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Original Article

Globalization and Livelihood Transformation among Fishing Communities in the Konkan Coast of Maharashtra, India

Aniket Adinath kondaji
PhD Research Scholer,Department: RGCCS, University of Mumbai

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Correspondence Address:
Aniket Adinath kondaji
PhD Research Scholer,Department: RGCCS, University of Mumbai
Email: aniket.kondaji@mu.ac.in

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Abstract:

This study examines the relationship between globalization and livelihood transformation among fishing communities on the Konkan coast of Maharashtra, India. The research conceptualizes globalization as a multidimensional process involving market integration, market information, technological change and changing demand, while livelihood transformation encompasses changes in household livelihood strategies, occupational diversification, migration, traditional practices, gender roles and responses to environmental and policy pressures. A structured questionnaire was designed for an intended sample of 350 fishing households/respondents and included socio-economic variables and fifteen five-point Likert items. After data reconciliation, the working master contains 350 intended respondent IDs; 249 respondents have complete valid responses across all fifteen Likert items, while 101 records remain without those responses. Six out-of-range Likert observations coded as 6 were excluded from scale calculations rather than recoded without source verification. Preliminary descriptive analysis shows variation across the fifteen items, with Q11 recording the highest mean (M=3.75, SD=1.52) and Q07 and Q12 the lowest means (M=2.42, SD=1.16). These results indicate differentiated perceptions of social, livelihood and globalization-related change, but they should not be interpreted as causal or population-level effects until the remaining records are verified. The study argues that globalization should be analyzed together with market access, infrastructure, gender, climate pressures and institutional change rather than as a single independent force. The paper proposes a rigorous empirical framework for testing whether globalization exposure is associated with livelihood transformation while maintaining methodological transparency regarding missing data and measurement validity.

Keywords: *Globalization; fishing communities; Konkan coast; small-scale fisheries; livelihood transformation; livelihood diversification; gender; climate change; market access; Maharashtra*

Introduction:

Fishing communities along the Konkan coast occupy a distinctive position within Maharashtra's coastal economy. Fishing is simultaneously an economic activity, a source of food and employment, a social institution and a cultural way of life. Changes in markets, fishing technology, transport, communication, infrastructure and public policy therefore have consequences that extend beyond fish production itself. At household level, these changes may influence occupational choices, income composition, migration, women's work, community relationships and the continuity of traditional practices.

Globalization is not treated in this study as an inherently positive or negative process. Instead, it is understood as a set of interconnected changes through which local fishing households become more closely connected to wider markets, technologies, information systems and institutional arrangements. Market integration can provide new buyers and information, while also increasing exposure to competition and price volatility. Mechanization can raise productive capacity, but it may alter labour requirements, capital dependence and relationships between different categories of fishers. Digital communication can improve access to price and weather information, while changing how households interact with markets.

These transformations occur alongside environmental pressures. Changes in weather, sea conditions, fish availability and coastal erosion can affect fishing effort and income. A household that faces declining or uncertain fishing returns may respond by taking a secondary occupation, migrating seasonally, increasing women's participation in income-generating work, changing fishing gear or reducing its dependence on fishing. Consequently, livelihood transformation is likely to reflect the interaction of economic globalization, environmental stress and institutional change.

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These transformations occur alongside environmental pressures. Changes in weather, sea conditions, fish availability and coastal erosion can affect fishing effort and income. A household that faces declining or uncertain fishing returns may respond by taking a secondary occupation, migrating seasonally, increasing women's participation in income-generating work, changing fishing gear or reducing its dependence on fishing. Consequently, livelihood transformation is likely to reflect the interaction of economic globalization, environmental stress and institutional change.

The present study investigates this interaction through a household-level questionnaire covering market exposure, technology, alternative livelihoods, migration, women's participation, traditional practices, community cohesion, climate impacts, coastal erosion and policy change. The central aim is not simply to determine whether globalization has an effect, but to identify the dimensions through which change is experienced and to construct measurable relationships that can be tested statistically.

Study Context: Konkan Fishing Communities

The Konkan coastal belt of Maharashtra contains diverse fishing settlements and fishing-dependent households. Livelihood systems vary by fishing method, boat ownership, gear, market connectivity, household labour and access to complementary occupations. Accordingly, the study treats the fishing community as heterogeneous rather than assuming a uniform response to globalization.

Market and infrastructure conditions are particularly relevant. Access to ice, cold storage, transport, landing infrastructure and market information can influence post-harvest losses, timing of sales and bargaining conditions. At the same time, households with stronger access to alternative occupations may be less dependent on daily fishing income. These differences provide an empirical basis for comparing livelihood strategies within the broader Konkan fishing population.

Review of Literature:

FAO's Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries emphasize that small-scale fisheries should be considered in relation to food security, poverty eradication, decent work, social development, gender equality, value chains, climate resilience and participatory governance. This integrated perspective supports the present study's decision to examine fishing livelihoods beyond catch and income alone.

Livelihood diversification literature generally views households as combining multiple assets and activities to manage risk and pursue income. In fishing communities, diversification may involve agriculture, fish vending, processing, wage labour, tourism, transport, petty trade or formal employment. However, diversification is analytically ambiguous: it can represent strategic adaptation or a response to declining returns from fishing. The present study therefore measures diversification separately from the broader transformation construct.

Gender is central to fisheries value chains. Women may participate in processing, sorting, drying, vending, marketing and household financial decisions, even when harvesting is male dominated. Changes in market organization may alter women's economic contribution and decision-making power. Therefore, the questionnaire includes separate measures of women's participation and women's decision-making change rather than treating gender as a single demographic control.

Climate change adds another source of uncertainty. Changes in weather patterns, fishing conditions, extreme events and coastal processes can affect the reliability of fishing livelihoods. Climate pressures may amplify the consequences of market dependence, while infrastructure, information, insurance and diversified income sources may contribute to resilience.

The literature therefore suggests that a useful empirical model should integrate globalization exposure, livelihood strategies, gender, infrastructure, environmental stress and institutional conditions. The present study builds such a framework for the Konkan context.

Research Gap:

Existing fisheries studies frequently focus on ecological status, production, catch trends, fishing effort or policy implementation. Fewer household-level frameworks simultaneously connect globalization with livelihood diversification, migration, women's participation, traditional practices, community cohesion, climate impacts and policy change. A further gap is methodological: composite constructs such as globalization exposure and livelihood transformation require explicit operationalization and reliability testing rather than being inferred from a single indicator. This study addresses these gaps by combining structured household variables with a fifteen-item Likert instrument.

Objectives:

1. To examine the extent to which fishing households are exposed to market, technological and information-related dimensions of globalization.
2. To assess livelihood transformation among fishing households in the Konkan region.
3. To examine the role of alternative livelihoods and occupational diversification.
4. To assess changes in women's participation and decision-making in fisheries-related livelihoods.
5. To examine perceived changes in traditional practices and community cohesion.
6. To assess perceived impacts of climate change and coastal erosion on fishing livelihoods.
7. To examine the relationship between policy/institutional change and livelihood transformation.
8. To develop an empirically testable framework linking globalization exposure with household livelihood outcomes.

Research Questions:

- How do fishing households experience globalization through market integration, technology and information?
- What forms of livelihood diversification are available to fishing households?
- How are women's participation and decision-making changing?

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- What changes are occurring in traditional fishing practices and community cohesion?
- How do climate impacts and coastal erosion affect fishing livelihoods?
- How are policy and institutional changes experienced by fishing households?
- Is globalization exposure statistically associated with livelihood transformation after accounting for relevant household and contextual factors?

Hypotheses:

- H1: Globalization exposure is positively associated with perceived livelihood transformation.
- H2: Availability of alternative livelihoods is associated with greater livelihood diversification.
- H3: Greater globalization exposure is associated with changes in traditional fishing practices.
- H4: Greater perceived climate impact on fishing is associated with greater livelihood transformation.
- H5: Changes in women's participation and decision-making are associated with livelihood transformation.
- H6: Access to cold-chain and market infrastructure is associated with greater market-oriented livelihood change.
- H7: Policy/institutional change is significantly associated with livelihood transformation.

Conceptual Framework:

The proposed framework places Globalization Exposure at the centre of the explanatory model. It includes market integration, market competition, exposure to wider demand, modern technology and digital information. These factors operate through intermediate mechanisms such as market access, infrastructure, occupational diversification, migration and changes in fishing practices. Gender, climate pressure and policy are treated as contextual dimensions that may strengthen, weaken or redirect the relationship between globalization and livelihood transformation.

Conceptual pathway: Globalization Exposure → Market/Technology Change → Household Livelihood Strategies → Livelihood Transformation; with Gender, Climate, Infrastructure and Policy as contextual/intervening dimensions.

Methodology:

Research Design

A mixed-method, cross-sectional research design is used. The quantitative component consists of a structured questionnaire administered to fishing households/respondents. The qualitative component is intended to provide contextual interpretation through field observation, informal discussions and interviews. Because the present paper is based on the questionnaire workbook, the empirical statistical results reported here are limited to the available structured data.

Population and Sample

The intended sample size is 350 respondents. The cleaned master file has been standardized to respondent IDs R001–R350. However, only 249 respondents currently have complete valid answers to all fifteen Likert items. The remaining 101 records are retained as missing rather than being filled with invented values. This distinction is essential for transparent reporting.

Sampling:

The final manuscript should specify the exact sampling technique, village selection procedure, district-wise allocation and inclusion criteria from the field protocol. These details should not be inferred from the spreadsheet alone.

Questionnaire:

The questionnaire includes demographic and socio-economic information, fishing gear, secondary occupation, cold-chain access, market information, alternative livelihoods, migration, women's participation, traditional practices, community cohesion, climate impacts, coastal erosion and policy impacts. Fifteen Likert items measure broader perceptions of globalization and livelihood/social transformation using a five-point scale from 1='Strongly Disagree' to 5='Strongly Agree'.

Operationalization of Variables:

Construct	Items/Variables	Operational meaning	Proposed measure
Globalization Exposure Index	Q01–Q05	Market integration, market demand, technology, information and broader market connectivity	Mean of validated items
Livelihood Transformation Index	Q06–Q10	Changes in livelihood strategy, alternative dependence, migration, traditional practices and youth transition	Mean of validated items
Social/Gender/Environmental-Policy Dimension	Q11–Q15	Women, diversification, climate, coastal and policy-related change	Mean of validated items
Livelihood Diversification	Secondary occupation + alternative livelihood variables	Number/type of non-fishing activities; preferably income-share based	Count or validated index
Cold-chain access	Cold_Chain_Access	Ice, cold storage, refrigerated	Ordinal

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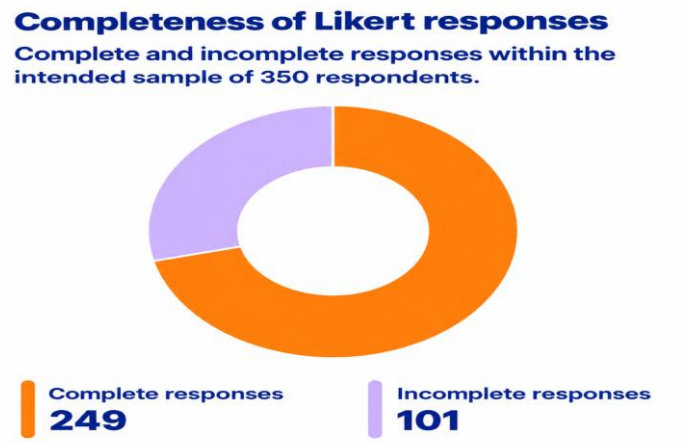
		transport	
Fishing gear	Fishing_Gear_Type	Gear used by household/fisher	Multiple response / binary coding

11. Data Cleaning and Validation:

The submitted workbook was reconciled into a 350-ID master frame. Duplicate Likert rows were removed only to produce a one-row-per-ID working structure; no missing responses were fabricated. Values outside the five-point Likert scale were treated as invalid for scale calculations. Six cells were coded as 6 and were therefore excluded from item means and composite calculations until their original source responses are verified.

Table 1. Data quality audit

Data-quality indicator	Value
Intended respondent IDs	350
Unique IDs in cleaned master	350
Respondents with complete Q01–Q15	249
Respondents with missing one or more Likert items	101
Out-of-range Likert cells (code 6)	6
Duplicate Likert rows removed during reconciliation	100





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Results:

1 Descriptive Statistics of Likert Items:

Table 2. Preliminary descriptive statistics for Q01–Q15

Item	Valid N	Mean	SD	Invalid code 6
Q01	249	2.53	1.32	0
Q02	249	3.10	1.41	0
Q03	249	3.03	1.30	0
Q04	246	3.26	1.45	3
Q05	249	3.12	1.51	0
Q06	249	2.53	1.32	0
Q07	249	2.42	1.16	0
Q08	249	2.86	1.52	0
Q09	249	3.27	1.40	0
Q10	247	2.76	1.11	2
Q11	249	3.75	1.52	0
Q12	249	2.42	1.16	0
Q13	249	2.45	1.17	0
Q14	249	2.83	1.51	0
Q15	248	3.33	1.42	1

The item-level results show meaningful variation in reported perceptions. Q11 has the highest mean (M=3.75, SD=1.52), followed by Q15 (M=3.33, SD=1.42) and Q09 (M=3.27, SD=1.40). Q07 and Q12 have the lowest means (both M=2.42, SD=1.16). These figures describe the currently valid responses and do not establish causal effects or population estimates.

12.2 Construct-level Preliminary Scores:

Table 3. Preliminary construct scores

Construct	Valid_N	Mean	SD
Globalization Exposure (Q01–Q05)	249	3.01	0.37
Livelihood Transformation (Q06–Q10)	249	2.77	0.33
Social/Gender/Environmental & Policy (Q11–Q15)	249	2.95	0.58

The construct-level results are exploratory because the item grouping is theory-driven and requires reliability and construct-validity assessment before being treated as a definitive scale structure.

Reliability Analysis:

Table 4. Preliminary internal consistency

Scale	Complete_N	Cronbach_Alpha
Globalization Exposure (Q01–Q05)	246	-2.40
Livelihood Transformation (Q06–Q10)	247	-2.67
Social/Gender/Environmental & Policy (Q11–Q15)	248	-0.11
All Q01–Q15	244	-0.67

Cronbach's alpha is reported as a diagnostic rather than as proof of construct validity. A scale should not be retained solely because alpha is high; item content, dimensionality and theoretical coherence must also be considered. Because the dataset has unresolved missingness and invalid codes, the reliability estimates should be re-run on the final verified dataset before journal submission.

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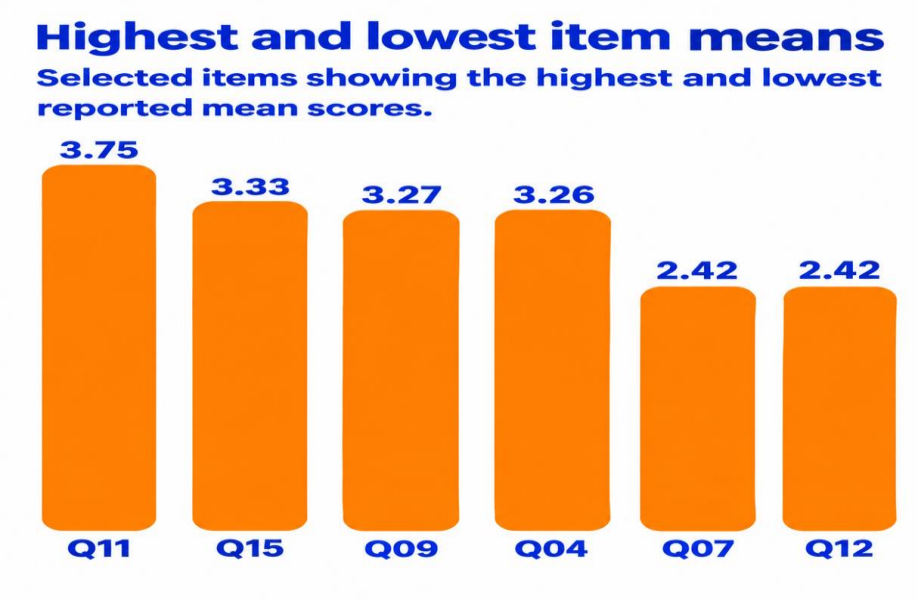

Interpretation of Findings:

The relatively high mean for Q11 suggests that respondents who provided valid answers reported comparatively stronger agreement with the statement represented by Q11. Because the item is part of the social/gender dimension, this points to the importance of examining women's roles and social transformation as part of livelihood change. However, the result should not be converted into a claim that globalization has increased women's empowerment without examining the underlying variable and supporting evidence.

The lower mean for Q07 indicates comparatively lower agreement with the associated livelihood-change statement. This may reflect continuing dependence on fishing, limited alternative opportunities, or heterogeneous household strategies, but the current descriptive data cannot distinguish among these explanations. That distinction is important because diversification can arise from opportunity as well as economic stress.

The moderate values observed for several market, technology and climate/policy items suggest that transformation is multidimensional. Rather than assuming one uniform globalization effect, the final model should test whether different forms of exposure are associated with different livelihood outcomes.

Discussion:

The findings support the conceptual premise that livelihood transformation should be treated as a multidimensional process. Fishing households are embedded in markets, technologies, ecological systems and institutions simultaneously. Accordingly, market integration may change sales channels without producing the same change in household diversification; technology may alter fishing practices without necessarily increasing household welfare; and climate pressure may accelerate diversification even when households would prefer to remain in fishing.

The role of infrastructure is particularly relevant. Cold-chain access can influence the timing and quality of fish sales and therefore potentially affect bargaining power and post-harvest losses. However, infrastructure access should be measured as an explanatory condition rather than automatically interpreted as a positive outcome.

Gendered livelihood transformation deserves separate attention. Women's participation in fish processing, marketing and household financial decisions can change even when women's direct involvement in harvesting remains limited. Thus, the proposed framework's separation of participation and decision-making is analytically useful.

Climate pressures can interact with globalization through market dependence and income volatility. A household facing unstable catches may increase dependence on alternative occupations or migration, while a household with strong infrastructure and market information may adapt differently. Future analysis should therefore test interaction effects if the sample and measurement quality permit.

Policy Implications:

- Improve access to ice, cold storage, hygienic handling and appropriate refrigerated transport in fishing centres.
- Strengthen transparent fish-price and market-information systems through accessible digital channels.
- Support livelihood diversification through skills, small enterprise development and locally appropriate non-fishing opportunities while maintaining sustainable fisheries.
- Recognize women's post-harvest, marketing and financial contributions and strengthen their participation in fisheries institutions.
- Integrate climate-risk information, early warning, disaster preparedness and coastal adaptation into fisheries extension.
- Improve awareness and accessibility of fisheries schemes, insurance and social protection.

- Strengthen participatory fisheries governance and ensure fishing-community representation in implementation processes.
- Use village- and district-level evidence to target interventions because fishing households are heterogeneous.

Limitations:

- The current workbook has 101 respondents without complete Likert responses; therefore the effective sample for the fifteen-item scale is 249.
- Six out-of-range responses coded as 6 remain to be verified from original questionnaires.
- The study is cross-sectional and cannot establish causal direction from associations alone.
- Self-reported perceptions may be affected by recall and response bias.
- Population-level generalization requires documentation of the sampling frame and selection procedure.
- Composite indices require final reliability and validity checks before confirmatory interpretation.
- District and village differences should be examined before pooling all observations into a single model.

Conclusion:

This study presents a multidimensional framework for examining globalization and livelihood transformation among fishing communities on the Konkan coast of Maharashtra. The empirical instrument captures market, technology, infrastructure, occupational diversification, migration, gender, cultural change, climate and policy dimensions. Preliminary analysis of 249 complete Likert cases shows substantial variation across the fifteen items, indicating that respondents do not experience transformation uniformly. At the same time, the present evidence does not justify causal claims or a final 350-case inferential model because 101 intended respondents lack complete Likert responses and six cells contain an invalid code. The principal methodological contribution of the study is therefore its integrated measurement framework and transparent data treatment. Once the outstanding field records are verified, the dataset can support formal tests of the proposed hypotheses using reliability analysis, factor analysis, correlation and multivariable regression.

Acknowledgement

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Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of thesis paper.

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Appendix A. Fifteen Likert Items:

Q01 | Globalization has increased access to wider fish markets.

Q02 | Globalization has increased market competition for local fishers.

Q03 | Modern technology has changed traditional fishing practices.

Q04 | Market integration has affected household fishing income.

Q05 | Changing fish demand has affected the type/quantity of fish caught.

Q06 | Globalization has increased livelihood diversification.

Q07 | Fishing households increasingly depend on non-fishing income.

Q08 | Globalization has influenced migration/occupational mobility.

Q09 | Women's participation in fisheries-related economic activities has changed.

Q10 | Traditional fishing knowledge/practices have changed.

Q11 | Community institutions have changed due to economic development.

Q12 | Government policies have affected fishing livelihoods.

Q13 | Coastal development has affected access to fishing resources.
Q14 | Climate/environmental changes have increased livelihood vulnerability.
Q15 | Overall, globalization has transformed the livelihood of my household.
Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree.

Appendix B. Final Data Verification Protocol:

- Verify R250–R350 against the original questionnaires and enter only actual responses.
- Verify the six code-6 cells against the original questionnaire; correct only from source evidence.
- Confirm one respondent ID corresponds to one questionnaire.
- Freeze the final dataset and preserve the cleaned version as an audit copy.
- Re-run descriptive statistics and reliability on the final dataset.
- Run factor analysis only after checking KMO, Bartlett's test and item structure.
- Construct final indices using a documented scoring rule.
- Run correlation and regression using complete-case or a pre-specified missing-data method.
- Report N for every analysis and clearly distinguish valid N from intended sample size.