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Eco-Spiritual Local Culture in Community-Based Wetland Tourism: Development and Preliminary Measurement among *Pokdarwis* Members in Banjarbakula, Indonesia

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Abstract: Community-based tourism depends on how communities interpret environmental responsibility and translate local values into collective destination management. Existing studies on spirituality, culture, and environmental stewardship appear to offer few context-sensitive measures for voluntary tourism organizations. This study aimed to develop and preliminarily assess Eco-Spiritual Local Culture (ESLC) in the Banjarbakula wetland area, Indonesia. A sequential exploratory mixed-methods design was applied. Three conceptual domains (normative eco-spiritual values, relational community values, and collective environmental behavior) and 15 candidate items were formulated from a non-systematic synthesis of 18 articles and interviews with 26 purposively selected stakeholders. The items were administered in a pilot survey of 101 Tourism Awareness Group (*Pokdarwis*) members, recruited through convenience sampling via *Pokdarwis* networks in an area comprising 86 groups, and rated on a 5-point Likert agreement scale (1 = strongly disagree to 5 = strongly agree). Exploratory factor analysis used principal axis factoring on a Pearson correlation matrix in R. The Kaiser–Meyer–Olkin (KMO) measure was .842, Bartlett's test of sphericity was significant (χ^2 (105) = 472.1, $p < .001$), and parallel analysis indicated one factor. Thirteen items had loadings of .425 to .741, whereas ESLC2 and ESLC3 (loadings of .357 and .334) were excluded. Cronbach's α for the 13 retained items was .866. These findings are an initial, exploratory step based on a pilot convenience sample, and the items were discussed within the research team without formal expert review or cognitive pretesting. The study contributes a locally grounded pool of candidate items and an initial one-factor pattern as a basis for further instrument development.

Keyword: Environmental Stewardship, Local Values, Voluntary Organizations, Scale Development, Exploratory Factor Analysis.

INTRODUCTION

Community-based tourism offers a way to organize destination development around the people who live with its consequences. Its practical promise rests on residents having influence over tourism decisions, retaining meaningful benefits, and protecting the cultural and environmental resources on which tourism depends. However, community participation is neither a single behavior nor a guarantee of empowerment. The foundational community-based tourism model connects participation, collaboration, and social capital, while recent work revisits the reciprocal relationship between participation and empowerment (Okazaki, 2008; Gutierrez, 2023). A tourism organization can invite residents to activities without transferring authority over planning or resource allocation. Understanding the values that sustain participation therefore requires attention to how communities cooperate, whose preferences become collective priorities, and whether environmental responsibilities remain meaningful when livelihoods are under pressure.

Wetland destinations sharpen these questions because tourism occurs within landscapes that support ecological functions and everyday community life. Rivers and wetland environments can be places of work, social interaction, cultural memory, and religious meaning, as well as attractions for visitors. Conservation decisions consequently involve competing understandings of what should be protected and why. Research on diverse values of nature emphasizes that environmental decision-making cannot be reduced to a single economic valuation (Pascual et al., 2023). For community-based wetland tourism, the relevant management question is how these meanings become shared responsibilities within the organizations that coordinate tourism (Azwar et al., 2023). A measurement framework must represent this social setting without claiming that perceptions of stewardship are direct measures of ecosystem condition.

The Banjarbakula wetland area provides a setting for examining this question. The study concerns members of Tourism Awareness Groups, locally known as *Pokdarwis*, across five districts or cities. These organizations connect tourism activities with local communities and public tourism institutions. Their members participate in destination management while operating within cultural expectations about solidarity, cooperation, and care for the environment (Hadi & Rajiani, 2022). The conceptualization draws on Banjar values such as *bubuhan* and *papadaan* to describe social belonging and shared responsibility. These terms inform the local rationale for construct development; they should not be presumed to have identical meanings for all members or across every organization. The study therefore approaches local culture as a potentially relevant source of management norms whose measurement requires empirical scrutiny.

Spirituality adds another layer to environmental responsibility, but its role should be specified rather than assumed. Environmental stewardship can be framed as a duty toward a sacred creation, a responsibility to other people, or an obligation arising from relationships with place. These interpretations overlap without being equivalent to religious affiliation or participation in worship. Eom and Ng distinguish stewardship beliefs from broader religiosity and discuss conditions under which religious environmental motivation may be supported or weakened (Eom & Ng, 2023). Research on Indonesian environmental movements also documents combinations of religious traditions, local knowledge, and other social resources in environmental practice (Smith et al., 2024). The connection between spirituality, culture, and ecology is consequently an established area of scholarship. A defensible contribution lies in developing a context-sensitive measure for voluntary tourism organizations, rather than asserting that no earlier research has integrated these ideas.

Measurement is central to that contribution. A construct name does not by itself establish that a new scale measures something different from social capital, environmental norms, place attachment, or general pro-environmental orientation. Scale development

requires a clear domain, items that adequately cover that domain, evidence about internal structure, and relationships with other measures consistent with the proposed interpretation (Boateng et al., 2018; Clark & Watson, 2019). Recent methodological guidance likewise treats development and validation as an iterative program rather than a single statistical screening exercise (Stefana et al., 2025). These requirements are especially relevant when a proposed construct combines values, relationships, and behavior. Their conceptual connection may justify studying them together, but it does not determine whether they form one factor, three correlated factors, or a broader composite.

Conceptual position of ESLC**.** ESLC is proposed as a candidate constructed positioned alongside, rather than in place of, established constructs. Social capital refers to the networks, trust, and reciprocity that enable collective action. Environmental norms refer to perceived expectations about environmentally relevant conduct (Constantino et al., 2022). Spirituality and religiosity refer to beliefs and practices that may or may not be directed toward nature (Eom & Ng, 2023), and place attachment refers to emotional bonds with a particular setting. ESLC is intended to describe how elements of these constructs are combined within a specific context: environmental responsibility is framed through religious and customary meanings (for example, nature as a trust, *amanah*), enacted through locally named practices of mutual help (for example, *gotong royong* and *kayuh baimbai*), and carried out through the routines of a voluntary tourism group. Whether this combination is empirically distinct from its neighboring constructs remains an open question. Answering it requires convergent and discriminant evidence against measures of social capital, environmental norms, spirituality, and place attachment, which the present pilot does not provide. The contribution claimed here is therefore limited to a locally grounded pool of candidate items and an initial measurement pattern and does not rest on the identification of a definitive research gap.

This study develops Eco-Spiritual Local Culture (ESLC) as a candidate framework for the shared meanings and practices through which *Pokdarwis* members understand environmental responsibility in community-based tourism. A sequential exploration design was applied: a literature-informed qualitative exploration was used to formulate candidate items, and their preliminary internal structure was then examined in a pilot survey. The objectives are (1) to identify locally meaningful conceptual domains, (2) to describe the item development sequence, and (3) to assess the preliminary exploratory measurement evidence. The study distinguishes domain coverage from factor structure, and individual survey responses from community-level properties. It does not test whether ESLC causes environmental action, improves tourism performance, or changes wetland conditions; these relationships remain questions for a subsequent validation and substantive research program.

Community-based tourism places collective organization at the center of sustainable destination management, yet its benefits depend on the conditions under which organization occurs. Early work on ecotourism and empowerment distinguishes economic gains from psychological, social, and political forms of empowerment (Scheyvens, 1999). This distinction matters for an ESLC framework because willingness to cooperate does not necessarily imply meaningful influence over tourism decisions. A member may contribute labor to cleaning a destination while having little say in how revenues are used or which environmental priorities receive funding. Shared values may support involvement, but institutional arrangements determine whether that involvement can shape decisions. ESLC should therefore be situated within community governance rather than treated as an alternative to examining governance.

Recent studies help specify these conditions. Research on post-conflict rural destinations links the limitations of community tourism to insufficient social capital and weakly structured governance (Rocca & Zielinski, 2022). Work on urban community-based tourism examines how social networks can both support and obstruct cooperation

(Vongvisitsin et al., 2024). Together, these studies caution against a uniformly positive interpretation of community cohesion. Strong relationships can facilitate shared action, but they can also privilege established members, limit access to decision-making, or discourage criticism. The relational component proposed for ESLC is therefore best understood as a domain to investigate, not evidence that every close-knit tourism group operates inclusively. Organizational context remains necessary when interpreting any future ESLC score.

Culture is also enacted through participation rather than simply displayed as a tourism product. Community cultural development research considers how collective cultural practices can create opportunities for capacity building and involvement in tourism (Moayerian et al., 2022). Research on traditional villages similarly emphasizes that tourism development must be understood alongside the preservation of community values (Yanan et al., 2024). These insights support a focus on the meanings that guide management, beyond the economic value of cultural attractions. They also raise a measurement challenge: endorsing cultural preservation, participating in a cultural activity, and believing that culture obliges environmental care are related but distinct responses. An ESLC instrument needs to make clear which of these relationships its items capture.

Spirituality can contribute to stewardship by giving environmental care a moral meaning that extends beyond immediate personal benefit. However, a religious identity does not necessarily indicate an environmental orientation, and spiritual interpretations can differ within the same community. Research comparing spirituality and religious fundamentalism reports contrasting relationships with environmental attitudes (Preston & Shin, 2022). The implication for ESLC is that environmental responsibility should be represented through substantive beliefs about care, obligation, and human relationships with nature, rather than inferred from the intensity of religious identification. This distinction also makes the proposed framework more appropriate for communities containing multiple faith traditions or members who articulate responsibility in secular terms.

Existing environmental research shows that religion and local culture can interact in ways that are responsive to particular social problems. Indonesian environmental movements have drawn on religious creativity, local traditions, and wider political or scientific resources (Smith et al., 2024). Faith-based conservation research likewise addresses the potential and limitations of linking religious practices with biodiversity protection (Maheshwari et al., 2024). These studies provide a comparative rationale for investigating the meanings described in Banjarbakula. They do not establish that the same processes operate uniformly within *Pokdarwis*, nor that local spirituality independently explains behavior. A locally developed construct must demonstrate its own content and measurement properties while acknowledging that its conceptual ingredients have precedents elsewhere.

Environmental responsibility is also learned and negotiated within social relationships. This micro-level focus on *Pokdarwis* stewardship aligns with macro-level evidence on Indonesia's sustainable development trajectory. Recent country-level analyses show that while Indonesia demonstrates rapid progress in industry and innovation, its deepest deficit relative to international benchmarks lies within the governance pillar (Rizal & Sudarmaji, 2026). By formalizing local cultural wisdom and shared spiritual obligations into measurable governance norms, the ESLC framework offers a bottom-up mechanism to address institutional governance gaps within community-based tourism settings. Studies of food waste examine religious values in relation to family upbringing and personal norms and investigate how religious values and social distance relate to norms when dining out (Filimonau et al., 2022; Filimonau et al., 2023). These settings differ from wetland tourism management, so their measures cannot simply be transferred to ESLC. Nevertheless, they illustrate why values, and social relations should be examined together when interpreting environmentally relevant action. They also show why the behavior must be specified: a

general endorsement of environmental duty need not predict each environmental practice to the same extent. ESLC's behavioral domain therefore requires careful definition of the activities and organizational responsibilities to which it refers.

Environmental meanings include relationships between people and between people and nature. Relational values scholarship draws attention to responsibilities and identities that are not fully expressed through either instrumental benefits or nature's intrinsic value (Chan et al., 2016). More recent research on cultural contributions to conservation highlights the significance of locally maintained knowledge and practices (Levis et al., 2024). These perspectives help explain why local culture should be considered within destination management rather than added as a background demographic variable. However, local knowledge and identity are not automatically interchangeable with environmental performance. The relevant empirical task is to examine whether the value orientation is distinguishable, consistently measured, and associated with independently assessed practices.

Research on culturally significant species and on ecosystem services identified through local knowledge demonstrates the specificity of environmental meanings (Goolmeer et al., 2024; Lee & Ahn, 2023). Practice can be important because it protects a livelihood, honors an obligation, sustains an identity, or maintains a relationship with a particular place. These comparative studies support sensitivity to local interpretation, while offering no direct validation of ESLC in Banjarbakula. For the present study, their relevance is to construct boundaries: a culturally grounded stewardship framework should retain the connection between values and their setting. Removing difficult items solely to improve statistical coherence could inadvertently remove the very meanings that distinguish a local construct from a generic sustainability scale.

Social norms provide another potential connection between shared values and environmental practice. A critical review of norms for climate action emphasizes the importance of social expectations and the context in which norm-based approaches are used (Constantino et al., 2022). Research on normative appeals examines variation associated with individualism and collectivism, while work on direct and mediated norm relationships distinguishes possible pathways to pro-environmental behavior (Helferich et al., 2023; Saracevic et al., 2022). These studies justify examining perceived expectations alongside personal endorsement of values. They do not justify assuming that a single factor represents a mechanism by which values generate action. In ESLC, the association of norm, relationship, and behavior items is a measurement finding that must be distinguished from any theory of influence among those domains.

The proposed construct consequently has two separable questions. The first is whether normative, relational, and behavioral content describes a meaningful local orientation toward stewardship in tourism organizations. The second is whether responses to items of that content support a particular statistical representation. The qualitative phase addresses the first question by identifying conceptual domains. The pilot EFA addresses a limited part of the second question through item covariance and retention. Neither phase alone establishes a community-level value system or a causal explanation of sustainability. Maintaining these distinctions allows ESLC to be developed as a testable framework while avoiding a premature claim that its entire theoretical meaning has been validated.

METHOD

This study used a sequential exploratory mixed-methods design, moving from literature-informed exploration to qualitative inquiry, item formulation, and a quantitative pilot. The sequence is consistent with the use of an initial qualitative phase to inform subsequent measurement, but integration requires an explicit connection between the two phases rather than their simple juxtaposition (Fetters et al., 2013).

Interviews were conducted between February and late March 2026, and the pilot survey between late May and July 2026. All analyses were carried out on the raw survey data (N = 101; no missing responses) and on the member-checked interview narratives. The interview guides and the item wording are provided in Appendices A–E, and the R script and anonymized item-level data are available as supplementary material. Table 1 summarizes the evidence and documentation available at each stage.

Table 1. Development stages and available documentation

Stage	Evidence	Documentation
Literature synthesis	18 articles identified through Google Scholar; non-systematic	Search expressions, dates, and screening rules not documented
Qualitative exploration	26 purposive interviews (Feb–Mar 2026); member-checked narratives; ATLAS.ti coding	Interview guides (Appendices A–D); no verbatim transcripts; one coder with analyst assistance
Item development	Three domains; seven indicators; 15 candidate items	Item wording and mapping (Appendix E); no formal expert review or pretesting
Pilot survey	101 members recruited through convenience sampling; late May–July 2026	Sampling frame, response rate, and allocation by area not documented
Exploratory analysis	Principal axis factoring; Pearson correlations; parallel analysis; alpha	R script and data (supplement)

Source: research data (2026)

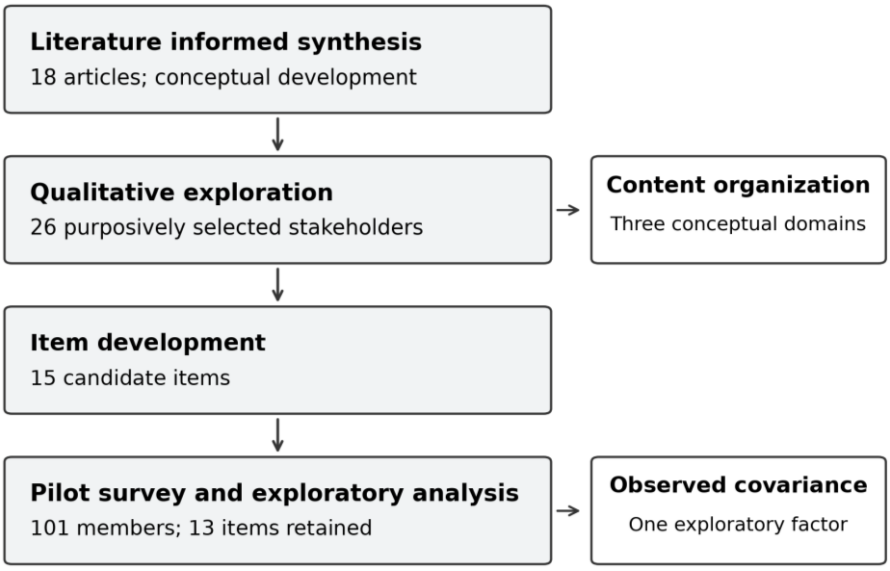


Figure 1. ESLC development sequence

Literature Informed Construct Development

The initial phase summarized 18 articles spanning local culture, spirituality, ecological awareness, and sustainability. The articles were identified through Google Scholar using keywords related to these topics; the exact search expressions, search dates, screening rules, and quality appraisal were not documented. The synthesis included studies of community participation and conservation alongside research conducted in educational, organizational, and consumer settings, and this breadth was used to identify conceptual resources for ESLC. The 18-article exercise is therefore described as a literature-informed conceptual synthesis rather than a reproducible systematic review. Its role was to support domain generation, not to estimate the prevalence of a relationship or to establish that no comparable construct exists in literature.

Evidence from different settings was treated as conceptually informative rather than directly transferable. For example, organizational spirituality may illuminate meaning and

interpersonal relationships, but a voluntary tourism group differs from a formal workplace in authority, incentives, and participation. Similarly, environmental purchasing intentions are not equivalent to shared destination maintenance. The ESLC domains were therefore anchored in the local exploration instead of being defined solely by these external measures. This approach follows established scale-development principles that require the proposed construct and the intended population to be specified before statistical item screening (Tavakol & Wetzel, 2020). References added to contextualize this article were not part of the 18-article development set.

Qualitative Recruitment and Analysis

1. Informants and Recruitment.

Informants were recruited purposively. The initial plan was to interview Islamic religious leaders only. After five interviews, responses within this group appeared repetitive, but the fifth informant asked why only Islamic leaders were included given the religious diversity of the region. The sample was therefore deliberately broadened to include other perspectives. Repetition among the first five interviews is reported as early observation only; saturation was not formally assessed across the full sample. The 26 informants (23 men and 3 women, aged 34–73 years, M = 51.2) were five Islamic leaders; five leaders of the Protestant, Catholic, Hindu, Buddhist, and Confucian communities, each a member of the Interfaith Harmony Forum (FKUB); five customary or community leaders; six Pokdarwis chairs; and five tourism office officials from Banjar, Banjarbaru, Banjarmasin, Barito Kuala, and Tanah Laut. Education was doctoral (n = 1), master's (n = 7), bachelor's (n = 12), or senior high school (n = 6). Each non-Islamic tradition was represented by one informant.

2. Data Collection.

Interviews followed semi-structured guides tailored to four informant groups (Appendices A–D) and were conducted in Indonesian; Banjar terms used by informants were explained by them in Indonesian. Interviews took place at locations chosen by informants, such as places of worship, homes, and workplaces. Three of the six *Pokdarwis* interviews were held by video call because data collection coincided with Ramadan; all other interviews were face to face. The guide for *Pokdarwis* chairs contained no written closing question; the closing questions used with the other groups (the most important value to maintain and hopes for the future of wetland tourism) were asked verbally at the end of each interview.

Recording and narratives. All interviews were audio-recorded after informants gave verbal permission at the start of each interview. Immediately afterwards, the first author wrote the recorded accounts into narratives, supplemented by field notes. Each narrative was then returned to the informant for confirmation in two rounds: corrections of wording and meaning were incorporated, and the revised version was confirmed again before analysis. This process also corrected misinterpretations; for example, a customary leader's phrase *pagar budaya* ("cultural fence"), initially taken as a slip for *cagar budaya* ("cultural heritage"), was clarified to mean that culture filters the influence of globalization. The analysis therefore draws on member-checked narratives rather than verbatim transcripts.

Coding. The narratives were coded in ATLAS.ti 9 with the assistance of a data analyst, using open, axial, and selective coding, which produced 69 codes grouped into 13 categories and three dimensions (normative, relational, and behavioral). The first author reviewed the codes and categories against the narratives. No second independent coder was used, and the coding framework was revised after the interfaith informants were added to the sample.

The adequacy of 26 informants is judged by information power, which depends on the specificity of the sample, the study aims, the quality of dialogue, and the analytical strategy, rather than by the number alone (Malterud et al., 2016). Empirical research on saturation also indicates that sample requirements vary with study characteristics and the type of saturation

sought (M. Hennink & Kaiser, 2022). Saturation was not formally assessed in this study and is therefore not claimed. Involving several stakeholder categories allows comparison across perspectives, but source diversity is not itself proof of triangulation, and convergence among informant groups should be read as exploratory.

Reporting of this phase was guided by the COREQ criteria, which identify the information needed to evaluate interview-based research, including researcher characteristics, recruitment, setting, analysis, and presentation of findings (Tong et al., 2007). Quality criteria should fit the actual analytical approach (Braun & Clarke, 2006, 2021), and the themes are therefore presented as exploratory findings whose completeness, unanimity, and credibility are not claimed beyond the member checking described above.

3. Ethical Considerations.

The study was conducted with institutional permission, in the form of an official letter issued by the doctoral study program for preliminary data collection. Before each interview, the researcher explained the purpose of the study, and informants gave verbal consent to participate and to be audio-recorded; consent was not documented in writing. Survey respondents completed the online questionnaire voluntarily. The study did not undergo separate ethics committee review. To protect confidentiality, informants are identified by role only, and no names are reported

Item Generation and Pilot Survey

The interviews and the literature synthesis led to three domains, seven indicators, and 15 items (Appendix E). The normative domain comprised ecological-spiritual values (ESLC1–ESLC3) and local Banjar cultural values (ESLC4–ESLC5); the relational domain comprised social harmony (ESLC6–ESLC7), trust (ESLC8), and collective work (ESLC9–ESLC10); and the behavioral domain comprised mutual cooperation (*gotong royong*; ESLC11–ESLC12) and active participation (ESLC13–ESLC15). Items were rated on a 5-point Likert agreement scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) and administered in Indonesian. All items were positively worded, and none was reverse scored. Items differ in referent: seven refer to the respondent's own belief or behavior (ESLC1, ESLC3, ESLC11–ESLC15), one to perceived messaging by religious leaders (ESLC2), six to the group or its members (ESLC4, ESLC6–ESLC10), and one to cultural values in general (ESLC5). No formal expert review or cognitive pretesting of the items was conducted; the items were discussed with the second author, who supervised the study.

The Banjarbakula area has 86 Pokdarwis with 1,613 members. The intention was to select respondents at random, but no list of individual members was used as a sampling frame, and no random selection procedure was applied. In practice, the first author contacted Pokdarwis chairs and members by messaging and asked them to share the questionnaire, circulated as an online form, with other members; some respondents were acquaintances of the first author who are Pokdarwis members. The pilot sample (N = 101) is therefore a non-probability sample recruited through chain referral and convenience. Because the questionnaire circulated through group channels, the number of people reached is unknown and a response rate cannot be calculated. Allocation of respondents across groups and districts was not documented.

Several consequences follow. First, the sample cannot be assumed to represent the 1,613 members or the five districts or cities; more engaged members may have been more likely to receive and complete the questionnaire, which is consistent with the uniformly positive responses (3–5). Second, respondents are likely clustered within the groups of the members who shared the questionnaire, so standard errors may be underestimated, and the single factor may partly reflect between-group differences; group identifiers were not

recorded, so clustering could not be modeled. Third, exploratory factor analysis does not require probability sampling, but its results describe this sample only and are interpreted as exploratory. The survey provided approximately 6.7 respondents per item, calculated as 101 divided by 15. Factor-analysis sample requirements depend on communalities, factor strength, and the pattern of loadings rather than a universal respondent-to-item threshold (MacCallum et al., 1999). Communalities in the one-factor solution were low to moderate (.11–.55; Table 4), and under such conditions factor recovery with a sample of this size is uncertain. The pilot therefore provides an initial basis for further measurement research, with uncertainty about the stability and transportability of its factor solution.

Survey Administration and Data Handling

The questionnaire contained 15 items (Appendix E) rated on a 5-point Likert agreement scale and was administered online in Indonesian between late May and July 2026. All 101 questionnaires were complete, so no missing data procedure was needed. Data were analyzed in Rstudio version: 2026.4.0.526 with the *psych* package library.

Exploratory factor analysis and retention criteria

Exploratory factor analysis (EFA) was conducted in R with the *psych* package on the Pearson correlation matrix of the 15 candidate items (N = 101; no missing responses). Responses were analyzed as continuous scores. Factorability was evaluated with the Kaiser–Meyer–Olkin (KMO) measure (criterion above .60) and Bartlett's test of sphericity (criterion $p < .05$). These diagnostics concern the suitability of the correlation structure for factor extraction. They do not establish construct validity, prove that the sample is representative, or identify the correct number of factors, which is why structural evidence must be interpreted together with the analytical procedures and the proposed construct (Alavi et al., 2024).

The number of factors was determined by parallel analysis, which compares observed eigenvalues with reference eigenvalues generated from random data (Horn, 1965); 1,000 random-data simulations and the 95th-percentile reference eigenvalues were used, and the observed eigenvalues are reported in Table 3. Factors were extracted with principal axis factoring, a common-factor method (Fabrigar et al., 1999); principal component analysis was not used, and the term factor is used throughout. A one-factor solution was specified, so no rotation was applied, and PA1 in Table 4 denotes the principal axis factor.

Items were retained when their loading was .40 or higher. ESLC2 and ESLC3 fell below that threshold, and 13 items met it; the one-factor solution and Cronbach's alpha were then recalculated for the retained items. A reduced questionnaire can have different properties from the initial pool, and reviews of EFA in tourism and management call for a clearer separation of component analysis from common-factor analysis and more precise reporting of factor decisions (Howard & Henderson, 2023; Howard, 2023). The R script is provided as supplementary material.

Reliability and Interpretation of Item Correlations

Internal consistency was assessed with Cronbach's alpha, using a criterion above .70. The 13 retained items had α = .866 (95% bootstrap CI [.82, .90]), and all 15 items had α = .863. Alpha is presented as an internal consistency estimate for this pilot rather than a complete assessment of reliability or dimensionality; it does not measure temporal stability, establish equivalence across groups, or demonstrate that the construct is distinct from other orientations. Methodological work recommends matching reliability estimates to the measurement model and avoiding reliance on alpha alone (Dunn et al., 2014; McNeish, 2018). Omega coefficients and test–retest reliability were not computed.

Item–total correlations. Each retained item was correlated with the sum score of the 13 retained items. Because an item contributes to its own total, these uncorrected coefficients are inflated by part–whole overlap, so corrected item–total correlations (each item correlated with the sum of the other 12 items) are reported in Table 5 alongside the uncorrected values. Item–total correlations describe item homogeneity. They are not evidence of construct validity, and no item was classified as valid or invalid on the basis of *p*-values, because with $N = 101$ almost any correlation above about .20 is statistically significant. Measurement transparency requires specifying what was correlated and why that relationship supports a proposed score interpretation (J. K. Flake & Fried, 2020). Retention decisions rested on factor loadings.

RESULT AND DISCUSSION

1. Conceptual Domains Identified Through Exploration

The development process produced a framework with three conceptual domains. Normative eco-spiritual values concerned the moral meaning attached to environmental care, including spiritual beliefs and responsibilities understood through local culture. Relational community values concerned trust, solidarity, harmonious relationships, and cooperation within the tourism community. Collective environmental behavior concerned participation in destination care, including cleanliness, conservation activities, visitor education, and capacity-building activities. Table 2 summarizes the domain descriptions. These are qualitative categories derived from the interviews; the results do not establish their relative prevalence, statistical separability, or a temporal order among them.

The normative domain positioned environmental care within obligations that inform everyday community life. In the interview narratives, responsibility toward the environment was linked to religious teaching and cultural inheritance rather than conservation knowledge alone. The relational domain located those responsibilities within social relationships that could support shared work. The behavioral domain described practices through which members participated in managing the destination. Together, the domains provided a basis for generating items covering meaning, cooperation, and activity. Illustrative interview extracts are not presented in this article; the coding output (69 codes grouped into 13 categories and three dimensions) is available as supplementary material.

The distinction between the domains is substantively useful even though their boundaries require further examination. Normative content refers to what members believe ought to be done; relational content refers to the quality or expectations of working together; behavioral content refers to self-reported actions. These concepts were grouped under ESLC, but the study did not examine whether all informants understood them identically, nor did it analyze negative cases, role-specific differences, or variation across faith backgrounds. The result is therefore an exploratory conceptual organization of the interview material, not a finding of complete consensus across Banjarbakula or proof that the domains encompass every locally relevant stewardship meaning.

Table 2. Conceptual content of ESLC

Domain	Content	Measurement distinction
Normative eco-spiritual values	Moral responsibility; spiritual beliefs; culturally understood environmental care	Beliefs and obligations rather than religious identity alone
Relational community values	Trust, solidarity, harmonious relationships and cooperation	Relationships rather than assumed empowerment
Collective environmental behavior	Cleanliness, conservation, visitor education and capacity building	Self-reported practices rather than ecological outcomes

Source: research data (2026)

2. Candidate Items and Factorability

The item development stage yielded 15 candidate items (Appendix E). The KMO measure was .842, with item-level measures of sampling adequacy ranging from .803 to .935, and Bartlett's test was significant, $\chi^2(105) = 472.1$, $p < .001$. These values met the criteria specified for continuing to factor extraction and indicate that the correlation matrix was suitable for factor analysis. Item means ranged from 4.16 (ESLC4) to 4.55 (ESLC1); across all responses, 3 (neutral) was chosen 7.2% of the time, 4 (agree) 49.8%, and 5 (strongly agree) 43.0%, and no respondent selected 1 or 2.

The first observed eigenvalue (5.32) exceeded its 95th-percentile reference value (1.89), whereas the second (1.37) and third (1.20) fell below theirs (1.67 and 1.51), so parallel analysis supported a single factor (Table 3). The second and third eigenvalues exceeded 1.0, so a Kaiser criterion would have suggested more factors; the parallel-analysis result was given precedence. This result differs from the three-domain conceptual organization but is not inherently contradictory: conceptual domains can describe distinguishable kinds of content while their items covary along a common response dimension. Conversely, it does not show that the three domains are empirically indistinguishable in every population. The finding is therefore described as an exploratory one-factor solution, not as confirmed unidimensionality or evidence for a higher-order construct.

3. Item Retention and Internal Consistency

In the one-factor solution (Table 4), ESLC2 (.357) and ESLC3 (.334) loaded below .40 and were excluded. The 13 remaining items loaded from .425 (ESLC11) to .741 (ESLC15), with ESLC15 and ESLC14 loading highest. The single factor accounted for 31.1% of the total variance among the 15 items, and communalities ranged from .11 to .55. Re-estimating the solution for the 13 retained items gave loadings of .423 to .751 and 34.2% of the variance explained.

The reduction remained 86.7% of the initial item pool (13 of 15). This percentage describes item retention only; it is not variance explained or a measure of construct coverage. Cronbach's α was .866 for the retained items and .863 for all 15 items. Corrected item–total correlations for the retained items ranged from .398 to .687 (Table 5). These results support a preliminary account of covariance and internal consistency. They do not establish convergent validity against an external scale, discriminant validity, criterion prediction, or equivalence across districts and religious groups.

Table 3. Pilot measurement results

Statistics or decision	Value	Interpretation
Pilot sample	101 members	Convenience sample; individual respondent observations; no missing data
Candidate items	15	Initial pool (Appendix E)
KMO	.842	Overall factorability adequate (item MSA .803–.935)
Bartlett's test	$\chi^2(105) = 472.1$, $p < .001$	Correlation matrix differs from identity
Parallel analysis	Eigenvalues 5.32, 1.37, 1.20 vs. 1.89, 1.67, 1.51	One factor retained
Extraction	Principal axis, one factor	Common-factor method; no rotation
Retention threshold	Loading ≥ .40	Specified screening rule
Retained items	13; loadings .425–.741	Individual estimates in Table 4
Excluded items	ESLC2 (.357), ESLC3 (.334)	Loadings below .40
13-item solution	Loadings .423–.751; 34.2% of variance	Re-estimated for retained items
Internal consistency	Cronbach's α = .866 (13 items); .863 (15 items)	Internal consistency only; 95% CI [.82, .90]
Item–total correlations	Corrected r = .398–.687	Item homogeneity, not validity evidence (Table 5)

Source: research data (2026)

Table 4 lists the item-level loadings and communalities for the single factor, and Table 5 lists the corrected and uncorrected item–total correlations for the 13 retained items. Among the retained items, loadings ranged from .425 (ESLC11) to .741 (ESLC15); ESLC2 and ESLC3 loaded .357 and .334.

Table 4. Item loadings on the single factor

Item	Loading (PA1)	h^2	Decision
ESLC1	.495	.245	Retained
ESLC2	.357	.127	Excluded (< .40)
ESLC3	.334	.112	Excluded (< .40)
ESLC4	.503	.253	Retained
ESLC5	.607	.368	Retained
ESLC6	.604	.365	Retained
ESLC7	.564	.318	Retained
ESLC8	.542	.294	Retained
ESLC9	.498	.248	Retained
ESLC10	.607	.368	Retained
ESLC11	.425	.181	Retained
ESLC12	.628	.394	Retained
ESLC13	.608	.370	Retained
ESLC14	.692	.479	Retained
ESLC15	.741	.549	Retained

Source: research data (2026)

Table 5. Item–total correlations for the 13 retained items

Item	Corrected item–total *r*	Uncorrected *r*
ESLC1	.433	.515
ESLC4	.444	.550
ESLC5	.564	.638
ESLC6	.573	.653
ESLC7	.516	.600
ESLC8	.496	.590
ESLC9	.477	.577
ESLC10	.576	.662
ESLC11	.398	.502
ESLC12	.589	.668
ESLC13	.564	.642
ESLC14	.640	.711
ESLC15	.687	.751

Source: research data (2026)

Corrected item–total correlations ranged from .398 (ESLC11) to .687 (ESLC15), and their rank order closely resembled that of the loadings: ESLC15 was highest and ESLC11 lowest on both. These coefficients support item homogeneity in the pilot sample; they are not interpreted as evidence of convergent or discriminant validity. ESLC2 and ESLC3 had corrected item–total correlations of about .33–.34 with the 15-item total, so their exclusion rested on their low factor loadings rather than on item–total evidence. Cronbach's α for the 13 items was .866, above the .70 criterion (Table 3); it indicates internal consistency in the pilot but does not demonstrate test–retest stability or unidimensionality.

4. Integration of Qualitative and Quantitative Findings

The qualitative and quantitative phases address different aspects of ESLC. Qualitative exploration generated the content domains; the survey provided evidence about how the developed items covaried. The integrated result is a candidate framework covering normative, relational, and behavioral content with an exploratory common factor in the pilot. No three-factor solution, second-order model, or mediation analysis was tested. The study

therefore does not establish that normative values first strengthen relationships and subsequently produce environmental behavior. Such a sequence is a theoretical proposition that may guide future work, but it is not a result of the present design.

The exclusion of two items creates a specific integration question. Statistical screening favored removing ESLC2 and ESLC3, while the qualitative interpretation located them within the ecological-spiritual indicator, which is central to the construct's name and purpose. Only ESLC1 now represents that indicator, and the strongest loadings belong to behavioral items, so the reduced item set may have shifted toward a broader cooperation and environmental-practice orientation (see Content coverage after item deletion). This question should be resolved through content assessment and further measurement work rather than by assuming that acceptable alpha compensates for possible content loss.

1. Directions for Future Research

This pilot did not examine whether *ESLC relates to* destination sustainability, and its results provide no evidence of a mediating mechanism. As a rationale for later work only, research in higher education has examined green organizational behavior as a mediator between green leadership and sustainability performance (Widjaja & Purwadhi, 2026); future studies could test whether collective eco-spiritual orientation plays a comparable role in Pokdarwis. This is a hypothesis, not a finding of the present study. In addition, individual endorsement of values should be distinguished from formal institutional capacity. A systematic review of tourism-village governance in Indonesia reports strong attention to community participation but little attention to internal control and performance management (Sri et al., 2026), and future work could examine how a value-based construct such as ESLC relates to formal governance and accountability in Pokdarwis.

The Contribution of a Locally Grounded Stewardship Framework

The principal contribution is a framework that brings environmental responsibility, social cooperation, and local cultural meaning into the same measurement problem within voluntary tourism organizations. The study's evidence supports domain generation and preliminary item screening, while stopping short of complete validation. This narrower interpretation strengthens the scientific contribution by making its scope explicit. ESLC is valuable as a candidate way to describe the stewardship orientation described by informants in Banjarbakula, provided that future research establishes how its items represent the proposed domain and differ from existing measures. Its usefulness will depend on the explanatory precision it offers, not on the novelty of combining three familiar terms.

The framework connects destination management with the meanings through which members understand their obligations. This orientation complements a social–ecological view in which resource systems, users, and governance arrangements must be considered together (Ostrom, 2009). It directs attention to why members may perceive environmental care as a shared responsibility within a tourism organization. However, the study did not measure the ecological effects of those responsibilities or compare groups under different governance arrangements. The construct cannot therefore be used to infer that destinations with stronger declared values have healthier wetlands. Its initial contribution concerns how stewardship may be represented in research, while the relationship between that representation and environmental outcomes remains open.

The distinction from general community participation is especially important. Participation can describe attendance, labor, consultation, or decision-making influence, whereas ESLC proposes content about the meanings associated with environmental responsibility. Future research should determine whether ESLC explains something beyond these established dimensions. Studies linking tourism involvement, empowerment, quality of life, and support for sustainable development provide a relevant neighboring research space

(Gautam & Bhalla, 2024). ESLC may help contextualize such relationships, but an association with support for tourism would not automatically demonstrate stewardship or environmental protection. The outcome must correspond to the construct's proposed role, and measurement overlap must be evaluated before interpreting any relationship as a substantive contribution.

A similar boundary applies to local knowledge and cultural value. Research developing measures of perceived value in local knowledge tourism illustrates the possibility of grounding measurement in a specific tourism context (Zhang et al., 2023). ESLC differs in its intended focus on stewardship within tourism organizations, rather than visitors' valuation of tourism experience. This distinction should be maintained in item content and future validation. An item about appreciating cultural attractions may concern tourism value; an item about cultural obligations toward shared environmental care concerns a different proposition. Clear boundaries would help prevent ESLC from absorbing any positive attitude toward culture, religion, community, or sustainability merely because those attitudes correlate.

1. Three Conceptual Domains and One Exploratory Factor

The qualitative domains and the one-factor solution are compatible only when read at their own levels. The domains organize content, whereas the factor describes a covariance pattern in one pilot sample. This pattern does not validate the three-domain framework, nor does it show that the domains are empirically indistinguishable. A common factor may reflect an integrated stewardship orientation, but similar wording, a shared response format, uniformly positive item wording, socially desirable content, or a general tendency to endorse community responsibility could also produce it, and this study cannot discriminate among these explanations.

Loadings ranged from .425 to .741 and communalities from .11 to .55. The four weakest retained items (ESLC11, ESLC1, ESLC9, and ESLC4) come from the behavioral, normative, relational, and normative domains, so weaker loadings are not concentrated in one domain; the strongest loadings belong to behavioral items (ESLC15, ESLC14, and ESLC12). A single factor can support a summary score only if the intended meaning of the score is defensible, and three domain scores would be premature because three separate factors were not established. At present, neither a three-subscale questionnaire nor a unitary validated score is justified.

Competing representations are offered as hypotheses for future work: a one-factor model, a correlated three-factor model, and a composite interpretation in which the components jointly define the construct. Comparing them requires confirmatory factor analysis and model comparison in a new, independent sample, since models cannot be tested on the data that generated them. The choice among them should also rest on item wording and on what changes in the construct are expected to do to each item.

2. Content Coverage After Item Deletion

Deleting ESLC2 and ESLC3 is substantively consequential. Both belonged to the ecological-spiritual indicator (ESLC1–ESLC3), which is now represented by a single retained item (ESLC1, the personal belief that protecting the environment is part of religious teaching). The normative domain retained three of its five items, whereas the relational and behavioral domains retained all five. Mean loadings were .54 (normative), .56 (relational), and .62 (behavioral), and the highest loadings belonged to behavioral items that are not specifically eco-spiritual, such as improving skills through training (ESLC15, .741) and reminding visitors to keep the area clean (ESLC14, .692). ESLC2 and ESLC3 correlated weakly with the other items (mean r = .21 and .20, compared with .34 among ESLC4–ESLC15) and only modestly with each other (r = .26), so they did not form a separate religious cluster. These results suggest that the common factor in this pilot is driven mainly

by cooperative participation and environmental practice, and that the reduced item set may have shifted away from the spiritual meaning that motivated ESLC. Statistical coherence and content representation serve different purposes, and a high alpha does not rule out this narrowing.

Several explanations for the weak loadings merit investigation without selecting one in advance. ESLC2 asks about the activities of religious leaders, so responses may depend on exposure to such messaging rather than on the respondent's own orientation. ESLC3 concerns religion as a motivation and may be interpreted differently across religious and organizational backgrounds. Both items may also have been too abstract or ambiguous. These possibilities imply different actions: revision, broader coverage of the spiritual domain, separate measurement, or justified exclusion. Cognitive interviews and content review would help distinguish them, and retesting the original or revised items in a larger independent sample would show whether their weakness is stable or specific to this pilot.

The behavioral items (ESLC11–ESLC15) all concern the respondent's own participation, but they differ in opportunity and responsibility. A person may hold strong stewardship values while lacking access to training (ESLC15) or the authority to remind visitors (ESLC14). Treating these activities as interchangeable manifestations of values risks confusing motivation with opportunity, and a low score should not be read as weak moral commitment when the activity is unavailable to the respondent.

3. Individual Responses and Claims About Collective Culture

ESLC is framed as a collective value system, but the pilot evidence consists of individual responses to items with mixed referents: seven items refer to the respondent, one to perceived messaging by religious leaders, six to the group or its members, and one to cultural values in general (Appendix E). Responses to group-referenced items (for example, "We always strive to maintain harmonious relationships") reflect each respondent's perception of the group, not demonstrated agreement among members. A collective construct requires a defined group referent and evidence that members' responses can be aggregated, and this study did not examine within-group agreement. The term collective is therefore retained as a conceptual aspiration, while the quantitative evidence is described as individual members' responses.

Future research should first decide whether ESLC is intended as an individual or organizational measure. If individual stewardship orientation is the target, item wording and interpretation should consistently refer to the respondent. If shared organizational culture is the target, the referent should be the *Pokdarwis* group and the sampling design should include enough members within enough groups to evaluate agreement and between-group variation. The population of 86 organizations provides a conceptual setting for such research, but the pilot's allocation across organizations was not documented. One cannot infer adequate group-level information merely from a total sample of 101 members.

Collective culture must also allow for disagreement. Community organizations contain members with different roles, resources, histories, and access to decisions. A group average may conceal divergent experiences, and a highly cohesive majority may not represent less powerful members. The study's qualitative inclusion of multiple stakeholder categories is promising, but no comparative analysis across stakeholder categories was conducted. Future research should examine whether the framework represents ordinary members as well as leaders and whether environmental obligations are negotiated fairly. This would protect the concept of local culture from becoming an idealized account in which solidarity is assumed, and dissent is treated as measurement error.

4. Implications for Environmental Practice and Tourism Governance

The framework suggests a practical direction for dialogue within *Pokdarwis*: connect environmental tasks with meaningful local responsibilities and the relationships needed to

carry them out. This implication is a proposition derived from the domains, not an intervention effect demonstrated by the pilot. Tourism managers could explore how members interpret obligations toward place, where cooperation is difficult, and which environmental activities require support. The value of such dialogue would lie in revealing differences and constraints rather than assigning moral rankings. An unconfirmed instrument should not determine access to funding, identify supposedly deficient groups, or be used as a performance standard.

Environmental practice also depends on infrastructure, authority, and the distribution of work. A community can endorse care for wetlands while lacking waste services, reliable resources, or influence over activities outside the destination. A cultural or spiritual framework cannot replace those conditions. Research on citizen trust and cultural values in Indonesia offers a relevant reminder that environmentally oriented responses are situated within wider social relationships (Irawan et al., 2022). For ESLC, the practical question is whether values help explain action when opportunities and constraints are measured separately. This would allow the framework to complement governance analysis instead of attributing all environmental outcomes to members' beliefs.

There is a related risk of treating spiritual motivation as inherently stronger or more durable than other motives. The study did not compare spiritual, economic, regulatory, or reputational motivations over time. It also did not test whether members who articulate environmental care in secular language contribute less. An inclusive application should recognize multiple legitimate grounds for stewardship. Interfaith participation in exploration is relevant to this aim but does not establish measurement equivalence across traditions. The framework's usefulness may depend on expressing environmental responsibility in terms that retain local meaning without requiring respondents to endorse a particular religious formulation.

5. Priorities for Independent Validation

The next step is to refine and review the item pool. Content review by experts, cognitive interviews with *Pokdarwis* members, and a documented rationale for the treatment of ESLC2 and ESLC3 would clarify whether the items cover the intended domains. Observed and reference eigenvalues (Table 3), communalities (Table 4), and reliability estimates with uncertainty are now reported, but they come from a single pilot sample. These tasks are distinct from collecting a larger sample: more respondents cannot repair an item pool whose content coverage is untested. Table 6 sets out a sequence of validation questions linking each proposed claim to the evidence needed to assess it.

Independent confirmatory testing should follow content refinement, with sample planning based on the intended model and clustering structure. The pilot should not be used both to optimize an instrument and to claim independent confirmation of that same instrument. A new study can examine model fit, local misfit, and whether the retained items preserve the proposed domains. For ordered response categories, the analysis should justify the correlation and estimation approach based on the scale's actual format and distributions. In the pilot, responses were concentrated in the upper three categories, which makes this choice consequential. Transparency in those choices would make subsequent findings interpretable and replicable.

Discriminant and convergent evidence are particularly important because ESLC spans several established concepts. Comparisons should include theoretically relevant measures of environmental norms, social capital, spirituality, and local or place-based identification. Expected convergence should be specified without treating a high correlation as proof of distinctiveness. Conversely, low correlations could signal either a distinctive construct or poor measurement. Criterion testing should use outcomes measured independently where feasible, such as documented participation or observed management practices. Testing

associations only among similarly worded self-reports would provide limited evidence that ESLC explains environmental stewardship beyond a general positive response orientation.

Measurement equivalence should be investigated before comparing districts, faith backgrounds, or organizational roles. Differences in scores may reflect different interpretations of cultural terms, different opportunities for action, or differences in the underlying orientation. Qualitative follow-up can identify these interpretations, while appropriate statistical analyses can examine whether the same score meaning is supported across groups. The sample needed for such work may exceed that required for a single pooled factor solution. Likewise, longitudinal evidence is needed before claiming that values precede cooperation or behavioral change. The current cross-sectional pilot does not establish stability, developmental sequence, or direction of influence.

Table 6. Validation questions and evidence required

Proposed interpretation	Evidence needed	Current status
Adequate content coverage	Expert content review, cognitive review, and deletion rationale	Wording and domain map documented (Appendix E); review not conducted
Stable internal structure	Independent confirmatory testing and model comparison	Exploratory only
Consistent and stable scores	Model-appropriate reliability with uncertainty; repeat measurement	Alpha only
Distinct stewardship construct	Comparison with norms, social capital, spirituality and identification	Not tested
Shared organizational culture	Group referent; within-group agreement and multilevel evidence	Individual responses only
Comparable group scores	Equivalence across locations, roles and faith backgrounds	Not tested
Behavioral or ecological relevance	Independent practices or outcomes; appropriate temporal design	Not tested

Source: research data (2026)

A further validation question concerns the meaning of score change. An increase in endorsement after a training activity could reflect greater stewardship orientation, familiarity with the questionnaire, or awareness of socially approved responses. A longitudinal design should therefore separate repeated measurement from evidence of improvement. Independently documented changes in practice would help assess whether a score change corresponds to a meaningful organizational or environmental difference. The relevant time interval should follow the activity being studied: routine maintenance, visitor education, and conservation responsibilities may operate on different schedules. These design choices should be specified before collecting follow-up data rather than selected after observing a favorable pattern.

The intended use of an instrument also determines what evidence is necessary. A questionnaire used for exploratory dialogue has a different evidential burden from one used to compare organizations or evaluate an intervention. For dialogue, interpretable wording and adequate domain coverage are central. For comparison, equivalent score meaning and comparable opportunities for action are necessary. For intervention evaluation, reliable change and appropriate comparison conditions become essential. ESLC currently has preliminary evidence for development, with none of these later applications fully established. Explicitly stating the intended use would keep the validation program focused and prevent statistical thresholds from becoming substitutes for substantive judgment.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This sequential exploratory study developed Eco-Spiritual Local Culture (ESLC) as a locally grounded candidate framework for environmental stewardship in community-based wetland tourism. Interviews with 26 stakeholders identified normative eco-spiritual values, relational community values, and collective environmental behavior as conceptual domains. A pilot survey of 101 Pokdarwis members produced an exploratory one-factor pattern, 13 of 15 items were retained, and factorability and internal consistency were favorable (KMO = .842; α = .866). The contribution is an initial, locally grounded item pool with a preliminary one-factor covariance pattern. ESLC is not a validated scale: the three-domain structure is not supported empirically, and the results neither demonstrate a collective culture at the group level nor any effect on sustainability.

Its potential contribution lies in specifying how cultural meaning, spiritual responsibility, and cooperation may be represented within voluntary tourism organizations. Realizing that contribution requires transparent item documentation, review of content coverage after deletion, and independent validation against neighboring constructs and external practices. Future work should also determine whether the intended score concerns individual orientation or shared organizational culture. Until those questions are resolved, ESLC provides a useful foundation for further inquiry while claims about predictive effectiveness, cross-group comparability, and wetland sustainability remain untested.

Limitations

This study has several limitations that define the scope of its conclusions. The literature synthesis was non-systematic and supports conceptual framing rather than an exhaustive claim about the research gap. The qualitative analysis rests on member-checked narratives rather than verbatim transcripts, was coded with analyst assistance without a second independent coder and did not formally assess saturation; each non-Islamic tradition was represented by one informant. Item development involved consultation within the research team, without formal expert review or cognitive pretesting, so content coverage after the removal of ESLC2 and ESLC3 remains to be examined. The pilot sample (N = 101) was a non-probability sample whose representativeness is unknown, responses were concentrated between 3 and 5, clustering within groups was not modeled, and the exploratory factor analysis was conducted on a single sample. External criteria and ecological outcomes were not examined. These limitations define the next research tasks (Table 6) and do not diminish the value of the initial development evidence.

Recommendations

Future research should follow a staged validation plan. (1) *Content review and cognitive interviews:* experts and *Pokdarwis* members should review the 15 items, including ESLC2 and ESLC3, to examine whether the eco-spiritual content of the domain is adequately covered and whether items refer to beliefs, perceived group norms, or behavior. (2) *Independent sample:* a larger sample should be drawn with documented sampling across the five areas and the 86 groups, with group identifiers recorded. (3) *Competing measurement models:* EFA and confirmatory factor analysis should compare one-factor, correlated three-factor, and composite models in the independent sample. (4) *Reliability and validity:* reliability beyond alpha (for example, omega and test–retest) and convergent, discriminant, and criterion validity should be examined against measures of social capital, environmental norms, spirituality, place attachment, and independently assessed environmental practices. (5) *Group-level validation:* multilevel analysis and within-group agreement indices should be used only if the sampling design supports aggregation to the *Pokdarwis* level. Structural

equation modeling is appropriate at stages 3 to 5; system dynamics and artificial intelligence-based methods are not recommended until the instrument has been validated.

Author Contributions

All authors made significant contributions to this study. These contributions included research conceptualization, development of the theoretical framework, data collection, data analysis, interpretation of results, manuscript preparation, scholarly revision, and final approval of the manuscript for publication.

AI Disclosure Statement

The authors used Claude and ChatGPT to translate and edit text between Indonesian and English, to draft sections of the manuscript (including the abstract, recommendations, and declarations), to format tables, and to support the revision in response to reviewers. The authors verified all content; the study design, data collection, data analysis, and interpretation were carried out by the authors.

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