacities. This realignment suggests allocating funds for continuous support over several years rather than providing singular training sessions. The second recommendation is to prioritize the establishment of cooperatives based on local readiness criteria, such as the presence of operational structures and competent governing bodies, instead of making it a bureaucratic prerequisite. The third proposal involves integrating community capacity-building efforts with

economic strategies and financial mechanisms, such as aggregation facilities, access to working capital, and the establishment of sustainable market connections. These initiatives aim to reduce reliance on intermediaries, thereby enhancing the effectiveness of community-driven Global Health Resource Management initiatives.

7. Limitations and future research

The study's assertions are constrained by four factors that guide future research. Initially, the use of a single-case framework enhances in-depth analysis and insight but constrains the capacity for empirical generalization; the preferred approach to generalization is analytical, focusing on the model and propositions rather than on statistical inference (Yin, 2018). It is recommended that comparative multiple-case studies be conducted across various KNMP sites to assess the replicative logic of the propositions concerning diverse social capital, leadership styles, and market configurations. Secondly, the fieldwork only captured the initial phase of institutionalization; longitudinal studies are imperative to monitor the closure of the ETL feedback loop over time as innovations evolve or falter. Third, despite efforts to mitigate interpretive risks through back-checking, translated quotations still entail residual ambiguity, and the research team's involvement in the KNMP setting introduces bias that cannot be completely eradicated through reflexive debriefing and negative-case analysis. Finally, the propositions call for an expansion into mixed-methods research: upon operationalizing community GHRM dimensions, surveys and configurational designs (e.g., fuzzy set) could be employed to evaluate the proposed moderation and mediation framework, while quasi-experimental assessments could estimate the impacts of opportunity-first sequencing and interventions in the value chain.

8. Conclusion

The research inquiry centered on the customization and institutionalization of green human resource management (GHRM) to stimulate green innovation within a coastal fishing community. Findings from Tanjung Putri indicate that such adaptation is feasible through the implementation of community-based GHRM. This involves six adaptive dimensions and five adaptive practices, underpinned by trust, gotong royong, participatory deliberation, and the village status economy, rather than traditional mechanisms such as contracts, curricula, and payment. By adopting this approach, GHRM harnesses a community's inherent resourcefulness to foster a structured capacity for green innovation. This process is seamlessly integrated into the Eco-Governance Talent Loop and is guided by eight fundamental propositions. Nevertheless, the study underscores the limitations of GHRM in isolation, emphasizing the indispensable role of value-chain restructuring, access to credit, and regulatory enforcement to ensure the loop's efficacy. Consequently, the research introduces the informal economy as a novel domain for exploring GHRM theory while also offering practical insights for policymakers striving to cultivate an equitable blue economy by delineating the pivotal role of community-level interventions in advancing this transformative agenda.

Declaration

Ethics approval and consent to participate: Universitas Palangka Raya, Indonesia, does not currently operate a formal Institutional Review Board (IRB) or Research Ethics Committee for non-medical social science research. Therefore, no institutional ethics approval or formal ethics waiver was available for this study. The research was conducted under an official research authorization issued by the Faculty of Economics and Business, Universitas Palangka Raya. This research authorization permitted fieldwork but did not constitute institutional ethics approval. Written informed consent was obtained from all participants before data collection. Participation was voluntary; participants could withdraw at any time without consequence, and confidentiality and anonymity were maintained throughout the study. No medical procedures, clinical interventions, or sensitive personal data were

Conflict of interest

On behalf of all authors, the corresponding author declares no conflicts of interest.

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Data availability

Anonymous coding structures and illustrative transcript excerpts are available from the corresponding author upon reasonable request, subject to participant confidentiality.

Use of AI tools

The authors used Scispace and LeapSpace to support literature exploration and Trinka for language refinement and grammar checking during manuscript preparation. All conceptualization, analysis, interpretation, reference verification, and final manuscript preparation were performed by the authors. The authors accept full responsibility for the originality, accuracy, and integrity of the work.

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