

A Multi-Dimensional Social Indicator Framework for Corporate Social Responsibility Program Prioritization

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Abstract

Corporate social responsibility (CSR) planning requires a transparent method for comparing community needs across locations. This study develops a multidimensional social indicator framework to prioritize place-based CSR programs—an exploratory sequential design that combines expert consultation with weighted composite-index analysis. Three purposively selected experts representing academia, CSR practice, and government reviewed six indicators across five dimensions. At the same time, 2023 official statistics were compiled for five administrative areas in the Special Region of Yogyakarta. Direction-aware Min–Max normalization aligned adverse and protective indicators so that higher normalized values consistently represented greater relative need; moderated consensus assigned the largest weight to poverty (0.25). Composite scores ranged from 0.150 to 0.746: Gunungkidul ranked first (0.746), followed by Kulon Progo (0.681), Bantul (0.519), Sleman (0.243), and Yogyakarta City (0.150). The ordering remained unchanged under equal weighting and 12 one-at-a-time $\pm 10\%$ weight-perturbation scenarios, indicating local rank stability. The framework contributes an auditable bridge between social mapping and CSR resource allocation by disclosing indicator definitions, directions, weights, normalized values, and sensitivity results. It is intended as a first-stage screening tool for transparent, evidence-informed, and context-sensitive allocation decisions, not a substitute for community consultation or feasibility assessment. Findings remain conditional on the selected indicators, the three-expert panel, the five-area comparison, and the cross-sectional dataset.

Keywords: *Corporate Social Responsibility, Social Indicators, Multi-Criteria Assessment, Priority Framework, Social Mapping*

INTRODUCTION

Corporate social responsibility (CSR) has evolved beyond conventional philanthropy into a strategic approach to creating social value, strengthening relationships with local communities, and contributing to sustainable development. Community recognition of corporate activities depends on whether CSR initiatives respond to locally perceived priorities, including education, employment, cultural protection, and income-generating opportunities (Bustillo-Castillejo et al., 2023).

Community participation and contextual relevance also affect the successful implementation of community-based CSR programs (Kasim et al., 2023). Evidence from rural communities further indicates that CSR can contribute to poverty reduction when interventions are aligned with household conditions and beneficiary needs (Ventura & Jauregui, 2023). These findings demonstrate the importance of using systematic evidence when designing CSR programs and allocating limited resources across communities.

The effectiveness of CSR programs depends largely on decision-makers' ability to identify community needs and set appropriate intervention priorities. In practice, incomplete socioeconomic information, fragmented data sources, and reliance on stakeholder judgment can

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constrain this process.

The decision-support studies reviewed for this paper address organizational CSR-performance measurement ([Kamte et al., 2024](#)), organizational adoption of artificial intelligence in CSR initiatives ([Pai & Chandra, 2022](#)), and semantic alignment between corporate activities and customer preferences ([Ullah et al., 2026](#)). These examples are not a systematic census of all CSR decision-support research; rather, they show that prominent applications use organizational, technological, or preference-based units of analysis and do not directly rank geographical areas by multidimensional social need. Consequently, a place-based allocation decision may still lack a transparent basis for comparison.

In this study, social mapping is used as a general community-needs-assessment approach: a structured process for describing population conditions, resources, vulnerabilities, institutions, and stakeholder relationships in a defined territory. It is not claimed as a single standardized methodology. Participatory approaches such as Participatory Rural Appraisal (PRA) generate locally grounded knowledge through community involvement, mapping, ranking, and other facilitated techniques ([Chambers, 1994](#)).

The present framework complements, rather than replaces, such participation by converting selected official indicators into a comparable first-stage profile. Conventional social-mapping outputs may include qualitative descriptions, maps, stakeholder narratives, and lists of needs; these are contextually rich but do not automatically support reproducible cross-location comparison. Indicators expressed in percentages, years, and monetary units require explicit rules for direction, normalization, weighting, and aggregation ([OECD & European Commission Joint Research Centre, 2008](#)).

Digital transformation and data-driven decision-making provide opportunities to strengthen social mapping and CSR planning. The increasing availability of official socioeconomic statistics allows community conditions to be assessed in a structured, measurable, and comparable manner.

In Indonesia, BPS–Statistics Indonesia provides regional indicators derived from the National Socioeconomic Survey (Susenas), the National Labor Force Survey (Sakernas), housing statistics, population estimates, and human-development components ([BPS–Statistics of D.I. Yogyakarta Province, 2023, 2024](#); [BPS–Statistics of Gunungkidul Regency, 2024](#)). Integrating these indicators can provide a broader evidence base for identifying relative community needs, prioritizing CSR interventions, and documenting resource-allocation decisions.

Previous studies demonstrate the potential of quantitative decision methods in CSR and related sustainability contexts. Multi-criteria decision-making has been applied to institutional performance evaluation ([Lesmana et al., 2025](#)), while fuzzy logic has been used to assess sustainable decent-work conditions ([Abundes-Recilla et al., 2024](#)). Other studies have examined sustainability and profitability efficiency ([Kuo et al., 2023](#)), configurations influencing corporate water responsibility ([Gu et al., 2023](#)), and public preferences for different CSR initiatives ([Wang et al., 2025](#)).

Nevertheless, these studies primarily evaluate organizations, institutional arrangements, workplace conditions, or stakeholder preferences. Comparatively limited attention has been given to an ex-ante framework that combines official multidimensional social indicators, expert-derived weights, need-oriented normalization, and sensitivity analysis to produce an auditable priority ranking of geographical areas.

The Special Region of Yogyakarta was selected as an empirical demonstration case because its bounded administrative structure—four regencies and one city—permits complete comparison using a common official-data system while retaining substantial socioeconomic variation. It is not assumed to represent all Indonesian provinces.

In 2023, poverty ranged from 6.49% in Yogyakarta City to 15.64% in Kulon Progo, while

school participation among people aged 16–18 ranged from 80.59% in Gunungkidul to 97.18% in Yogyakarta City ([BPS–Statistics of Gunungkidul Regency, 2024](#)). Adjusted expenditure, life expectancy, improved drinking-water access, and unemployment also varied across the five areas ([BPS–Statistics of D.I. Yogyakarta Province, 2023, 2024](#)). This combination makes the region well suited to demonstrating how the proposed framework handles contrasting indicator profiles in CSR planning.

To address this gap, this study develops and demonstrates a Multi-Dimensional Social Indicator Framework for CSR Program Prioritization. Specifically, the study aims: (1) to operationalize six social indicators representing five dimensions of community need; (2) to construct a direction-aware, expert-weighted composite priority score for five actual administrative areas in the Special Region of Yogyakarta; and (3) to assess the stability of the resulting ranking under plausible changes in the weighting scheme.

Accordingly, this study addresses the following research question: How can heterogeneous official social indicators be transformed into a transparent, reproducible, and auditable ranking of geographical needs for CSR intervention? The framework is intended to support evidence-informed resource-allocation decisions rather than claim absolute objectivity or replace stakeholder consultation and program-feasibility assessment.

LITERATURE REVIEW

CSR Planning and Social Mapping

Effective CSR planning requires a credible connection between stakeholder expectations, documented community conditions, and resource-allocation decisions. Community legitimacy depends on whether corporate initiatives address locally recognized priorities and whether communities see companies as meaningful contributors to territorial development ([Bustillo-Castillejo et al., 2023](#)).

Similarly, community-based CSR programs are more likely to gain local acceptance when their design incorporates community participation, contextual knowledge, and stakeholder expectations ([Kasim et al., 2023](#)). Evidence from rural poverty-reduction initiatives also indicates that CSR programs can create social value when they identify intended beneficiaries, household constraints, and locally relevant development needs before implementing interventions ([Ventura & Jauregui, 2023](#)).

However, these studies primarily examine community relationships, implementation factors, or program outcomes. They provide limited methodological guidance for comparing the relative needs of several candidate locations before CSR resources are allocated.

Social mapping can provide the contextual foundation for location comparison by organizing information about population characteristics, socioeconomic conditions, local institutions, community resources, vulnerabilities, and stakeholder relationships. Established community-needs approaches such as PRA emphasize that local people should participate in generating, interpreting, and prioritizing knowledge about their own conditions ([Chambers, 1994](#)).

Accordingly, official indicators should not replace community voice. In the present framework, they provide a transparent screening layer that can identify where subsequent participatory assessment should begin. Qualitative narratives, participatory maps, stakeholder profiles, and indicator tables retain contextual depth, whereas the composite index serves the narrower purpose of cross-area comparison.

Transforming social-mapping information into a location-priority score therefore requires an explicit analytical procedure. Indicators measured in percentages, years, and monetary units must first be standardized to a common scale. The direction of each indicator must also be specified because a high value can represent either greater need, as in poverty and unemployment, or better

welfare, as in school participation and access to improved drinking water.

Constructing a composite indicator also requires a documented conceptual framework, indicator-selection criteria, normalization rules, weighting procedures, aggregation methods, and sensitivity analysis (OECD & European Commission Joint Research Centre, 2008). These requirements provide the methodological basis for developing a transparent social-indicator framework for place-based CSR program prioritization.

Multi-Criteria Assessment and Research Gap

Multi-criteria decision-making (MCDM) and composite-index approaches support decisions involving multiple and potentially conflicting criteria. AHP derives weights from pairwise judgments and provides a consistency diagnostic, but the number of comparisons and cognitive burden increase with the number of criteria (Saaty, 2008).

TOPSIS ranks alternatives by their distance from ideal and anti-ideal profiles, which is intuitive but makes the result dependent on the normalization, distance metric, and constructed reference points (Hwang & Yoon, 1981). ELECTRE methods use outranking relations and can accommodate incomparability and veto logic, but they require additional preference and threshold parameters that are less straightforward for nontechnical users (Roy, 1991).

A weighted additive composite index was selected because the decision task requires an interpretable screening score from a small set of observed social indicators, not a definitive choice among projects. Its calculation can be reproduced from disclosed raw values, directions, and weights, and each area's score can be decomposed by indicator.

This transparency comes at a cost: aggregation can conceal offsetting deprivation patterns, normalization can compress information, and expert weights remain subjective. The framework addresses these limitations by reporting the raw and normalized matrices, interpreting indicator-level contributions, limiting claims to relative need, and testing alternative weights. Sensitivity analysis evaluates rank robustness; it does not remove weighting subjectivity or establish inter-rater reliability (OECD & European Commission Joint Research Centre, 2008).

Multi-criteria and decision-support approaches have been applied in several CSR-related contexts. Lesmana et al. (2025) employed an MCDM framework to evaluate government institutional performance and corporate citizenship within a public-sector ecosystem. Abundes-Recilla et al. (2024) developed a fuzzy-logic method to assess sustainable decent-work conditions as part of corporate social responsibility.

Kamte et al. (2024) designed a decision-support platform for evaluating CSR performance among manufacturing small and medium-sized enterprises. Other quantitative studies have assessed sustainability and profitability efficiency (Kuo et al., 2023), configurations influencing corporate water responsibility (Gu et al., 2023), and stakeholder preferences for CSR initiatives (Wang et al., 2025). These studies show the value of structured quantitative assessment but focus mainly on organizational performance, institutional arrangements, workplace conditions, or stakeholder preferences.

A critical limitation is that their units of analysis and decision objectives differ from those required for place-based CSR planning. Existing models generally evaluate organizations, policies, programs, or stakeholder responses rather than compare the relative needs of geographically distributed communities before investment decisions.

Furthermore, some composite assessments do not clearly distinguish between adverse indicators, where a higher value represents greater need, and protective indicators, where a higher value indicates better welfare. Applying the same normalization direction to both types of indicators can produce inconsistent interpretations and potentially distort priority rankings.

Accordingly, a methodological gap remains in integrating official multidimensional social

indicators into a transparent framework for prioritizing geographical CSR programs. The present study addresses this gap by combining six official indicators representing five dimensions of community need with expert-informed weights, direction-aware normalization, weighted aggregation, disclosure of raw and normalized data, and sensitivity analysis.

Under this approach, every normalized value has a consistent interpretation: a higher value indicates a greater relative need for CSR intervention. The framework therefore produces an auditable location-priority ranking while allowing decision-makers to examine the indicators and assumptions that drive each result.

Table 1 synthesizes the focus, methods, inputs, and limitations of eight related studies. The final row positions the current study in relation to the existing literature and identifies its distinct contribution to place-based CSR planning.

Table 1. Synthesis of related studies and the research gap

Author and Year	Sector/focus	Method	Indicators or Input	Limitation for This Study
Bustillo-Castillejo et al. (2023)	Community legitimacy	Qualitative/empirical	Community perceptions, territorial development, and CSR–community relations	Examines community legitimacy but does not provide a quantitative mechanism for ranking locations
Kasim et al. (2023)	Community-based CSR	Critical-success-factor analysis	Community perceptions and stakeholder-related success factors	Focuses on program success factors rather than multidimensional community deprivation
Ventura and Jauregui (2023)	Rural poverty reduction	Case study	Household conditions, beneficiary perceptions, and program outcomes	Uses an ex-post, single-program context and does not compare needs across locations
Kamte et al. (2024)	Manufacturing SME CSR	Decision-support platform	Organizational CSR performance measures	Evaluates organizational performance rather than the relative social needs of communities
Pai and Chandra (2022)	AI adoption in CSR	Organizational adoption model	Technological and organizational factors	Explains technology adoption but does not support geographical CSR program prioritization
Ullah et al. (2026)	CSR congruence	Semantic DSS	Firm and customer CSR profiles	Measures CSR alignment but does not incorporate official

				regional social indicators
Lesmana et al. (2025)	Institutional performance	MCDM	Governance and institutional-performance criteria	Uses a different unit of analysis and decision objective from place-based community-need assessment
Abundes-Recilla et al. (2024)	Decent work/CSR	Fuzzy logic	Work-quality indicators	Concentrate on workplace conditions rather than multidimensional territorial needs
Current study	Place-based CSR planning	Direction-aware weighted composite index	Six official social indicators	Methodological contribution: a reproducible place-based prioritization procedure that combines official data, need-oriented normalization, expert-informed weights, decomposable scores, and rank-sensitivity analysis

Dimension and Indicator Logic

The framework comprises five dimensions of community need: economic conditions, education, health, basic environmental services, and social vulnerability. These dimensions are conceptually aligned with the Sustainable Development Goals (SDGs), particularly Goal 1 on poverty reduction, Goal 3 on health and well-being, Goal 4 on inclusive and equitable education, Goal 6 on access to clean water and sanitation, and Goal 8 on decent work and employment ([United Nations, 2015](#)). The SDGs provide the conceptual basis for selecting the dimensions, while the availability and comparability of official regional data determine the operational indicators used in the analysis.

The six indicators were obtained from publications issued by BPS–Statistics Indonesia. These publications compile regional welfare information from the National Socioeconomic Survey (Susenas), the National Labor Force Survey (Sakernas), population estimates, housing statistics, and human-development components ([BPS–Statistics of D.I. Yogyakarta Province, 2023, 2024](#); [BPS–Statistics of Gunungkidul Regency, 2024](#)).

Poverty rate and adjusted expenditure per capita represent the economic dimension; school participation among people aged 16–18 represents education; life expectancy at birth represents health status; household access to improved drinking water represents basic environmental services; and the open unemployment rate represents social vulnerability related to labor-market exclusion. Indicators were included only when comparable values for all five administrative areas were available for the common reference year of 2023.

The original concept of average income was operationalized using adjusted expenditure per capita. This modification was necessary because the selected BPS publications did not include comparable regional household-income data. In contrast, Indonesian human-development

statistics use adjusted expenditure per capita as an observable measure of purchasing power and material living standards (BPS–Statistics of Gunungkidul Regency, 2024). The indicator should therefore be interpreted as a proxy for economic welfare rather than as direct household income.

Life expectancy at birth was similarly used as a population-level proxy for health conditions. It reflects accumulated health outcomes and is consistently available across the five administrative areas, but it does not directly measure geographical, financial, or travel-time access to health facilities. Consequently, the framework refers to this indicator as health status rather than direct access to health services. These operational distinctions are important because the composite score must retain the meaning and limitations of each underlying indicator.

The direction of need was specified before normalization. Higher poverty and unemployment rates indicate greater community need and were therefore treated as adverse indicators. In contrast, higher adjusted expenditure, school participation, life expectancy, and access to improved drinking water indicate better welfare conditions; lower observed values on these indicators consequently represent greater intervention need. This direction-aware specification ensures that all normalized indicators have the same interpretation: a higher normalized value consistently represents a greater relative need for CSR intervention.

Table 2. Dimensions, Indicators, Direction, Weight, and Source

Code	Dimension	Operational Indicator (2023)	Need Direction	Weight	Source
E1	Economy	Poverty rate (%)	Higher = greater need	0.25	BPS Susenas
E2	Economy	Adjusted expenditure per capita (thousand rupiah/year)	Lower = greater need	0.15	BPS IPM component
P1	Education	School participation, age 16–18 (%)	Lower = greater need	0.20	BPS Susenas
K1	Health	Life expectancy at birth (years)	Lower = greater need	0.15	BPS IPM component
L1	Environment	Households with improved drinking water (%)	Lower = greater need	0.10	BPS Susenas
S1	Social vulnerability	Open unemployment rate (%)	Higher = greater need	0.15	BPS Sakernas

RESEARCH METHOD

Research Design

This study employed a sequential exploratory mixed-methods design that integrated expert consultation with secondary quantitative data analysis. In the first phase, a focus group discussion refined the conceptual dimensions, selected operational indicators, determined the direction of community need, and established indicator weights.

In the second phase, official regional statistics were compiled, normalized to a common need-oriented scale, aggregated into composite priority scores, and used to rank the study areas. Sensitivity analysis was subsequently conducted to examine the robustness of the ranking under alternative weighting assumptions.

The unit of analysis was the district or municipality. The study covered five actual administrative areas in the Special Region of Yogyakarta: Kulon Progo Regency, Bantul Regency, Gunungkidul Regency, Sleman Regency, and Yogyakarta City.

The quantitative dataset refers to 2023, the latest common reference year with complete and comparable values for all six indicators and five study areas. Figure 1 summarizes the analytical process, from indicator identification to CSR priority ranking.

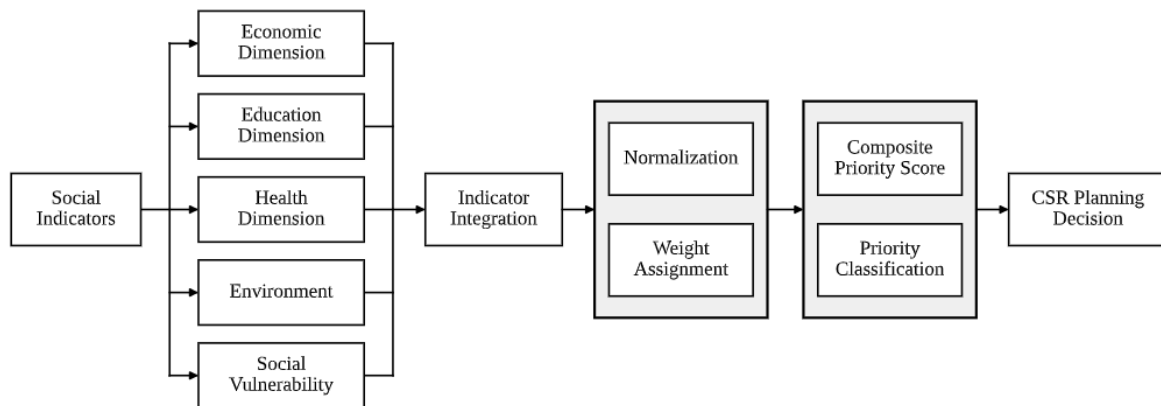


Figure 1. Proposed Multi-Dimensional Social Indicator Prioritization Framework for CSR Program Planning

Focus Group and Expert Validation

The FGD was conducted in Yogyakarta in April 2026 and lasted approximately two hours. The three-member panel was purposively composed of one academic, one CSR practitioner, and one government representative, each with at least five years of relevant experience. This small, information-rich panel was chosen to combine conceptual, implementation, and public-policy perspectives in an exploratory framework-development exercise; it was not intended to provide statistical representation.

Eligible experts were identified through relevant professional roles and experience. 3 experts were invited to provide input on the research to be carried out. Verbal informed consent was obtained before the discussion; participation was voluntary, and roles rather than identities were reported. The session was documented using notes. The documentation was reviewed after the session to confirm the agreed indicators, directions, and final weight vector. Table 3 shows the expert-panel profile.

Table 3. Expert-Panel Profile

Participant	Role	Institution Type	Relevant Experience	Primary Contribution
E1	Academic	University	≥5 years	Conceptual dimensions and indicator validity
E2	CSR practitioner	Private/CSR program	≥5 years	Program relevance and weighting
E3	Government representative	Public sector	≥5 years	Policy relevance and official-data interpretation

Weighting Procedure and Robustness Assessment

Indicator weights were established through direct allocation followed by moderated consensus. Each participant was first asked to explain the relative importance of the six indicators for identifying geographical areas with greater CSR intervention need and to propose a provisional allocation summing to 1.00.

The moderator recorded the proposals and highlighted differences. Participants then

discussed the underlying rationales, reviewed the implications for place-based prioritization, and adjusted the allocations until all three explicitly accepted one shared vector. The final weights were 0.25 for poverty, 0.15 for adjusted expenditure, 0.20 for school participation, 0.15 for life expectancy, 0.10 for improved drinking-water access, and 0.15 for unemployment. These values represent negotiated panel judgment, not an arithmetic mean of independent ratings.

The team produced the final weights collectively rather than through separate rating rounds. Because individual preliminary scores were not retained, an inter-rater reliability coefficient could not be calculated retrospectively. Sensitivity analysis was therefore used to assess the robustness of the resulting ranking to plausible changes in the weights. Interpret this analysis as a weight-robustness assessment, not a substitute for inter-rater reliability.

Data Sources and Operationalization

The study used aggregate secondary data obtained from official publications of BPS–Statistics Indonesia. Poverty rate, adjusted expenditure per capita, school participation among people aged 16–18, life expectancy at birth, and the open unemployment rate were obtained from regional welfare, labor-force, and human-development statistics for 2023 ([BPS–Statistics of D.I. Yogyakarta Province, 2024](#); [BPS–Statistics of Gunungkidul Regency, 2024](#)). Household access to improved drinking water was obtained from the 2023 housing-statistics publication based on the March 2023 National Socioeconomic Survey (Susenas) ([BPS–Statistics of D.I. Yogyakarta Province, 2023](#)).

Only indicators with comparable values for all five administrative areas in the common reference year were included. The poverty rate and open unemployment rate were classified as adverse indicators because higher observed values represent greater community need.

Adjusted expenditure per capita, school participation, life expectancy, and access to improved drinking water were classified as protective indicators because lower observed values represent less favorable welfare conditions and, consequently, greater intervention need. Indicator definitions, measurement units, reference years, and directions were specified before normalization and scoring.

Adjusted expenditure per capita was used as a proxy for material living standards rather than as a direct measure of household income. Life expectancy at birth was used as a population-level health-status indicator. It should not be interpreted as a direct measure of geographical, financial, or travel-time access to health facilities.

Normalization, Weighting, and Classification

Min–Max normalization was performed in a need-oriented direction. For adverse indicators, where a larger value indicates greater need, the normalized value was:

$$n_{ij} = (x_{ij} - \min_i x_{ij}) / (\max_i x_{ij} - \min_i x_{ij}) \quad (1)$$

For protective indicators, where a smaller value indicates greater need, the direction was reversed:

$$n_{ij} = (\max_i x_{ij} - x_{ij}) / (\max_i x_{ij} - \min_i x_{ij}) \quad (2)$$

Here, x_{ij} is the observed value of indicator j for area i and n_{ij} lies between 0 and 1. The composite priority score was calculated as:

For example, poverty is adverse. Kulon Progo's poverty value of 15.64% is normalized as $(15.64 - 6.49) / (15.64 - 6.49) = 1.000$, indicating the greatest relative poverty need in the five-area sample.

Adjusted expenditure is protective. Gunungkidul's value of 10,065 thousand rupiah per year is therefore reversed as $(19,920 - 10,065)/(19,920 - 10,065) = 1.000$, indicating the greatest relative need on this indicator. These examples show why the normalization direction must follow the substantive meaning of each measure.

$$P_i = \sum_{j=1..6} w_j n_{ij}, \text{ where } \sum_{j=1..6} w_j = 1 \quad (3)$$

The composite score is relative to the five observed areas and is not a universal 0–1 measure of deprivation. A score of 1 would indicate the highest composite need attainable relative to the sample-specific minima and maxima, while 0 would indicate the lowest. Because Min–Max normalization is sample-dependent, adding or removing an area, or applying the equations to another jurisdiction, can change normalized values and scores even when an existing area's raw value remains unchanged.

Rankings are therefore valid only for this five-area comparison unless the framework is recalibrated. For communication only, the first-ranked area is labeled high priority, ranks 2–4 medium priority, and rank 5 low priority; these are sample-relative ordinal labels, not externally validated thresholds.

Sensitivity Analysis

Two robustness checks were conducted. First, an equal-weight model was calculated by assigning a weight of $(1/6)$ to each indicator. Second, a one-at-a-time weight-perturbation analysis was performed. Each of the six expert-derived weights was separately increased by 10% and decreased by 10%, producing 12 perturbation scenarios. After each change, the complete weight vector was proportionally rescaled so the sum of the weights remained 1.00.

The robustness assessment therefore consisted of 12 one-at-a-time perturbation scenarios and one equal-weight scenario. For each scenario, composite scores were recalculated, and the resulting ranks were compared with the baseline expert-weight ranking.

The ranking was considered locally stable when no area reversed rank across the tested scenarios. This procedure evaluates sensitivity to modest changes in indicator weights but does not establish robustness to alternative indicators, different reference years, larger changes in stakeholder preferences, or different aggregation methods.

FINDINGS AND DISCUSSION

Raw and Normalized Matrices

Table 4 presents the raw values of the six indicators for the five administrative areas in 2023. The study areas showed considerable socioeconomic variation. Kulon Progo recorded the highest poverty rate at 15.64%, closely followed by Gunungkidul at 15.60%. Gunungkidul recorded the lowest adjusted expenditure per capita and the lowest school participation rate among people aged 16–18. B

antul had the lowest life expectancy at birth, while Kulon Progo had the lowest proportion of households with access to improved drinking water. Yogyakarta City performed most favorably on poverty, adjusted expenditure, school participation, life expectancy, and improved drinking-water access, but recorded the highest open unemployment rate at 6.07%.

Table 4. Raw Indicator Matrix for the Five Areas

Area	Poverty %	Expenditure (000 Rp/Year)	School Participation, Ages 16–18%	Life Expectancy (Years)	Households With Improved Drinking Water %	Open Unemployment Rate %
Kulon Progo	15.64	10,723	84.73	75.35	89.61	2.40
Bantul	11.96	16,524	91.14	74.64	96.29	3.78
Gunungkidul	15.60	10,065	80.59	74.76	97.59	2.09
Sleman	7.52	16,976	95.02	75.26	98.30	4.47
Yogyakarta City	6.49	19,920	97.18	75.52	99.31	6.07

Sources: [BPS–Statistics of D.I. Yogyakarta Province \(2023, 2024\)](#) and [BPS–Statistics of Gunungkidul Regency \(2024\)](#).

Table 5 presents the need-oriented normalized matrix. Every normalized value ranges from 0 to 1, with a higher value indicating greater relative need. The normalization reversed the direction of the protective indicators. Consequently, the lowest adjusted expenditure, school participation, life expectancy, and improved drinking-water access produced the highest need scores for their respective indicators.

Gunungkidul obtained normalized values close to or equal to 1.000 for poverty, adjusted expenditure, school participation, and health status. Kulon Progo obtained the maximum need scores for poverty and improved drinking-water access.

Bantul obtained the maximum health-need score because it recorded the lowest life expectancy among the five areas. Yogyakarta City obtained a normalized score of 1.000 for unemployment but zero for the other five indicators, reflecting its comparatively favorable position on those indicators.

Table 5. Need-Oriented Normalized Matrix and Weighted Score

Area	E1	E2	P1	K1	L1	S1	Score
Kulon Progo	1.000	0.933	0.751	0.193	1.000	0.078	0.681
Bantul	0.598	0.345	0.364	1.000	0.311	0.425	0.519
Gunungkidul	0.996	1.000	1.000	0.864	0.177	0.000	0.746
Sleman	0.113	0.299	0.130	0.296	0.104	0.598	0.243
Yogyakarta City	0.000	0.000	0.000	0.000	0.000	1.000	0.150

E1 = poverty rate; E2 = adjusted expenditure per capita; P1 = school participation among people aged 16-18; K1 = life expectancy at birth; L1 = household access to improved drinking water; and S1 = open unemployment rate. Higher normalized values indicate greater relative need for CSR intervention.

Priority Ranking

Within this five-area dataset, the expert-weighted composite scores ranged from 0.150 to 0.746; the values should not be interpreted as positions on a universal deprivation scale. Gunungkidul ranked first at 0.746, driven primarily by the lowest adjusted expenditure and school participation, high poverty, and comparatively low life expectancy. Kulon Progo ranked second at 0.681 because it recorded the highest poverty, the lowest improved drinking-water access, and relatively low expenditure and school participation.

Bantul ranked third at 0.519, primarily because of the lowest life expectancy, moderately high poverty, and higher unemployment than Kulon Progo and Gunungkidul. Sleman ranked fourth at 0.243. Yogyakarta City ranked fifth at 0.150 despite having the highest unemployment rate

because it held the sample minimum need value on the other five indicators.

The result illustrates compensability in a weighted additive index: a severe need in one lower-weighted dimension can be offset by favorable values elsewhere. If decision-makers assigned substantially greater weight to unemployment, or used a non-compensatory rule, Yogyakarta City's priority could rise.

For this reason, read the overall ranking alongside the indicator profile; the city remains a plausible target for employment-focused CSR even though it is not the highest overall geographical priority.

Table 6. CSR Priority Ranking and Classification

Rank	Area	Expert-Weight Score	Equal-Weight Score	Minimum/Maximum Rank	Main Normalized Need Components
1	Gunungkidul	0.746	0.673	1	Adjusted expenditure, school participation, and poverty
2	Kulon Progo	0.681	0.659	2	Poverty, improved drinking water, and adjusted expenditure
3	Bantul	0.519	0.507	3	Life expectancy, poverty, and unemployment
4	Sleman	0.243	0.257	4	Unemployment, adjusted expenditure, and life expectancy
5	Yogyakarta City	0.150	0.167	5	Unemployment

Minimum and maximum ranks were determined across the baseline model, the equal-weight model, and the 12 one-at-a-time $\pm 10\%$ weight-perturbation scenarios.

Sensitivity Results

The equal-weight model changed score magnitudes but not the ordering: Gunungkidul remained first, followed by Kulon Progo, Bantul, Sleman, and Yogyakarta City. None of the 12 one-at-a-time perturbations produced a rank reversal. Identical minimum and maximum ranks therefore mean that no area changed its ordinal position across the baseline, equal-weight, and 12 perturbation scenarios. This shows local robustness to the tested weight changes, not proof of general stability across different indicators, areas, years, expert groups, or aggregation rules.

Table 6 combines the baseline priority results with the sensitivity assessment. The identical minimum and maximum ranks indicate that the ranking was locally stable across the 12 perturbation scenarios and the equal-weight scenario. This finding provides evidence of robustness to modest changes in indicator weights. However, it does not demonstrate robustness to alternative indicators, different reference years, larger changes in stakeholder preferences, or different aggregation methods.

Discussion

Interpretation And Comparison with Previous Studies

The findings demonstrate that place-based CSR planning can produce different priorities when multiple dimensions of community need are considered simultaneously. Gunungkidul ranked first not because it had the least favorable value for every indicator, but because high poverty, low

adjusted expenditure, low school participation, and comparatively low life expectancy jointly contributed to its composite score.

Kulon Progo ranked second because its high poverty rate, low adjusted expenditure, and limited access to improved drinking water outweighed its comparatively low unemployment rate. Conversely, Yogyakarta City ranked fifth despite having the highest unemployment rate because it performed most favorably on the other five indicators. These findings illustrate the limitation of using a single indicator to determine geographical CSR priorities.

This multidimensional interpretation complements community-legitimacy research showing that communities evaluate corporate contributions based on locally relevant economic, educational, cultural, and social priorities (Bustillo-Castillejo et al., 2023). It also extends community-based CSR research emphasizing participation and contextual suitability as important conditions for program implementation (Kasim et al., 2023).

While these studies explain the importance of community recognition and engagement, the present framework provides an ex-ante analytical procedure for comparing geographical needs before selecting programs and locations. Similarly, the framework extends poverty-oriented CSR research (Ventura & Jauregui, 2023) by positioning poverty within a wider profile of education, health status, basic environmental services, and labor-market vulnerability.

The framework also differs from existing CSR decision-support applications. Kamte et al. (2024) evaluate organizational CSR performance, while CSRMATCHNET assesses semantic congruence between corporate activities and customer preferences (Ullah et al., 2026). These approaches support organizational evaluation and stakeholder alignment but do not rank community needs across geographical areas.

Likewise, the MCDM framework developed by Lesmana et al. (2025) evaluates institutional performance, while the fuzzy-logic model proposed by Abundes-Recilla et al. (2024) assesses sustainable decent-work conditions. The present study has a more specific decision objective: identifying which administrative area demonstrates the greatest relative need for further CSR assessment and intervention.

An important methodological distinction is the use of direction-aware normalization. Poverty and unemployment are adverse indicators because higher values represent greater need. In contrast, expenditure, school participation, life expectancy, and improved drinking-water access are protective indicators because higher values represent more favorable conditions.

Reversing the protective indicators ensures that every normalized value has the same interpretation: a higher score represents greater relative need. Applying a single normalization direction to indicators with opposing meanings could distort both composite scores and priority rankings.

The sensitivity analysis provides additional evidence that the ranking is not dependent on small changes in a single indicator weight. The ordering remained unchanged under equal weighting and across all 12 one-at-a-time $\pm 10\%$ weight-perturbation scenarios. This result indicates local robustness to modest weight uncertainty. However, it does not demonstrate that the ranking would remain unchanged if different indicators, geographical units, reference years, expert groups, or aggregation methods were used.

The framework should therefore be described as potentially more transparent and auditable than unaided judgment, rather than as universally more accurate or objective. Its transparency comes from disclosing raw data, indicator definitions, need directions, expert-derived weights, normalization equations, component values, composite scores, and sensitivity results. These elements allow decision-makers and stakeholders to examine how each priority was produced and to recalculate the ranking when updated data become available.

The principal novelty of this study is integrating a five-dimension CSR social-mapping

structure, direction-aware normalization, expert-informed weighting, a fully disclosed official-data matrix, and rank-sensitivity analysis into a reproducible procedure for place-based CSR program prioritization.

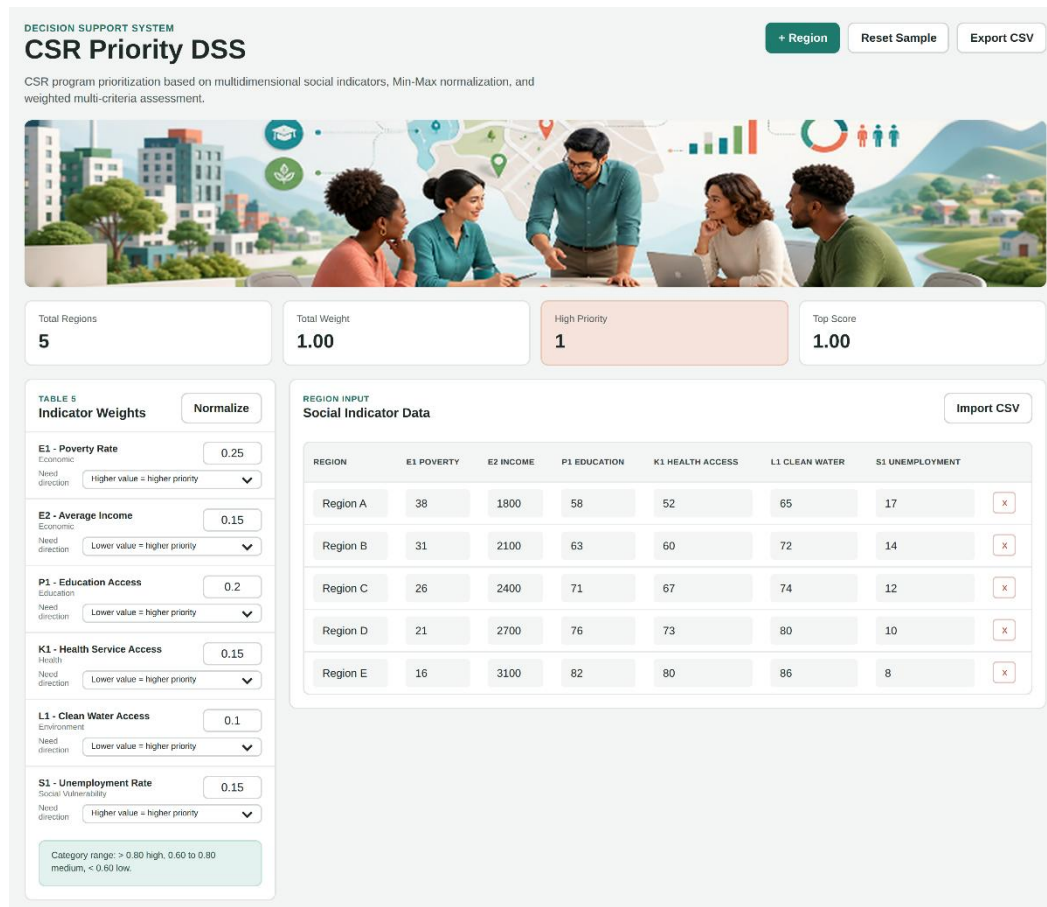


Figure 2. Implementation in CSR Applications

Figure 2 illustrates how the calculation can support CSR planning across sectors. Organizations may adapt the indicator set and weights to the target region and decision context, but any adaptation requires renewed stakeholder justification, recalculation, and sensitivity assessment. The framework is best used to structure initial screening and discussion rather than to automate final investment decisions.

Theoretical and Practical Contribution

Theoretically, this study connects community-oriented CSR research with composite-indicator methodology by conceptualizing geographical prioritization as a structured transformation of multidimensional community conditions into a relative decision output.

The framework extends existing CSR planning literature by distinguishing between identifying community conditions and aggregating them for comparative decision-making. It also shows that indicator direction is a substantive component of CSR prioritization because economic and social indicators do not necessarily relate to community need in the same way.

Practically, the framework provides CSR managers with an auditable first-stage screening tool. Managers can use the composite ranking to identify where to begin more detailed due diligence and stakeholder consultation. The normalized indicator profile can subsequently help identify relevant program themes.

For example, the results suggest that further assessment in Gunungkidul should consider economic welfare, school participation, and health conditions, whereas unemployment requires particular attention in Yogyakarta City. The calculation record can also support internal governance, justify resource allocation, and facilitate communication with government and community stakeholders.

The framework is not intended to replace community consultation, feasibility assessment, or managerial judgment. After prioritizing a location, decision-makers must still examine program costs, implementation capacity, local participation, potential beneficiaries, corporate expertise, and alignment with regional development plans. The ranking should therefore be treated as an evidence-informed starting point, not an automatic funding decision.

CONCLUSIONS

This study developed and applied a direction-aware, expert-weighted social indicator framework for prioritizing geographical needs for CSR intervention. Six official BPS indicators representing five dimensions of community need were applied to four regencies and one city in the Special Region of Yogyakarta.

Poverty received the largest expert-derived weight at 0.25. The resulting composite scores ranged from 0.150 to 0.746, with Gunungkidul ranked first, followed by Kulon Progo, Bantul, Sleman, and Yogyakarta City. The ordering remained unchanged under one equal-weight scenario and 12 one-at-a-time $\pm 10\%$ weight-perturbation scenarios. This finding indicates that the ranking was locally stable under modest changes in indicator weights, although it does not establish stability across different indicators, years, geographical units, or stakeholder groups.

The theoretical contribution connects community-oriented CSR planning with composite-indicator methodology through explicit indicator selection, need direction, normalization, expert-informed weighting, aggregation, and sensitivity assessment. The practical contribution is an auditable first-stage screening process that enables CSR managers to identify priority locations, inspect the indicators driving each score, and document resource-allocation reasoning.

The framework is particularly valuable in jurisdictions with multiple administrative areas competing for limited corporate investment, where transparent prioritization can reduce ad-hoc allocation decisions. The ranking should inform, rather than replace, stakeholder consultation, feasibility assessment, and program appraisal.

LIMITATIONS & FURTHER RESEARCH

This study has several limitations. First, the framework uses only six indicators, and four of the five dimensions are represented by a single indicator, which restricts the breadth of each construct. Second, the expert panel consisted of only three participants, and the consensus-based weighting procedure remains partly subjective. Because the authors did not retain individual preliminary ratings, they could not estimate inter-rater reliability retrospectively.

Third, the analysis is cross-sectional and limited to five administrative areas in 2023. It does not capture changes in community conditions over time, and the findings should not be generalized beyond the observed context without recalibration. Min–Max normalization is also sample-dependent; adding or removing an area could change normalized values and composite scores even when an existing area's underlying value remains unchanged.

Fourth, some indicators are proxies. Adjusted expenditure per capita represents material living standards rather than direct household income, while life expectancy represents population health status rather than direct access to health services. Fifth, the model does not incorporate program costs, implementation feasibility, absorptive capacity, community readiness, corporate capabilities, or strategic fit. Finally, the framework has not undergone ex-post validation against the

actual social outcomes of completed CSR programs. The ranking therefore indicates relative need within the observed dataset, not the expected effectiveness or impact of a particular intervention.

Future research should use larger, more diverse panels; retain individual ratings for reliability analysis; incorporate multiple indicators per dimension; analyze longitudinal data; compare alternative weighting and MCDM methods; and validate rankings against completed-program outcomes.

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