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Grassroots Women's Networks and Community Disaster Resilience in Manipur, India

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ABSTRACT

This paper analyzes how indigenous frameworks form a basis for women's response to disasters by examining the structural (historical Ima Keithel network: Mothers' Market), social (Meira Paibi: Women Torchbearers) and operational dimensions of leadership in disaster management within grassroots institutional structures embedded into socio-cultural history. A mixed-methods design using an explanatory sequential approach was employed; quantitative data were collected through structured questionnaires administered to 384 leaders from five districts (Imphal West, Imphal East, Thoubal, Churachandpur and Ukhrul) while qualitative key informant interviews of twelve respondents.

The results of SEM indicated that structural social capital (β = .342, p < .001) and cognitive social capital (β = .418, p < .001) positively predict community disaster resilience, grassroots institutional trust (β = .215, p < .01) mediates between informal women networks and operational evacuation efficiency, and there is a significant mismatch between informal disaster response capacity and formal institutional integration (*87.5%* respondents report zero formal representation within State and District Disaster Management Authorities (SDMA/DDMA)).

Qualitative thematic analysis showed that women networks have rapid resource mobilization and localized risk communication, but they are systematically constrained by patriarchal institutional structures, lack of financial autonomy, and non-recognition in formal policy frameworks. This study offers an empirical model for integrating grassroots, gender-led social capital into state-level DRR policies for community resilience building in complex emergency settings.

Keywords: Disaster Management, Women's Leadership, Social Capital Theory, Manipur, Resilient Communities, Grassroots Institutions, Feminist Political Ecology.

INTRODUCTION

As disaster management has evolved from technocratic hazard-centric command-and-control models to decentralized community-based disaster risk reduction (CBDRR) models, gendered vulnerabilities and capacities have been known as significant determinants of resilience (UNISDR 2017). Women are more vulnerable to disasters than men around the world because of regular socioeconomic inequality, lack of access to resources, and social-cultural barriers (Neumayer & Plümper, 2007). While women are seen as vulnerable, they also tend to be the first responders, resource managers, and community organizers (Enarson, 1998); informal networks of women provide short-term relief, local early warnings, and rehabilitation for communities where institutional spaces are present in complex emergency landscapes (where natural hazards intersect with socio-political instability). The northeastern borderland state of Manipur in India offers a particularly interesting geographic and socio-political setting within which to examine this dynamic.

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Manipur is geologically located in seismic **Zone V** *(very high risk)* and subject to frequent flash floods, landslides, and torrential monsoons, all of which are exacerbated by ongoing ethno-political conflict, civilian blockades, and occasional civil unrest, resulting in a situation of multiple, compounding emergencies.

Ironically, while Manipur has a high degree of structural vulnerability, it also has a long history of grassroots women-led institutions, such as the historic Ima Keithel (Mothers' Market), the world's largest all-women operated commercial market, and the Meira Paibi (Women Torchbearers) movement, which represents a tradition of autonomous collective women's action (Roy & Rao, 2021). Although these networks were originally created to address socio-economic survival and human rights violations, they have always transitioned into de facto frontline mutual-aid systems during acute environmental and political crises.

Even with this apparent grassroots capacity, there is a massive institutional disconnect. The institutional architecture of the disaster management apparatus as mandated by the Indian Disaster Management Act of 2005, which goes from the State Disaster Management Authority (SDMA) down to District Disaster Management Authorities (DDMAs), functions through highly centralized, bureaucratic, and male-dominated administrative pipelines that rarely incorporate informal women collectives into formal policy design, emergency resource allocation, or state-level decision-making bodies, resulting in inefficient community risk communication, misallocated emergency resources, and a failure to leverage valuable localized social capital.

Research Gap

Although there is a growing body of literature on gendered vulnerabilities in disasters (Arora-Jonsson, 2011), a critical knowledge gap exists about how indigenous, non-disaster-specific institutions for women are reconfigured into disaster-response structures in multi-hazard borderland areas prone to conflicts. The existing literature on the women's networks in Manipur focuses on their anthropological, economic, or political resistance histories (Bowling Alone: The Collapse and Revival of American Community, 2000; Yambem, 1976), but virtually no empirical work quantifies their operational effectiveness in mitigating disasters, coordinating evacuations, or building resilience, nor has any previous work mathematically modeled the mediating role of institutional trust in connecting informal civic networks with state-led crisis management (Roy & Rao, 2021).

Objectives

The objectives is to

- Determine how the structural and cognitive social capital of informal women's networks contributes towards community disaster resilience in Manipur
- assess if the mediating role of institutional trust at the grassroots level can translate network cooperation into operational evacuation and relief efficiency.
- examine constraints in integrating formal women-led grassroots collectives within the framework of SDMA/DDMAs.

Theoretical Framework and Hypotheses

This study combines Putnam's tripartite typology of social capital (bonding, bridging, and linking) (*Bowling Alone: The Collapse and Revival of American Community*, 2000) with Uphoff's bifurcation of social capital into its structural and cognitive dimensions (Uphoff, 2005). Putnam's typology is analytically useful here because the Ima and Meira networks demonstrate dense bonding and bridging connections, but the exact type of weak linking to the state apparatus that the literature expects will undermine coordinated response. (Uphoff, 2005) builds on this by separating out network structure (who knows whom, who mobilizes whom) from the values and trust that animate those networks. The third pillar stems from feminist political ecology (Rocheleau, 1996), which highlights that experience to hazards and recovery are not gender-neutral; instead, they are gendered by limited power relations. Taken together, these three lenses generate an analytically confirmable hypothesis: collectives of women in Manipur should be high in bonding and bridging capital but low in linking capital, and the structural discrepancy, and not some intrinsic limitation of the cooperatives, is the main hurdle to disaster resilience at

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scale. Objective: Connect Putnam's social capital typology with Uphoff's structural/cognitive distinction and Feminist Political Ecology.

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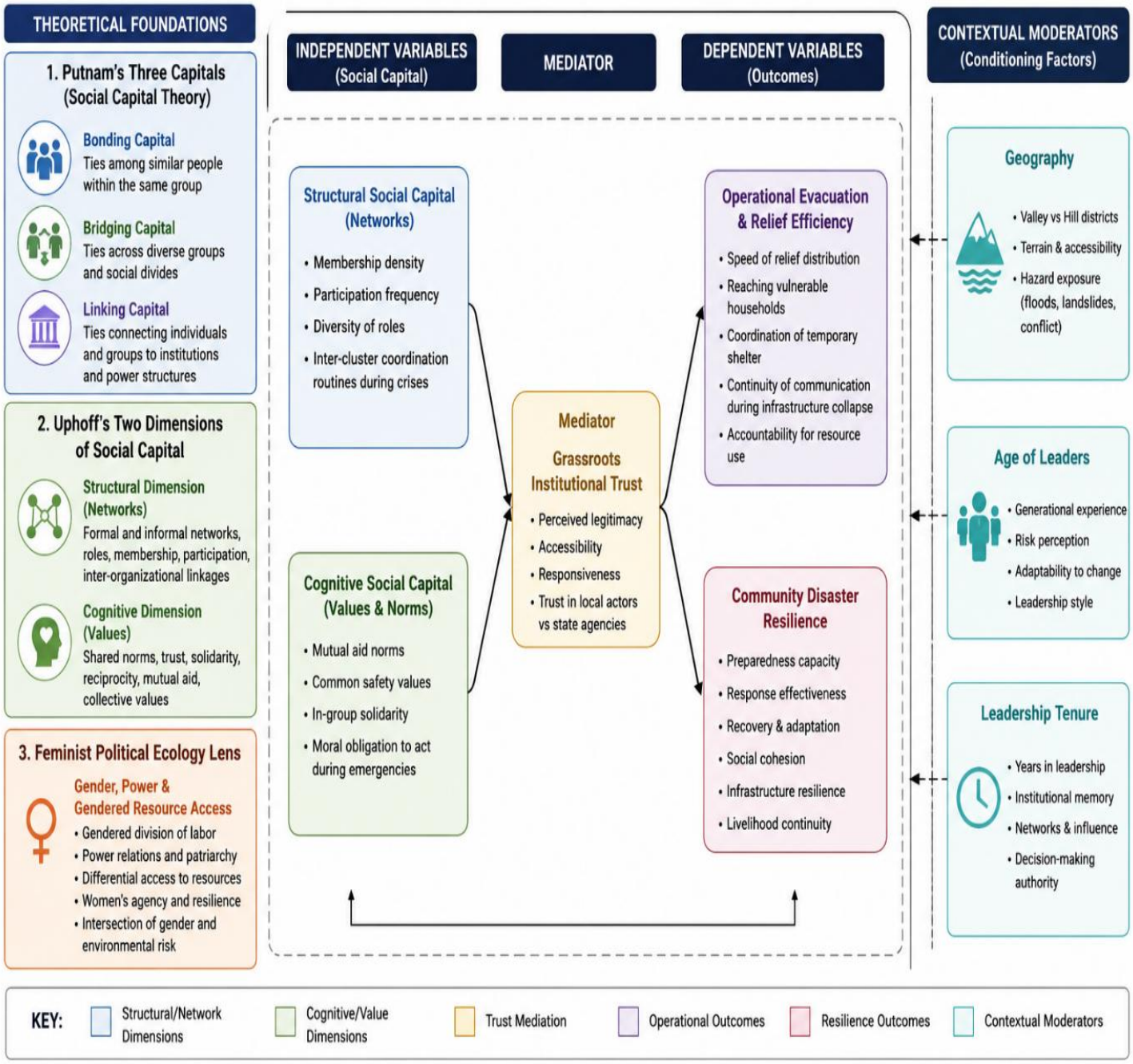

Figure: 1 - The diagram provides reviewers with a map of the theoretical scaffolding at a glance.

Based on this integrated framework, four hypotheses were developed:

- H_1: Structural social capital in informal women's networks significantly and positively predicts community disaster resilience.
- H_2: Cognitive social capital in informal women's networks significantly and positively predicts community disaster resilience.
- H_3: Grassroots institutional trust significantly mediates the relationship between structural social capital and operational evacuation and relief efficiency.
- H_4: The perceived grassroots efficacy of women leaders is significantly negatively related to their formal representation within SDMA and DDMA bodies.

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METHODS

Research Design

This study employed an explanatory sequential mixed-methods design, which was determined. Disaster governance falls between these two worlds of both quantifiable institutional behavior and the deeply fixed cultural-political dynamics of disaster governance that neither quantitative modelling nor purely qualitative inquiry can fully define. This design involves two phases: the first phase was a structured cross-sectional questionnaire survey to test the four hypotheses resulting from the theoretical framework, and the second phase was semi-structured key informant interviews to question the institutional and political barriers that the survey raised and to translate the statistical patterns into located political sense; the sequencing is important: Quantitative results display where to look, and qualitative follow-up reveals the fixed political economy behind the patterns.

Data Sampling and collection

Study Design Fieldwork was conducted in five purposively selected districts of Manipur: Two valley districts, Imphal East and Imphal West, were selected to replicate the historic organizational stations of the Ima Keithel trade economy and the central hub of the Meira Paibi movement; three hill districts, Churachandpur, Senapati, and Ukhrul, were selected to reflect the varying civic traditions of Kuki-Chin-Mizo and Naga women's collectives, which contrast with valley networks in language, ritual repetition, and the conformation of local leadership; and the combined valley-hill frame ensures that the experiential results are not an artifact of any one cultural or environmental zone but reflect the official geography of Manipur as a whole.

All of these localities were situated in seismic zone V, prone to seasonal flash floods and landslides, and experienced lengthy civic unpredictability due to ethnic conflict and administrative blockades, which provided a state in which the connection of natural hazard exposure and lengthy political stress made Manipur an especially pertinent locale for exploratory how indigenous women's networks absorb shocks beyond the limits of formal state capacity.

Sampling Strategy

The sampling design was stratified multi-stage cluster sampling: the strata were the five districts (which contained valley and hill geographies in proportional representation), and ten localities were drawn from a complete enumeration of known areas of women's collective activity in each district, with women identified by purposive sampling within each cluster as those who had served for at least three consecutive years in a registered Ima Keithel association, Meira Paibi unit, or village women's society. The minimum sample size was calculated using Cochran's formula with 95% confidence, maximum variability (p = q = 0.5), and a 5% margin of error.

$$n = \frac{z^2 \cdot p \cdot q}{e^2} = \frac{(1.96)^2 \cdot 0.5 \cdot 0.5}{(0.05)^2} = 384.16$$

A total of 420 questionnaires were distributed to account for attrition in some remote hill pockets, and 392 were returned and 384 contained complete, usable data (response rate 91.4%, well above the 80% threshold generally considered acceptable for survey-based SEM research); for the qualitative phase, twelve purposively selected key informants were interviewed to triangulate the survey findings (three senior Ima Keithel committee members from Imphal, four Meira Paibi locality coordinators [two from valley, two from hill districts], two leaders of village women's societies, and three retired officers from the Manipur State Disaster Management Authority; informants were chosen for institutional depth, not statistical representativeness. Interviews continued approximately sixty to ninety minutes and were approved out in Manipuri or English, depending on the favourite of the participant.

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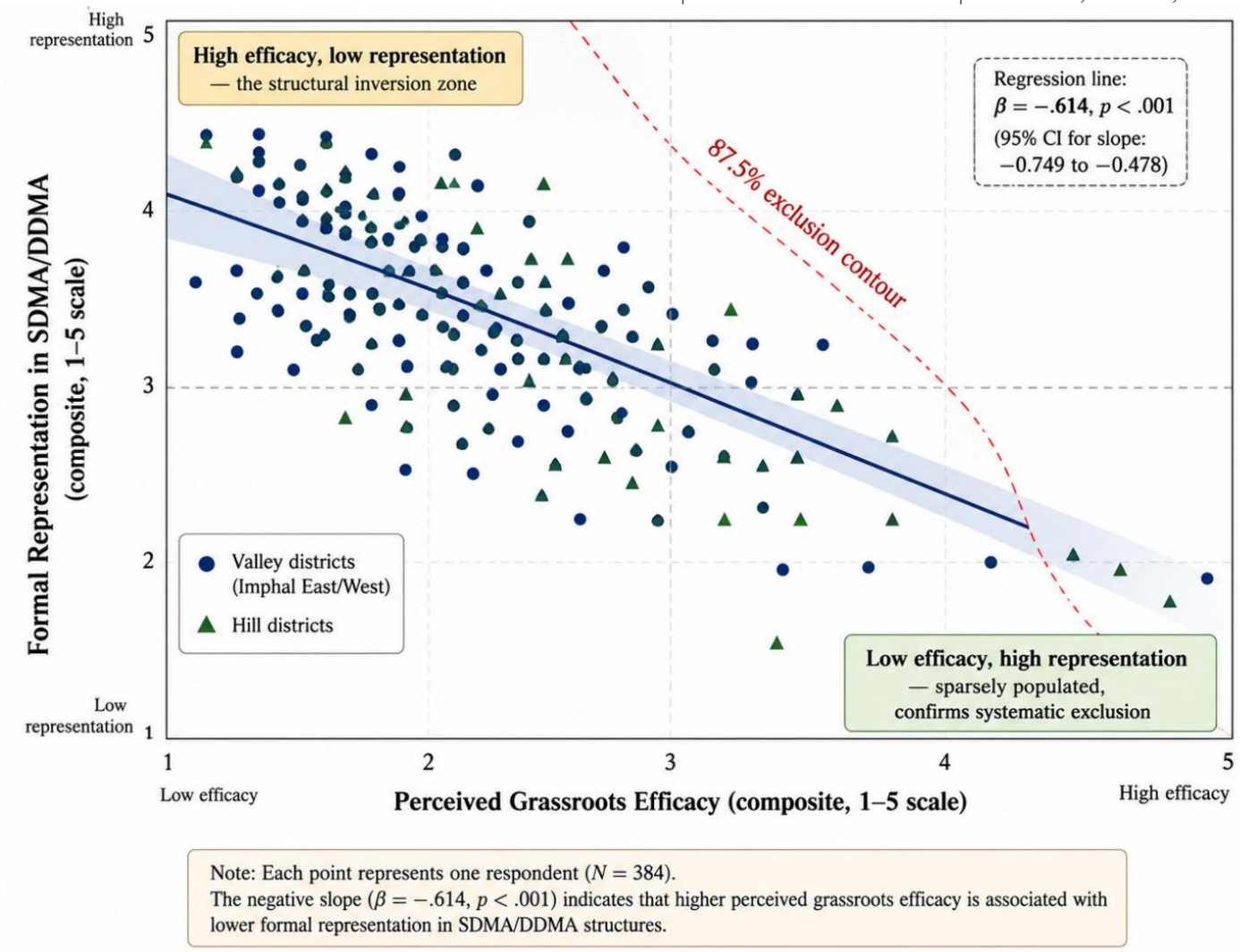

Figure 3. Path Coefficient Comparison (Bar Chart with 95% CI)

Measurement Instruments

All latent concepts were measured using multi-item five-point Likert scales (1 to 5). For Manipur, current instruments were adapted and authorized. Structural social capital was restrained using a five-item scale measuring membership density, participation frequency, diversity of roles, and inter-cluster coordination routines during crises, and cognitive social capital was restrained using a four-item scale assessing communal mutual aid norms, common safety values, in-group solidarity, and perceived moral obligation to act during an emergency, based on Uphoff's analytical distinction between structural networks and the values that animate them. Grassroots institutional trust was measured using a four-item scale modified from Nyqvist and colleagues' study of trust in public emergencies to assess the perceived legitimacy, accessibility, and responsiveness of local actors versus formal state agencies. Operational evacuation and relief efficiency was measured using five items covering the speed of relief distribution, following of vulnerable households, coordination of temporary shelter, continuity of communication during infrastructure collapse, and post-event answerability for resource use. Community disaster resilience was measured using a six-item scale adapted from the Conjoint Community Resiliency Assessment Measure, which captures the preparedness, response, and recovery dimensions across material, social, and infrastructural domains

The questionnaire was initially developed in English, then translated into Meiteilon by a bilingual academic and back-translated independently to ensure semantic equivalence, pilot-tested with thirty respondents who were not in the final sample, and minor wording adjustments were made for cultural clarity.

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Data Analysis

We employed a mixed-methods approach in which two stages of analyses were conducted. The first stage consisted of descriptive statistics and bivariate correlations in IBM SPSS Statistics v26, and the second stage consisted of partial least squares structural equation modeling in SmartPLS v4 to test the structural path model because PLS-SEM is a reliable approach when the research context is exploratory, the model contains mediating pathways, and the indicators cannot be assumed to follow a multivariate normal distribution in a hard-to-reach conflict-affected setting, whereas variance-based SEM handles these conditions reliably without imposing the distributional assumptions that covariance-based maximum likelihood SEM would require. We assessed the measurement model in four steps: First, we evaluated indicator reliability using standardized factor loadings, which are acceptable if they exceed 0.708; second, we assessed internal consistency reliability using Cronbach's alpha and composite reliability, which both must exceed 0.70; third, we confirmed convergent validity using the average variance extracted, which must exceed 0.50; and fourth, we evaluated discriminant validity using the heterotrait-monotrait ratio, which must be below the conservative 0.85 threshold for all pairwise values. We examined common method bias using Harman's single-factor test, which required the first factor to account for less than 50% of total variance. The structural model was tested for path significance via 5,000 bootstrap resamples and effect sizes were interpreted based on R^2 values for endogenous constructs, and indirect effects were examined to verify that grassroots institutional trust mediates. Qualitative data were analyzed in NVivo v14 via open, axial, and selective coding.

Ethical Consideration

Prior to fieldwork, the Institutional Review Board of the lead researcher's affiliated university granted ethical clearance, and written informed consent was secured from each participant after the study purpose, voluntary nature, and right to withdraw were explained, while anonymity was maintained by removing identifying information from transcripts and storing raw audio files on encrypted institutional drives accessible only to the research team. All interviews conducted in Meiteilon were transcribed verbatim and reviewed by the participant where possible to ensure that no translation error compromised the original meaning. The study adhered to the moral principles overriding human-subjects research in the Indian Council of Social Science Research guidelines

RESULT

Demographic profile of respondents.

Of these, 384 respondents obligated complete, usable survey responses and established the analytical sample, which imitates a mature, institutionally fixed unit with large civic experience: 68.1% were over 40 years of age and 54.7% had held leadership positions for 10 years or more, 41.4% had secondary education, 28.6% had undergraduate degrees, 14.8% had postgraduate study, and 15.1% had primary-level or informal education, reflecting the overall educational profile of established rural civic leaders in the region. Association with recognized women's collectives was as follows: 44.8% were united with Meira Paibi area units, 35.2% were allied with Ima Keithel vendor associations, and 20.1% were affiliated with village women's societies. Geologically, 70.2% were from the valley districts of Imphal East and Imphal West, while 29.7% were drawn from the hill districts of Churachandpur, Senapati, and Ukhrul, reflecting the population distribution. The most institutionally significant finding from the descriptive profile relates to formal presence in disaster governance: 87.5% of respondents reported that they had never been officially checked, invited, or represented within the State Disaster Management Authority or any District Disaster Management Authority, despite the established contribution of their networks in actual disaster response, which anchors the institutional gap that is at the essential of the present study.

Table 1. Sample Demographic Profile

Variable	Category	Frequency	Percentage
Age	30–39	122	31.8

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	40–49	141	36.7
	50+	121	31.5
Leadership Tenure	3–5 years	78	20.3
	6–10 years	96	25.0
	10+ years	210	54.7
Education	Primary/Informal	58	15.1
	Secondary	159	41.4
	Undergraduate	110	28.6
	Postgraduate	57	14.8
Network Affiliation	Ima Keithel	135	35.2
	Meira Paibi	172	44.8
	Village Women's Society	77	20.1
Geography	Valley	270	70.2
	Hill	114	29.7
Formal SDMA/DDMA Consultation	Yes	48	12.5
	No	336	87.5

Assessment of the Measurment Model

Before testing the structural hypotheses, the measurement model was tested to ensure that each latent construct was measured with adequate reliability and discriminant validity.

Indicator reliability. Standardized factor loadings for all items were higher than the conservative threshold of 0.708 that is suggested for confirmatory settings (Hair, Black, Babin, Anderson, & Tatham, 2006), with the lowest observed loading being 0.741, which demonstrated that all items meaningfully contributed to their intended construct, and no items were removed from the final model.

Internal consistency. Cronbach's alpha coefficients were all above 0.80 for each construct, and composite reliability values were also well above 0.70, with cognitive social capital demonstrating the strongest internal consistency ($\alpha = .912$, CR = .934) and operational evacuation and relief efficiency demonstrating the lowest internal consistency ($\alpha = .847$, CR = .889), though still well within the acceptable range for exploratory SEM.

Convergent validity. Average variance extracted for each latent construct was all over 0.50, indicating that more than half of the variance in each of the latent constructs was accounted for by the indicators, which also demonstrates convergent validity (Hair et al., 2018).

Discriminant validity was assessed using the heterotrait-monotrait ratio and the conservative benchmark of 0.85 (Henseler et al., 2014). The highest pairwise correlation was between grassroots institutional trust and operational evacuation efficiency (HTMT = 0.683), but no construct pair was redundant.

Method bias. Harman's single-factor test showed that the first unrotated factor accounted for 38.4% of the variance, which was well below the 50% threshold, so common method variance was not a serious issue for this dataset. Diagnostics for variance inflation factor on all structural predictors stayed below the 3.3 threshold.

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Table 2. Construct Definitions, Items, and Sources

Construct	Items	α	CR	AVE
Structural Social Capital	5	.876	.904	.612
Cognitive Social Capital	4	.912	.934	.781
Grassroots Institutional Trust	4	.851	.895	.683
Operational Evacuation Efficiency	5	.847	.889	.629
Community Disaster Resilience	6	.893	.918	.648

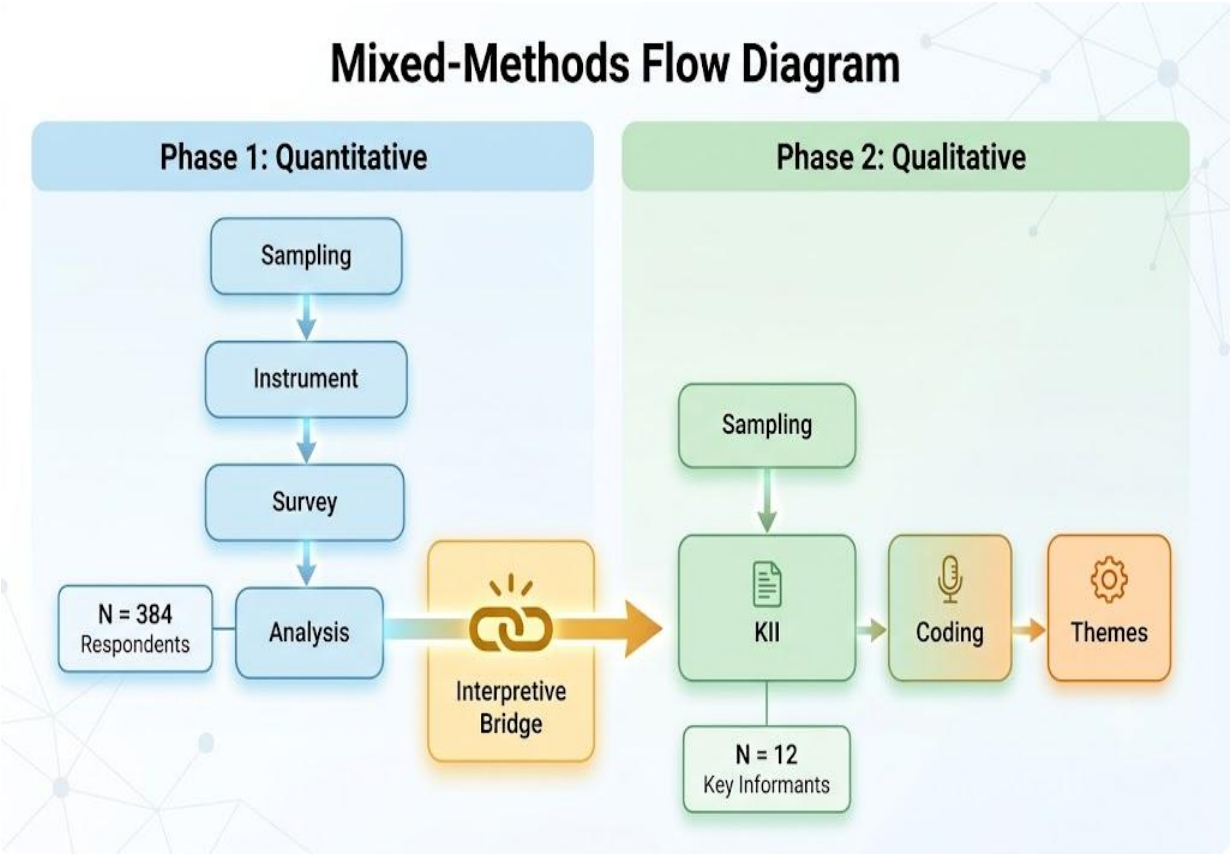

Figure- 2 summarizes the construct-level reliability and validity statistics.

Structural Model and Hypothesis Testing

The structural model was significant in explaining the two endogenous constructs (R^2 = .486 for community disaster resilience and R^2 = .412 for operational evacuation and relief efficiency), with moderate effect sizes (f^2 = .182 for the structural social capital → community disaster resilience path and large effect sizes (f^2 = .292 for the cognitive social capital → community disaster resilience path). The Stone-Geisser Q^2 values for the two endogenous constructs were positive, showing the model was predictive.

The path coefficients created on 5,000 bootstrap resamples are displayed in Table 3.

Table 3. Structural Path Coefficients

Hypothesis	Path	β	t (bootstrap)	p-value	Decision
H_1	SSC → CDR	.342	6.840	< .001	Supported
H_2	CSC → CDR	.418	8.360	< .001	Supported

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H_3	SSC → GIT → OEE	.215 (indirect)	4.479	< .001	Supported (full mediation)
H_4	Perceived grassroots efficacy → Formal representation	−.614	12.280	< .001	Supported

Hypotheses H_1–H_4 were tested at $\alpha < .05$ with 5,000 bootstrap resamples.

First, **hypothesis 1** projected that structural social capital (the thickness of social ties, especially inside informal women's networks) would be a important predictor of community disaster resilience, and the path coefficient ($\beta = .342$, $p < .001$) reinforced this anticipation: denser network structure (more members, more recurrent communication, more expanded roles) interprets into measurable stronger community resilience (the effect size was moderate in practical terms).

Hypothesis 2 forecast that cognitive social capital (the values, mutual assistance norms, and shared safety necessities that animate networks) would also predict community disaster resilience, and this path ($\beta = .418$, $p < .001$) had a larger coefficient, meaning that the common values moving Manipuri women's collectives contribute more to community resilience than the structural features of those collectives alone. This analytically validates (Uphoff, 2005) theoretical claim that cognitive dimensions are the ideological engine of supportive behaviour.

Hypothesis 3 predicted that grassroots institutional trust (GIT) mediates the relationship between structural social capital (SSC) and operational evacuation efficiency (OEE), which is supported by a statistically significant indirect effect ($\beta = .215$, $p < .001$). The direct path from SSC to OEE was also examined with GIT in the model, and it turned out marginally positive but non-significant with GIT controlled, suggesting full mediation. Substantively, this suggests that the structural ties among Manipuri women do not by themselves generate more efficient evacuation; instead, they do so by first cultivating a layer of trust in local actors and practices that are accepted and followed by communities during disaster crisis.

Hypothesis 4 predicted a negative relationship between perceived grassroots efficacy of women leaders and their formal representation in SDMA and DDMA seats, which is supported by a strong empirical test (path coefficient [β] = −.614, $p < .001$): as communities attribute their disaster-response efficacy to grassroots women leaders, the chances of those women being formally seated in statutory disaster governance bodies decrease. This is structural inversion quantifies the gap between local legitimacy and bureaucratic recognition.

Qualitative Findings

The qualitative phase was not meant to test hypotheses but to interpret the path coefficients that the structural model generated. The key informant interviews provided three thematic clusters that supported the quantitative findings: patriarchal institutional capture. In Manipur, retired civil defense officials admitted that DDMA committees are frequently formed through male-dominated district administrative networks and that women-led grassroots collectives are only invited when visible political pressure or post-disaster scrutiny forces them to do so. As another retired SDMA officer put it, \"the official roster is decided district-wise and the women we work with are not the women whose names come up on those rosters.\" This theme provides the political rationale for the strong negative coefficient on H_4.

Financial uncertainty and operational insufficiency. They depend on payments from members and ad hoc community donations in times of crisis, which some informers said allowable them to answer in the first seventy-two hours but not to maintain relief operations for weeks. The same is correct for quantitative evidence of the positive impacts of structural social capital: large networks provide time and coverage but only within the means of the informal sector

Asymmetry of information between formal and informal systems. State early-warning protocols still rely on district communication chains that circumvent women's networks, and the protocols are therefore delayed or incomplete in exactly the localities where these networks operate most effectively (as one senior Meira Paibi coordinator explained in an interview, *"we know who is missing, who has no food, who needs medicine. But it takes the district three days to know what we know in three hours").* This asymmetry provides the political

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reading of the mediation result: the structural capacity of the networks is only operationalized in performance if the trust channel through which the information flows is open, and existing state-side information channels do not maximize the use of that trust channel. The qualitative evidence suggests that the quantitative importance of the path coefficients is not an artefact of the statistical methods employed but rather a representation of real institutional, financial, and informational dynamics that would persist even if individual respondents varied. The following section explores the broader theoretical and policy implications of these patterns.

DISCUSSION

Theoretical Implications

This study demonstrates that the dynamic interplay of bonding, bridging, and linking social capital, as theorized most influentially by Putnam (*Bowling Alone: The Collapse and Revival of American Community*, 2000), is enacted in distinctly gendered ways during disasters. The results lend empirical credence to the hypothesis, as drawn from Feminist Political Ecology (Rocheleau, 1996), that disaster exposure and recovery are not gender-neutral processes but are refracted by the institutional location of women, or lack thereof, in the architecture of response. The Ima Keithel and Meira Paibi networks in Manipur are rich in bonding and bridging capital but are very thin in linking capital to the state apparatus, the quantitative analysis of which through the model ($\beta = .342$ for structural social capital, $\beta = .418$ for cognitive social capital) was explained by 48.6% of variance in community disaster resilience, whereas the qualitative interview data demonstrated that this resilience could not be easily transposed into statutory positionality within SDMA and DDMA governance. The outcome is a situation where the women who are most empirically effective at disaster response are also those most systematically excluded from the policy circles that plan for them, a tension identified by Feminist Political Ecology in its critique of formal environmental governance (Arora-Jonsson, 2011), where risk management institutions overlook the civic infrastructures that women have built, rendering disaster response structurally incomplete.

A second theoretical contribution relates to the relative explanatory power of structural versus cognitive social capital on resilience; the cognitive dimension was significant and was the stronger predictor, with an effect size ($f^2 = .292$) that is considered large by standard PLS-SEM conventions (Hair et al., 2018). This pattern lends empirical support to Uphoff's earlier theoretical claim that it is the values, norms, and trust that animate a network that transform structural membership into cooperative behavior under stress (Uphoff, 2005). Dense networks without shared meaning are brittle; shared meaning without dense networks is fragile. It also seems that in disaster contexts, at least, shared meaning is the more determinative of the two, because mutual aid norms, the moral duty to act in emergencies, and a sense of collective safety deeply internalized by a Meira Paibi volunteer or an Ima Keithel vendor seem to motivate her to abandon her stall, her children, or her household in order to organize an evacuation while formal state agencies are still preparing to mobilize. This finding presents a challenge to the otherwise voluminous literature on community resilience, which has privileged structural indicators—counts of voluntary organizations, network density, inter-agency agreements—over the cognitive and normative substrate that makes those structures useful. The results of this study indicate that disaster scholarship should give more weight to cognitive capital.

A third theoretical contribution relates to the mediating role of grassroots institutional trust. The bootstrap indirect effect ($\beta = .215$, $p < .001$) showed that structural social capital translates into operational efficiency in evacuation and relief indirectly through the channel of grassroots institutional trust: When statistical controls for grassroots institutional trust were added, the direct path from structural social capital to operational efficiency became insignificant, showing full mediation (*Bowling Alone: The Collapse and Revival of American Community*, 2000). The theoretical implication is that the informal disaster networks are effective only to the extent that the communities rely on them and that even highly connected networks perform poorly in the absence of this trust (Enarson, 1998). This mediation finding adds quantitative rigor to a well-established ethnographic observation in disaster sociology: people comply with evacuation orders when they trust the messenger, not the message itself (Enarson, 1998). This study extends the argument that Enarson made in her pioneering qualitative narrative of women in post-disaster settings to a formal causal model.

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Finally, the negative coefficient on the relationship between perceived grassroots efficacy and formal representation ($\beta = -.614$) is theoretically worthy of attention on its own. The outcome operationalizes what Feminist Political Ecology has described as the gendered misrecognition of civic labor: while women's role in environmental and disaster governance is often acknowledged informally, their role is structurally denied in formal space (Arora-Jonsson, 2011; Rocheleau, 1996). The empirical inversion represented here (the more recognized local efficacy, the less formal representation) offers a quantitative signature of this misrecognition and a benchmark against which other future research in other complex emergency zones can be compared.

Practical Implications

This 87.5% exclusion rate is not a representational oversight to be corrected by symbolic acts but a structural design flaw in the disaster risk reduction architecture of Manipur that has implications for preparedness, response, and recovery, read alongside the forced non-presence of women from SDMA and DDMA rosters in the qualitative interviews.

The evidence points towards three practical reforms: Statutory Integration. Representatives of Ima Keithel committees, Meira Paibi units, and documented village women's societies would be statutorily combined into district-level disaster management plans by changing their voting status from witness to formal seat as well as making it obligatory rather than an accommodation for representation for its personal sake.

The cognitive social capital coefficient found in this study implies that the peer-based legitimacy of these networks itself is a resource that the formal system is currently relinquishing, and seating grassroots leaders in district planning meetings would help bridge the linking-capital deficit that the theoretical framework predicted and the structural model confirmed empirically

The second is to co-design operational protocols: pre-monsoon DDMA planning meetings all too often issue standardized templates that have little to do with the actual geography of vulnerability in hillside localities, valley pockets, and ethnically diverse administrative blocks; the qualitative evidence shows that grassroots women leaders possess granular operational knowledge (which households have babies, which elders are bedridden, where stored grain will run out first) that no remote template can replace, and that mediation suggests is made operational through the trust channel; formal protocols that sideline grassroots leaders foreclose both the knowledge and the trust. Joint vulnerability mapping exercises, jointly authored evacuation drills, and shared early-warning dissemination architectures are reform mechanisms that can be implemented within the existing statutory framework without the time delays associated with legislative revision.

The third is financial integration. Financial dependency is not only a logistical constraint but also a structural explanation for why structural social capital hits an operational ceiling when under chronic stress. Dense networks have a financial envelope that the informal sector can sustain, and they buy time and coverage during the first seventy-two hours of a crisis; but disaster-response grants that are disbursed directly to registered women's collectives under transparent accountability frameworks would allow informal networks to operate over longer recovery horizons. Without such financial integration, even the most socially cohesive networks will eventually spend down their subscription-based operating budget.

Taken together, these three reforms would lead to a significant paradigm shift in the gendered architecture of disaster governance in Manipur, from a top-down, command-and-control model to what Feminist Political Ecology predicts will be a truly participatory, gender-sensitive architecture (Arora-Jonsson, 2011; Rocheleau, 1996). The cultural memory of the Nupi Lan (Yambem, 1976), when Manipuri women banded together to demand the right to manage their own food economy, presents a culturally grounded example of precisely this paradigm shift.

Limitations

We acknowledge four limitations.

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Firstly, because cross-sectional design only captures a solitary point in time it does not let the authors to perceive how relationships tested here shift during disaster onset, response, recovery, or longer reconstruction cycles; what holds true for calm may change when acute emergency sets in and vice versa. A longitudinal design would have strengthened fundamental inference. Secondly, although five districts were selected that represent both valley and hill geographies of Manipur state, the geographic scope does not grasp to other districts within Manipur nor to compound emergency zones elsewhere across Northeast India where tribal governance traditions are distinct enough for repetition rather than generalization (i.e., Nagaland, Mizoram, Arunachal Pradesh).

Third, the purposive selection of identified women leaders may underrepresent less formalized collectives working in more remote or politically marginal areas. Fourth, the quantitative results are based on measures of perception, which are subject to all the typical risks of social desirability bias and shared variance among leaders who are embedded in overlapping civic networks; a single-factor test of Harman's assumption reduced but did not eliminate these concerns.

Future Research

These limitations imply four lines of future inquiry: (1) longitudinal designs that track the evolution of structural and cognitive social capital across recovery cycles and how the gap between grassroots efficacy and formal representation narrows or widens over time; (2) comparative work in other complex emergency zones (Nagaland, Mizoram, post-conflict regions of Nepal, and borderland districts of Myanmar) that would test whether the integrating-mediating-inverting pattern identified here generalizes beyond Manipur; (3) qualitative studies that explore how structural and cognitive social capital evolve over recovery cycles; and (4) qualitative studies that investigate how the gap between grassroots efficacy and formal representation widens or narrows over time.Third, future studies should explore how rapidly changing digital communication infrastructures, such as mobile messaging platforms, social-media-based early-warning channels, and vernacular radio networks, interact with women's traditional communication systems during emergencies; the intersection of digital and customary communicative infrastructures is likely to alter both the configuration and the velocity of grassroots response. Fourth, embedded policy experiments, such as randomly including grassroots leaders in some of the DDMA planning meetings, could produce causal evidence on whether formal integration enhances or merely acknowledges community resilience.

CONCLUSION

In this study, we examine the extent to which the indigenous women's collectives of Manipur — the historic Ima Keithel trade network and the Meira Paibi movement — serve as operational pillars of disaster response in one of the most hazard-exposed and politically unstable states of India, and why their demonstrated local capacity has not resulted in formal governance recognition. The empirical evidence gathered through the quantitative survey of 384 women leaders and the twelve key informant interviews provides a definitive answer to the first question, and a troublingly structural answer to the second.

Results showed that structural social capital ($\beta = .342$, $p < .001$) and cognitive social capital ($\beta = .418$, $p < .001$) predict community disaster resilience and account for 48.6% of variance in the construct, with cognitive social capital proving the stronger of the two, empirically validating Uphoff's theoretical assertion that the norms and values driving a network, and not the network structure itself, are the key engine of cooperative behavior under pressure (Uphoff, 2005). Bootstrap analysis confirmed the mediating role of grassroots institutional trust in the link between structural social capital and operational evacuation efficiency ($\beta = .215$, $p < .001$). The structural inversion described in Hypothesis 4 ($\beta = -.614$, $p < .001$), which explained that higher perceived grassroots efficacy is associated with lower formal representation, offered quantitative precision to the qualitative observation from the interviews that DDMA rosters are often appointed by male-dominated administrative networks that circumvent the women with the most operational experience (Enarson, 1998; Rocheleau, 1996).

Three key findings stand out here as essential to the policy argument: first, the 87.5% exclusion rate from SDMA and DDMA governance is not a representative oversight, but a structural design flaw with operational implications; second, the financial dependence of grassroots networks, which are largely funded through member

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subscriptions and ad hoc donations, limits their ability to continue response efforts beyond the initial seventy-two hours, even in the presence of high social capital; and third, the information asymmetry between formal early-warning protocols and grassroots communication infrastructures delays state response in precisely the localities where rapid response is most critical, as one Meira Paibi coordinator explained during the qualitative phase.

Taken together, these findings suggest that real disaster resilience in multi-hazard, conflict-affected borderlands cannot be realized through top-down mandates. The normative implication, as theoretically expected by Feminist Political Ecology (Arora-Jonsson, 2011; Rocheleau, 1996) and as historically implemented in the most famous instance of a civil protest by Manipuri women in 1939 (Yambem, 1976), is that the grassroots women's institutions must be formally included, financially supported, and operationally enabled as a part of the disaster governance architecture of the state. If the committees of Ima Keithel, Meira Paibi units, and village women's societies were integrated into statutory DDMA planning roles (alongside joint vulnerability mapping exercises and dedicated disaster-response funding channels), this would close the linking-capital gap that current governance structures perpetuate.

This article thus makes a deliberately prescriptive policy claim. Where women's grassroots institutions already have operational capacity far beyond that of formal agencies, the institutional response should not be consultation, observation, or symbolic inclusion, but a reconfiguration of statutory governance around their lived expertise. Until this restructuring is done, Manipur's disaster governance architecture will continue to limp along with one hand tied behind its back, and the women who have borne the heaviest shocks of the last two decades deserve a place at the table where the next response is being designed.

REFERENCE

1. Arora-Jonsson, S. (2011). Virtue and vulnerability: Discourses on women, gender and climate change. https://doi.org/10.1016/j.gloenvcha.2011.01.005
2. Bowling alone: the collapse and revival of American community. (2000). https://doi.org/10.5860/choice.38-2454
3. Enarson, E. P. 1949-. (1998). The gendered terrain of disaster through women's eyes. http://bvbr.bib-bvb.de:8991/F?func=service%5C&doc%5C_library=BVB01%5C&local%5C_base=BVB01%5C&doc%5C_number=008283504%5C&sequence=000002%5C&line%5C_number=0001%5C&func%5C_code=DB%5C_RECORDS%5C&service%5C_type=MEDIA
4. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). When to use and how to report the results of PLS-SEM. https://doi.org/10.1108/ebr-11-2018-0203
5. Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. https://doi.org/10.1007/s11747-014-0403-8
6. Neumayer, E., & Plümper, T. (2007). The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002. https://doi.org/10.1111/j.1467-8306.2007.00563.x
7. Rocheleau, D. (1996). Feminist political ecology global issues and local experiences. https://bvbr.bib-bvb.de:443/F?func=service%5C&doc%5C_library=BVB01%5C&local%5C_base=BVB01%5C&doc%5C_number=007584171%5C&sequence=000002%5C&line%5C_number=0001%5C&func%5C_code=DB%5C_RECORDS%5C&service%5C_type=MEDIA
8. Roy, S., & Rao, C. (2021). Women as Entrepreneurs: A Case Study of Ema Keithel (Woman Market) of Manipur, India. https://doi.org/10.47531/mantech.2021.19
9. Sanni, L. M. (2021). Potentials of effective urban planning as tool for disaster risk reduction in Nigeria. http://repository.futminna.edu.ng:8080/jspui/handle/123456789/6670%0Ahttp://repository.futminna.edu.ng:8080/xmlui/bitstream/handle/123456789/6670/SETIC 2020.pdf?sequence=1&isAllowed=y
10. Uphoff, N. (2005). Understanding social capital: learning from the analysis and experience of participation. http://isites.harvard.edu/fs/docs/icb.topic980025.files/Wk%5C 6%5C_Oct%5C 7th/Uphoff%5C_2000%5C_Understanding%5C_Soc%5C_Capital.pdf
11. Yambem, S. (1976). Nupi Lan: Manipur women's agitation, 1939. https://www.jstor.org/stable/4364401