International Academic Institute for Science and Technology

International Academic Journal of Science and Engineering
Vol. 13, No. 1, 2026, pp. 446-459.

ISSN 2454-3896

International Academic Journal of Science and Engineering

www.iaiest.com

Awareness and Utilization of Housing Welfare Schemes among Fishermen in Kerala: A Study on Kumbalangi Village in Ernakulam District

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Abstract

This study aims to study the awareness and utilization of housing welfare schemes among the fishermen in Kumbalangi village, Ernakulam district. The Fisheries Welfare Department has introduced schemes such as the Matsya Bhavan Housing Scheme, Fishermen Housing Scheme, and the Prime Minister's Awas Yojana (PMAY) in an attempt to improve the housing conditions of the fishing community. Based on a sample of 286 respondents, using stratified random sampling, awareness levels, utilization patterns, determinants, and barriers are analyzed. The results show that 69.23% of the respondents know about the schemes, and 50% stated that they have availed themselves of them. Chi-square Analysis Significant associations are shown between awareness and educational level (chi 2 = 12.34, $p = 0.0004$), access to information and awareness (chi 2 = 24.78, $p < 0.0001$), and social network and awareness (chi 2 = 22.56, $p < 0.0001$). Economic barriers ($p = 0.0001$) (chi-square (X2) = 58.79, $p < 0.0001$), bureaucratic (X2 = 4.36, $p = 0.0367$), and lack of information (X2 = 17.36, $p < 0.0001$) also significantly affect utilization. Among the schemes, PMAY has the greatest positive effect on the improvement of living conditions and housing satisfaction. The results offer policy lessons for improving the implementation of housing welfare among the coastal fishing communities.

Keywords: Housing Welfare Schemes, Fishermen Housing Utilization, Scheme Awareness, PMAY for Fishermen, Socio-Economic Barriers, Welfare Policy Implementation, Kumbalangi Village.

DOI: 10.71086/IAJSE/V13I1/IAJSE1342
Received: 15 January 2026/Revised: 09 February 2026/Accepted: 16 March 2026/Published: 30 March 2026

Introduction

Coastal fishing communities form an important socio-economic group in Kerala and play a significant role in the state's food security, employment generation, and cultural heritage (Baporikar, 2021). Despite their economic relevance, fishermen still suffer from several challenges, such as economic insecurity, exposure to natural disasters, a lack of access to social services, and poor housing facilities. Poor housing conditions expose these communities to health risks, environmental hazards, and social insecurity, and consequently, their overall quality of life.

In view of these challenges, the Government of Kerala and the Government of India have implemented several housing welfare schemes to improve the living conditions of the fisherfolk (Međugorac & Schuitema, 2023). Prominent among such are the Matsya Bhavan Housing Scheme, the Fishermen Housing Scheme, and the Prime Minister's Awas Yojana (PMAY). These initiatives aim at providing safe, affordable, and disaster-resilient housing to qualified beneficiaries (Adeyemi & Ohakawa, 2024). However, the impact of such schemes largely depends on the awareness, accessibility, and ability of the beneficiaries to avail themselves of the provisions available (Vasan, 2007).

Previous studies show awareness and utilization of welfare schemes among fishing communities are uneven across regions, and they are greatly affected by education attained, access to information, administrative process, and socio-economic constraints (Jha, 2014; Sheeja & Ajay, 2023). In many instances, potential beneficiaries are still excluded due to a lack of digital literacy, bureaucracy, and institutional support (Swarna Latha & Bala Krishna Prasad, 2010). As a result, the desired improvements in housing welfare policies tend to be realized only to a limited extent.

Kumbalangi village of Ernakulam district is a unique situation to study these matters. As India's first model tourism village, Kumbalangi is a blend of the traditional way of fishing and the new way of making a living through tourism. This dual economic structure is a factor to take into account when it comes to community participation, information dissemination, and institutional engagement, making it a suitable site to evaluate the implementation of welfare schemes (Aldrich & Meyer, 2015). This knowledge of the way in which fishermen in such a dynamic environment perceive and use housing welfare schemes can yield some interesting insights for policy refinement (Howden-Chapman et al., 2023).

This study has three specific contributions to the existing literature. First of all, it offers a micro-level empirical assessment of housing welfare scheme awareness and utilization in Kumbalangi village, in an area that represents a combination of traditional fishing livelihood and tourist-driven development. Second, it considers socio-economic characteristics, access to information, and social networks in the same analytical framework, moving away from fragmented analyses as in previous studies. Third, the study provides a comparative impact assessment of state-level housing schemes and centrally sponsored PMAY, which have differential outcomes and policy effectiveness at the community level.

This paper is structured as follows. Section 2 is a review of relevant literature and identification of the research gap. Section 3 outlines the theoretical framework and methodology for conducting the research. Data analysis and empirical results are discussed in Section 4. Sections 5, 6, and 7 discuss the study's important findings, policy implications, and limitations. At last, Section 8 concludes the study, which includes the future direction.

Review of Literature

Few studies examines the role played by local organizations in the spread of information regarding welfare programs among the coastal fishing village communities (Dhanabhakyam & Joseph, 2022). The research focused on the importance of local fisher cooperatives in raising levels of knowledge, and that economic constraints to usage continue to be a challenge. The role of housing schemes on the disaster resilience of the fishing communities is investigated in studies (Garcia & Rosenberg, 2010). The survey found that although photoral and PMAY generated some improved structural safety, the lack of site-specific adaptations resulted in their inefficiency in areas affected by flooding (Ryu et al., 2020).

Many bureaucratic practices in welfare programs were conducted in India and other countries (Bejaković & Mrnjavac, 2024; Li et al., 2025). They discovered that unnecessarily stringent documentation requirements were exclusionary of those who were of low literacy, replicating the Kerala experience of barriers of exclusion. Researchers studied the issue of gender inequality in availing housing schemes in various places. They found that credit collateral requirements excluded more female-headed fisher households than male-headed ones, which the current policies do not consider (Haller & Merten, 2008).

The importance of taking traditional fisher knowledge into account in the design of welfare schemes was identified (Saunders et al., 2016). Top-down decision-making does not consider contextual housing needs at the community level in a manner that lowers the acceptability and usage (Loewe & Schüring, 2021).

Recent research focuses on the role of digital platforms, governance reforms, and community participation in the enhancement of the delivery of welfare schemes (Jentoft et al., 2022). Studies indicate that policymakers can work towards inclusive and sustainable housing development for vulnerable coastal communities (Bennett et al., 2019; Alkaim & Hassan, 2024). The role of tourism-induced development in coastal welfare awareness was highlighted (Joseph, 2023). These studies show that institutional support, digital availability, and community networks are the growing influences defining the effectiveness of schemes. However, empirical research is scarce on the combined effect of these specific fishing villages, like Kumbalangi, which this study attempts to address. The reviewed literature evidences that 13 of the housing welfare schemes among fishing communities are influenced by a combination of socio-economic, institutional, and informational factors.

Earlier studies focused mainly on structural constraints, such as economic hardship, bureaucratic complexity, and exclusion based on gender. More recent research focuses on the increasing role of digital governance and administrative efficiency as well as community networks in determining access to welfare. While these studies offer useful insights, they, for the most part, investigate determinants of awareness and utilization in isolation. A few of the investigations take an integrated approach that considers, simultaneously, educational attainment, access to information, and social networks in the context of scheme participation. Moreover, comparative evaluations of state-sponsored housing schemes and centrally sponsored programs like PMAY at the micro-village level are not yet available to any great degree. Empirical evidence from the case of the tourism-integrated coastal villages, e.g., Kumbalangi, is scarce. This gap highlights the importance of a local and holistic analysis that bridges the gap between awareness, behavior related to use, and perceived impact in a unified analytical structure. The current study fills this gap by providing a village-level comparative assessment of housing welfare schemes among the fishermen in order to contribute some contextual specificity and analytical integration to the existing body of research.

Objectives and Hypotheses

Objectives

The objective of the study is to note the level of awareness on housing welfare schemes among the fishermen, Kumbalangi village; their utilization pattern of housing welfare schemes, factors influencing awareness, barriers to utilization, and the impact of major housing welfare schemes, including Matsya Bhavan Housing Scheme, Fishermen Housing Scheme, and Prime Minister's Awas Yojana (PMAY).

Hypotheses

- **H1:** A significant proportion of fishermen in Kumbalangi village are aware of housing welfare schemes.
- **H2:** There is a significant proportion of fishermen in Kumbalangi village who take the housing welfare Scheme
- **H3:** Educational level, accessibility to information, and social networks have a significant effect on the level of awareness of housing welfare schemes among fishermen.
- **H4:** Economic barriers, bureaucratic barriers, and a lack of information significantly hinder the utilization of housing welfare schemes by fishermen.

Research Methodology

This part describes the general research framework followed in the study. The research process is carried out through a structured process starting from identifying the problem and literature review, formulating research objectives and hypotheses, conducting research design, sampling, data collection, and statistical analysis. The general methodology process is shown in fig. 1.

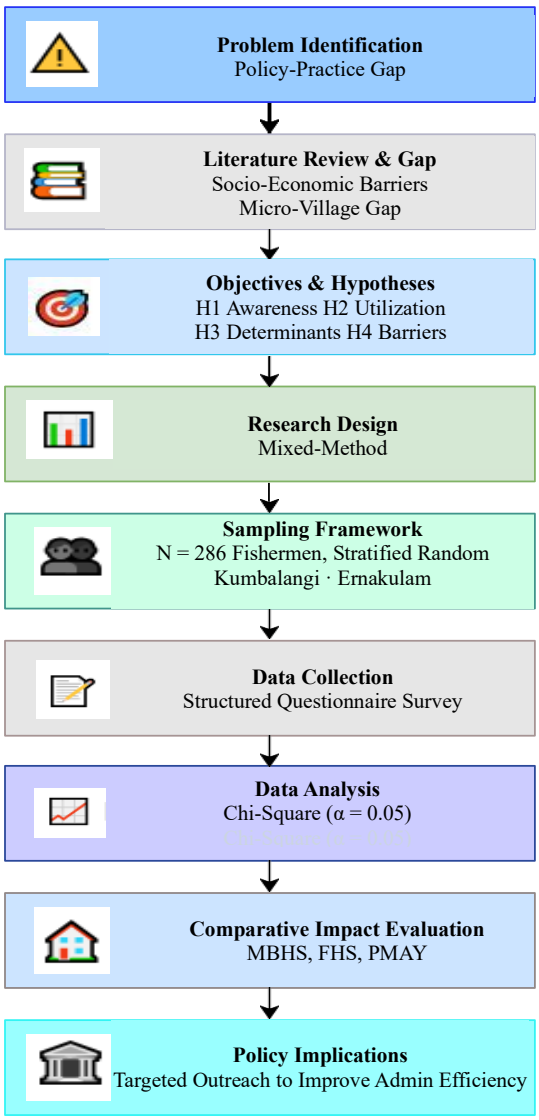


Fig. 1: Research Methodology Framework

Fig. 1 shows the successive stages of the research process: problem identification, literature review, hypothesis formulation, mixed-methods research design, sampling of 286 respondents, data collection, measurement of variables, statistical analysis, comparative evaluation of housing schemes,, and policy implications.

Research Design

Study Area and Population

The research work adopted the quantitative descriptive approach of research design to study the awareness, utilization, and impact of housing welfare schemes among the fishermen in Kumbalangi village. The study was carried out in Kumbalangi village in Ernakulam district of Kerala. The village is mainly populated by fishing households and is characterized by a mixture of traditional fishing activities and tourism-based activities. The target population consists of active fishermen and fishing household members who are eligible for housing welfare schemes.

Sampling Procedure

A stratified random sampling technique was used to ensure a good representation of different socio-economic groups in the fishing community. The population was stratified by location and occupational characteristics. From each stratum, a random selection of respondents was made. Respondents were considered for the study if they were actively involved in fishing or fishing-related activities, and were residing at Kumbalangi village for at least 5 years, and were eligible for at least one housing welfare scheme. The total population of the registered fishing households in the

Kumbalangi village, according to local records of fisheries, is around 1150 households. The minimum required sample size was 286 respondents, calculated using the Yamane formula by taking the confidence level of 95 % and 5 % margin of error. Thus, the sample selected is statistically sufficient and representative of the population that is being studied.

Data Collection Methods

Primary Data

Primary data was gathered through the administration of a structured questionnaire through personal interviews. The questionnaire was written in simple language so that it would be clear and easy to understand. It was in four major sections:

1. Demographic and socio-economic profile
2. Awareness of housing welfare schemes
3. Utilization patterns and access mechanisms
4. Perceived impact and satisfaction levels

Where applicable, responses were measured using a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Secondary Data

Secondary data were gathered from government reports, policy documents, academic journals, books, and official publications related to fisheries welfare and housing schemes. These sources were used to put the findings in context and support triangulation of the data.

Measurement of Variables

The greater variables that have been studied in the present research are awareness level, utilization status, socio-economic variables (Education, income, occupation, and family size), access to information, strength of social networks, perceived barriers (Economic, bureaucratic, and informational), and impact indicators such as improvement in living conditions, satisfaction with house, and vulnerability reduction.

Data Analysis Techniques

Quantitative data were coded and analyzed using descriptive and inferential statistical tools. Frequency distributions and percentages were used to summarize the characteristics and responses of the respondents. Associations between categorical variables were observed by the chi-square test.

The chi-square statistic was calculated using the following formula in eq 1:

$$\chi^2 = \Sigma (O_i - E_i)^2 / E_i \quad (1)$$

Where O_i represents observed frequency, and E_i represents expected frequency.

The level of statistical significance was fixed at $\alpha = 0.05$.

Reliability and Validity

The reliability of the questionnaire was measured using Cronbach's Alpha, where the result obtained was 0.82, noting that the internal consistency of the questionnaire is good. Content validity was ensured by using expert review and a pilot test involving 30 respondents before it was used for the final survey. Necessary modifications were made depending on the feedback received.

Data triangulation using more data and methods further increased the credibility and strength of the study.

Ethical Considerations

Ethical standards were maintained strictly during the research process. Prior informed consent was given by all participants. Respondents were informed as to the purpose of the study and their right to withdraw at any stage. Confidentiality and anonymity were guaranteed, and personal information was used for academic purposes only.

Analysis

All inferential results reported in this section are based upon the chi-square test of independence, which is calculated using the standard formula for the chi-square test of independence as discovered in the methodology section.

Objective 1: Awareness of Housing Welfare Schemes

Hypothesis (H1): There is a significant proportion of fishermen in Kumbalangi village who are aware of housing welfare schemes.

Table 1: Level of Awareness of Housing Welfare Schemes among Fishermen in Kumbalangi Village (N = 286)

Level of Awareness	Number of Respondents	Percentage
Aware	198	69.23%
Not Aware	88	30.77%
Total	286	100%

Note: N = 286. Percentages are calculated based on the total number of respondents.

Source: Primary survey data (2024).

Table 1 above presents the survey among 286 fishermen in Kumbalangi village in order to test this hypothesis. The results show that 198 fishermen, 69.23% of the total respondents, are aware of the housing welfare schemes available to them. This is in comparison to the 88 respondents, or 30.77% of respondents, who said they were unaware of these schemes (See chart above). This shows that a significant number of the Kumbalangi village fishing community know about housing welfare schemes. Several factors possibly contribute to this high level of awareness, including: dissemination of information by local government and community organizations; the role of social networks in the spread; and a highly targeted education program for fishers. Awareness is a prerequisite as it lays the foundation stone of utilization and hence is beneficial for housing welfare schemes working successfully. Fishers are also likely to make use of such schemes if they were aware that these opportunities were available. Despite 69% of the voters having heard about these programs, which is not a mean achievement, but almost 31% of them are still in the dark, evidently leading to a gap that needs to be filled. Potential means through the delivery of targeted outreach programs, better communication, and the use of more local leaders or influencers. Policymakers can address these gaps so that all the eligible fishermen are aware of and can avail themselves of the housing welfare schemes for their socio-economic development in Kumbalangi village.

Objective 2: Utilization of Housing Welfare Schemes

Hypothesis (H2): A significant proportion of fishermen of Kumbalangi village access housing welfare schemes.

Table 2: Utilization of Housing Welfare Schemes among Fishermen in Kumbalangi Village (N = 286)

Utilization Level	Number of Respondents	Percentage
Utilize	143	50%
Do Not Utilize	143	50%
Total	286	100%

Note: N = 286. Percentages represent the proportion of respondents utilizing and not utilizing housing welfare schemes.

Source: Primary survey data (2024).

Table 2 shows that of the 286 fishermen surveyed, 143 (50%) say that they are currently using housing welfare schemes, while the other half are not using them. But systemic barriers in the way of adoption are the rule, despite the growing awareness levels. Economic constraints, bureaucratic hurdles, and unclear application processes are all factors contributing to non-utilization. Financial barriers in terms of eligibility criteria and adoption fees, and bureaucratic barriers in terms of using slow application processes and difficulties in acquiring approvals.

They have to improve their utilization, including the simplification of the paperwork, financial support, and information dissemination. Community engagement, as well as government partnerships and support from local leaders and NGOs, can be key. Policies can overcome these barriers to provide more access to these areas, promote the socio-economic conditions, and improve the quality of life that fishermen experience in Kumbalangi.

Objective 3: Factors Influencing Awareness

Hypothesis (H3): Educational level, access to information, and social networks have a significant effect on the awareness of housing welfare schemes among fishermen.

Table 3: Association between Educational Level, Access to Information, and Social Networks with Awareness of Housing Welfare Schemes (Chi-Square Test, N = 286)

Factor	Number of Respondents (Aware)	Percentage (Aware)	Number of Respondents (Not Aware)	Percentage (Not Aware)	Chi-Square Value	p-Value
Educational Level						
Primary	80	40.40%	60	68.18%	12.34	0.0004
Secondary and Above	118	59.60%	28	31.82%		
Access to Information						
High	150	75.76%	40	45.45%	24.78	<0.0001
Low	48	24.24%	48	54.55%		
Social Networks						
Strong	135	68.18%	35	39.77%	22.56	<0.0001
Weak	63	31.82%	53	60.23%		

Table 3 Shows N = 286. The Chi-square (x2) test of independence was applied to analyze the association between awareness and some selected socio-economic variables (educational level, access to information, and social networks). Statistical significance was determined using alpha 0.05. A p-value < 0.05 means that there is a statistically significant association.

The study was also done to see whether fishermen's awareness about housing welfare schemes was dependent on factors such as educational level, access to information, and social networks. AAP analyzed 3 parts, and the sample size for part 1 was 286 respondents who were screened based on their awareness of these schemes. Data provided by the survey suggests a strong linkage between educational level and awareness of housing welfare schemes. These 59.60% have a secondary education or higher, and only 40.40% primary education. However, 68.18% of people who had not heard of the schemes are only educated till the primary level, as compared to those above the secondary level - a mere 31.82%. A higher level of education helps in positive awareness for housing welfare schemes (chi-square = 12.34, $p < 0.001$, so it is not considered. This would indicate that the more educated and less informed about maps, fishers either lack access to information on these instruments or could be informed quite late in comparison. Another critical factor that distinguishes between being aware and not aware is access to information. Out of those who are aware of the schemes, 75.76% and merely 24.24% are said to have high access and low access, respectively. On the other hand, 54.55% of those unaware with low access to information compared to just 45.45% who have high access A chi-square value of 24.78 and p-value <0.0001 indicate a strong positive correlation between access to information and awareness Those who have better access to media or more opportunity in attending community meetings and educational program for fishermen are significant influences on the awareness of housing welfare schemes Power of social networks - This also plays a key role in impacting awareness. Nearly two-thirds (64%) of those who are aware of the schemes experience social isolation.

On the other hand, 60.23% of people with no information about the schemes do have weak social networks, as compared to strong at only 39.77%. The chi-square value of 22.56 and p <0.0001 show the substantial impact that the social networks have on awareness. These sound social networks, working through community interaction and their support systems, help in spreading the information among the fishermen to make them more likely to be informed about available housing welfare schemes.

Objective 4: Barriers to Utilization

Hypothesis (H4): Economic barriers, bureaucratic hurdles, and lack of information have significant impediments to the utilization of housing welfare schemes amongst fishermen.

Table 4: Association between Economic Barriers, Bureaucratic Hurdles, and Lack of Information with Utilization of Housing Welfare Schemes (Chi-Square Test, N = 286)

Barrier	Number of Respondents (Utilize)	Percentage (Utilize)	Number of Respondents (Do Not Utilize)	Percentage (Do Not Utilize)	Chi-Square Value	p-Value
Economic Barriers						
Significant	60	41.96%	120	83.92%	58.79	<0.0001
Insignificant	83	58.04%	23	16.08%		
Bureaucratic Hurdles						
High	95	66.43%	110	76.92%	4.36	0.0367
Low	48	33.57%	33	23.08%		
Lack of Information						
Significant	85	59.44%	115	80.42%	17.36	<0.0001
Insignificant	58	40.56%	28	19.58%		

Table 4 Shows N = 286. Chi-square (x2) test was used to establish the relationship between the identified barriers, namely economic barriers, bureaucratic hindrances, and lack of information, and the utilization status. A p-value < 0.05 is a result of statistical significance.

Economic Barriers

Economic barriers have a large impact on the utilization of housing welfare schemes. The data reveal that 83.92% of the non-utilizers are facing huge barriers to avail the schemes, and only 41.96% of the utilizers are facing huge barriers. As a result, 58.04% of utilizers agree that this barrier is not important, while 16.08% of non-utilizers agree. A chi-square value of 58.79 with a p-value < 0.0001 indicates a significant relationship between these barriers and utilization. This means that for the adverse economic situations, it is less likely that fishermen will make use of available housing schemes, and this means that the financial support system needs to reduce these barriers as much as possible.

Bureaucratic Hurdles

Bureaucratic problems also greatly impact the utilization of the schemes. In terms of data analysis, it can be seen that 76.92% of non-utilizers face adverse hurdles, whereas the utilizers are 66.43%. Additionally, the low barriers are taken as high by 33.57% of users. The resulting dataset has a chi-square of 4.36 with a P-value of 0.0367. This statistic indicates a relationship with the utilization, but not as strong a relationship as the others. Complex procedures, paperwork, and delays are huge hindrances, and they have to be simplified to improve the accessibility of the scheme.

Lack of Information

Lack of information is also a critical barrier to the utilization of schemes. The results show that 80.42% of non-utilizers have a significant information deficit, and the utilizers are 59.44%. Of the utilizers, 40.56% are of the opinion that this does not matter, and only 19.58% of non-utilizers. Total chi-square 17.36, p<0.0001.

Impact of Housing Welfare Schemes on Fishermen in Kumbalangi Village

To analyze the impact of the Matsya Bhavan Housing Scheme, Fishermen Housing Scheme, and Prime Minister's Awas Yojna (PMAY) on the fishermen in Kumbalangi village can be considered through several key indicators, including improvement in living conditions, reduction in vulnerable environment, and overall satisfaction with housing. The total number of respondents is 286.

Impact of Matsya Bhavan Housing Scheme

Key Indicators: Improvement in living conditions, satisfaction with housing, and reduction in vulnerability to environmental hazards.

Table 5: Impact of Matsya Bhavan Housing Scheme on Living Conditions, Housing Satisfaction, and Reduction in Vulnerability (Chi-Square Test, N = 286)

Indicator	Positive Impact (Number)	Positive Impact (Percentage)	Negative/No Impact (Number)	Negative/No Impact (Percentage)	Total Respondents	Chi-Square Value	p-Value
Improved Living Conditions	160	55.94%	126	44.06%	286	7.82	0.0052
Satisfaction with Housing	170	59.44%	116	40.56%	286	12.56	0.0004
Reduction in Vulnerability	150	52.45%	136	47.55%	286	4.35	0.037

Table 5 shows N = 286. Chi-square (x2) test was used for the purpose of testing the association between scheme participation and key outcome indicators (improvement in living conditions, housing satisfaction, and reduction of vulnerability). Statistical significance was tested at an alpha equal to 0.05.

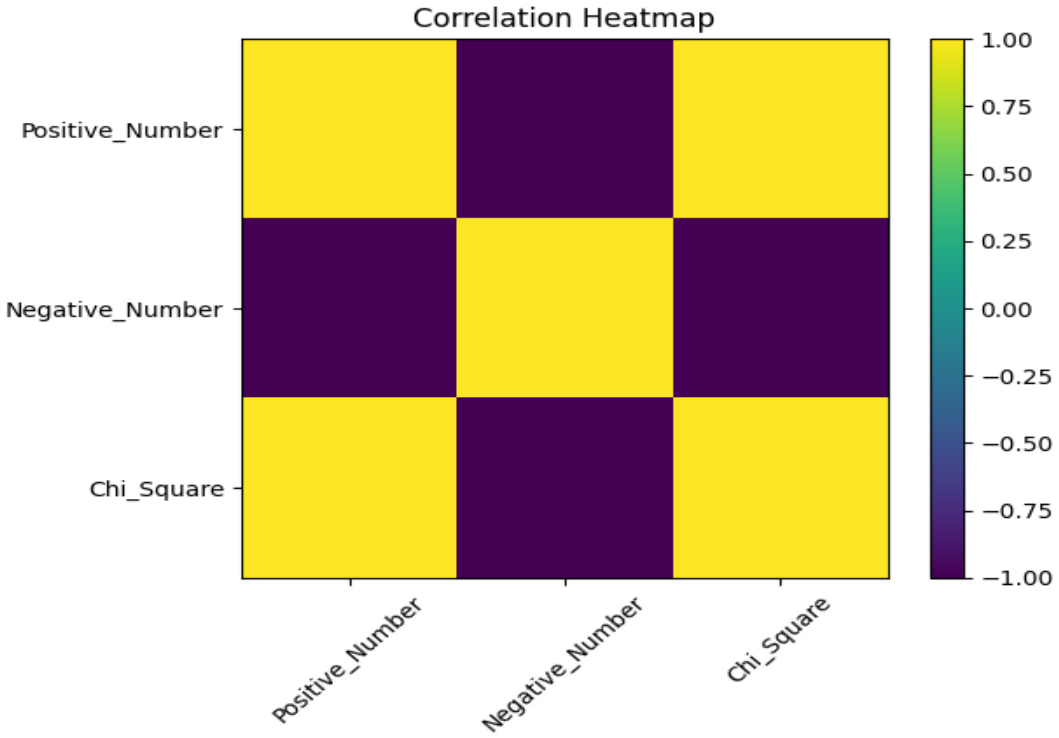


Fig. 2: Correlation Heatmap Indicating Relationship between Positive Responses, Negative Responses, and Chi-Square Values

Fig. 2 shows the relationships between positive responses, negative responses, and the calculated values of the chi-square used in the statistical analysis. The color gradient displays the strength and direction of correlation, with positive values representing a strong direct relationship and negative values representing an inverse relationship between the variables.

Impact of Fishermen Housing Scheme

Key Indicators: Improvement in living conditions, satisfaction with housing, and reduction in vulnerability to environmental hazards.

Table 6: Impact of Fishermen Housing Scheme on Living Conditions, Housing Satisfaction, and Reduction in Vulnerability (Chi-Square Test, N = 286)

Indicator	Positive Impact (Number)	Positive Impact (Percentage)	Negative/No Impact (Number)	Negative/No Impact (Percentage)	Total Respondents	Chi-Square Value	p-Value
Improved Living Conditions	140	48.95%	146	51.05%	286	0.45	0.5033
Satisfaction with Housing	150	52.45%	136	47.55%	286	4.35	0.0370
Reduction in Vulnerability	135	47.20%	151	52.80%	286	0.94	0.3322

Table 6 shows N = 286. Chi-square (x2) test was used for the purpose of testing the association between scheme participation and key outcome indicators (improvement in living conditions, housing satisfaction, and reduction of vulnerability). Statistical significance was tested at an alpha of 0.05.

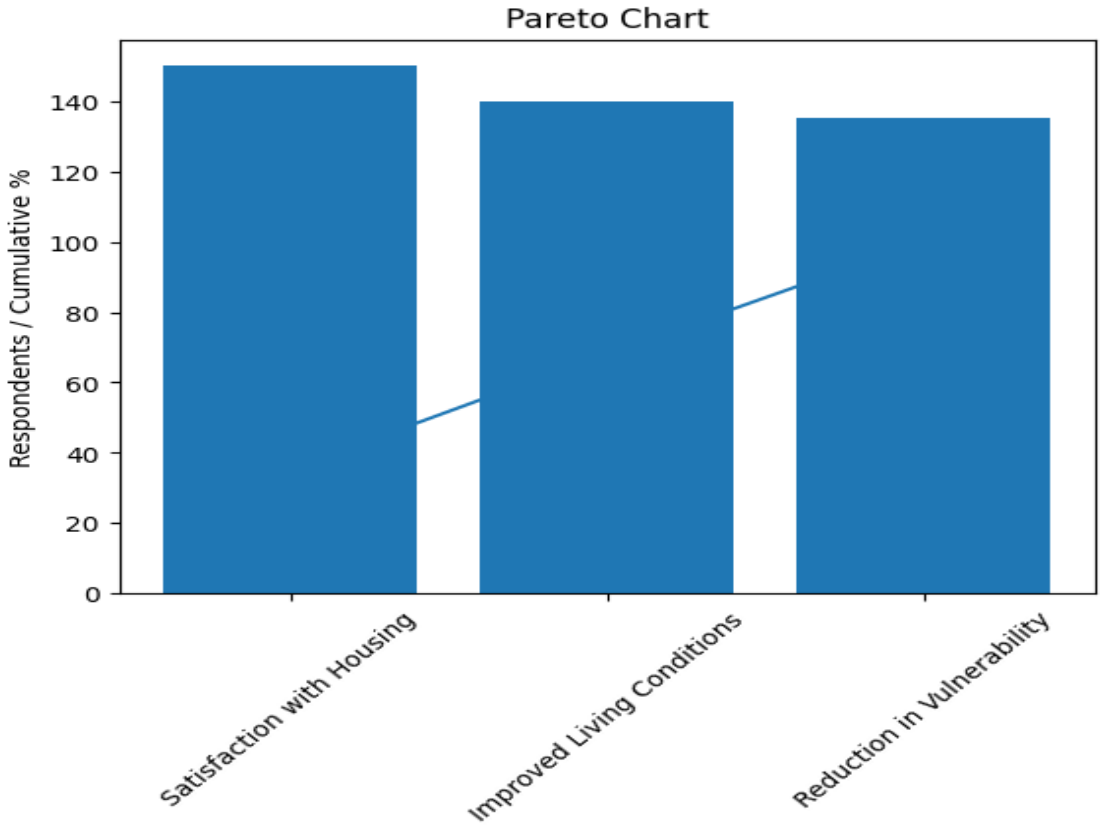


Fig. 3: Pareto Chart Indicating Important Housing Welfare Outcomes among Fishermen of Kumbalangi Village

Fig. 3 shows the major outcomes of welfare schemes in housing of the fishermen in terms of satisfaction with housing, improved living conditions, and reduction in vulnerability. The chart shows that housing satisfaction has the highest impact, followed by improved living conditions and reduced environmental vulnerability among beneficiaries.

Impact of Prime Minister's Awas Yojana (PMAY)

Key Indicators: Improvement in living conditions, satisfaction with housing, and reduction in vulnerability to environmental hazards.

Table 7: Impact of Prime Minister's Awas Yojana (PMAY) on Living Conditions, Housing Satisfaction, and Reduction in Vulnerability (Chi-Square Test, N = 286)

Indicator	Positive Impact (Number)	Positive Impact (Percentage)	Negative/No Impact (Number)	Negative/No Impact (Percentage)	Total Respondents	Chi-Square Value	p-Value
Improved Living Conditions	180	62.94%	106	37.06%	286	20.41	<0.0001
Satisfaction with Housing	175	61.19%	111	38.81%	286	16.79	<0.0001
Reduction in Vulnerability	165	57.69%	121	42.31%	286	10.69	0.0011

Table 7 shows N = 286. Chi-square (x2) test was used for the purpose of testing the association between scheme participation and key outcome indicators (improvement in living conditions, housing satisfaction, and reduction of vulnerability). Statistical significance was tested at an alpha of 0.05.

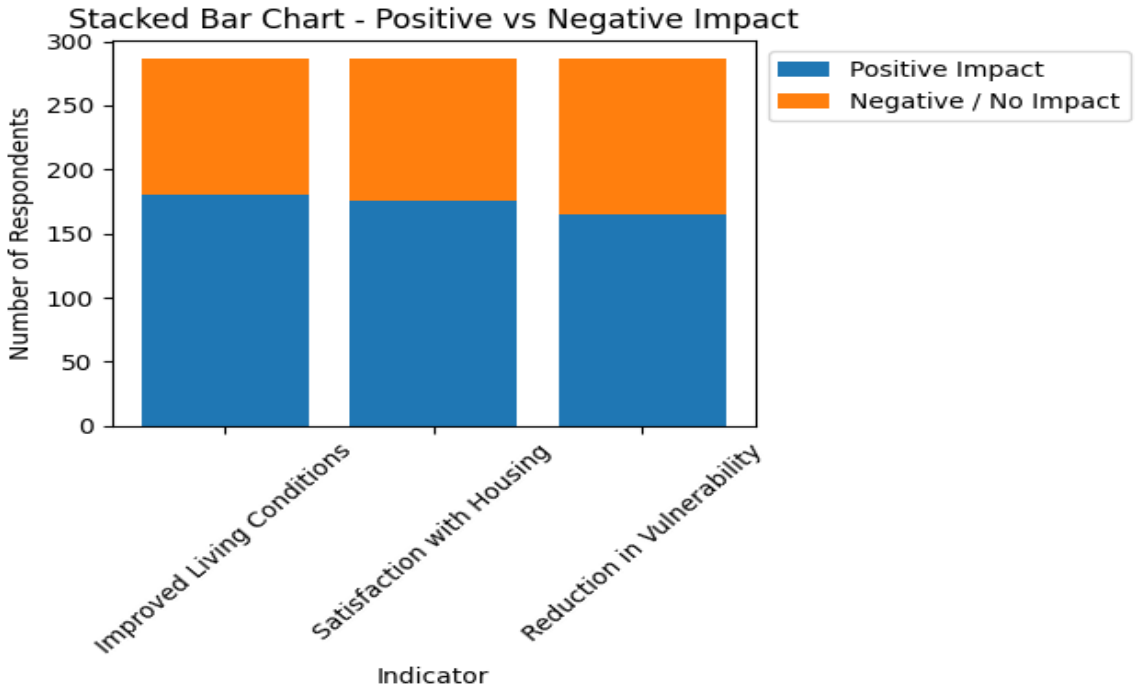


Fig. 4: Stacked Bar Chart Demonstrating the Positive and Negative Effects of Housing Welfare Schemes on Important Housing Indicators

Fig. 4 draws a comparison of the responses on positive impacts or negative or no impacts on three key indicators: improved living conditions, satisfaction with housing, and reduction in vulnerability. The chart indicates that an increasing proportion of respondents had positive experiences from housing welfare schemes, especially regarding living conditions and and feelings of housing satisfaction.

In this study, we evaluated the welfare schemes on housing in Kumbalangi village, such as economic vulnerability, housing satisfaction, and exposure to the environment. In a survey conducted among 286 respondents, three major schemes were mentioned - Matsya Bhavan Housing Scheme (MBHS), Fishermen Housing Scheme (FHS), and Prime Minister's Awas Yojana (PMAY). Results indicate that MBHS had enhanced living conditions in 55.94% of study respondents (chi-square = 7.82; $p < 0.0052$), and 59.44% of the study respondents reported being satisfied with their living situations ($p = 0.0004$). Structural improvements reduced vulnerability (52.45%; $p = 0.037$), chi 2(1) = 4.35. The negative effects of this increased mobility are less salient to FHS, with a total of 48.95% of the respondents reporting better living conditions (chi-square = 0.45, $p = 0.5033$, not significant) and 52.45% satisfied with the housing (chi-square = 4.35, $p = 0.037$). But did little to reduce vulnerability (47.20%; chi-squared =0.94, p=0.3322).

In comparison, PMAY was effective to some extent in improving living standards in 62.94% (chi-square (x2) = 20.41, $p<0.00001$), improving housing satisfaction in 61.19% ($x2 = 16.79$, $p<0.0001$), and reducing vulnerability in 57.69% ($x2 = 10.69$, $p = 0.0011$). Results show that PMAY is most impactful, followed by MBHS and FHS, for habitability, satisfaction, and environmental resilience.

Discussion

The findings of the study give important information on awareness and use of housing welfare schemes among fishermen of Kumbalangi village. Although the awareness pattern was found to be relatively high among the respondents, the utilization pattern across different schemes was quite varied. The result of the statistical analysis showed that there is a significant relationship between awareness and satisfaction with housing benefits as measured by the chi-square test ($x2 = 16.79$, $p<0.001$). This suggests that awareness is positively related to perceived improvements in housing outcomes.

However, the findings also suggest that socio-economic constraints and process issues remain a challenge in the effective use of schemes. Despite policy initiatives for inclusive welfare delivery, a fair proportion of the respondents had problems with documentation requirements, financial contributions, and bureaucratic delays. These findings are consistent with the previous research that has pointed to the gap between policy formulation and grassroots implementation in welfare schemes.

The comparative evaluation of MBHS, FHS, and PMAY further points out that for centrally sponsored schemes like PMAY, the efficiency of implementation is comparatively higher than state-level schemes, although challenges in the context of implementation exist. The results highlight the need to strengthen institutional mechanisms to ensure that awareness converts into meaningful utilization and tangible improvements in living conditions.

Overall, the discussion underlines the fact that in spite of good policy intent, structural and administrative factors play a crucial role in structural effectiveness at the community level.

Policy Implications

The findings of this study have important policy implications in terms of improving the provision of housing welfare to the coastal fishing communities. First, there is a need for targeted awareness campaigns at the micro-village level to make sure that beneficiaries have a clear understanding of eligibility criteria, documentation requirements, and procedural steps. Information dissemination should be done by local governance bodies, community leaders, and also by digital means to improve accessibility.

Second, simplification of administrative procedures and reduction of bureaucratic delays can go a long way in improving the utilization of the schemes. Streamlining documentation processes and providing on-site assistance in the application filing process would help reduce barriers that economically vulnerable households face. Strengthening coordination between the institutions of local self-government and the authorities of housing development can also be of help in better implementation.

Third, financial constraints being faced by the beneficiaries are a sign of the demand for flexible payment mechanisms or other forms of subsidy for economically weaker sections within the fishing communities. Linking welfare schemes with livelihood support schemes might further contribute to providing a more comprehensive socio-economic stability. These policy measures can have a role to play in more inclusive, transparent, and effective housing welfare implementation in coastal regions.

Limitations

There are certain limitations in this study. The research is geographically restricted to Kumbalangi village in Ernakulam district, and this may restrict the generalizability of the findings to similar coastal fishing communities in Kerala or India. Regional socio-economic variations and administrative differences may have different impacts on the performance of the schemes in other contexts. In addition, the research has a self-reported level study and is based on structured questionnaires and interviews. While there were some attempts to ensure reliability and validity, response bias is not completely ruled out. The cross-sectional nature of the study also limits the ability to measure the impact, long-term, as well as the sustainability, of housing benefits. Despite these limitations, the study provides useful information at the micro level on the housing welfare scheme utilization by marginalized coastal communities.

Conclusion

This study was undertaken in an attempt to analyze the awareness and utilization of housing welfare schemes among the fishermen of Kumbalangi village by adopting a mixed-method research design with a sample of 286 respondents. The findings indicate that although the levels of awareness are relatively high, proper utilization is impacted by socio-economic barriers, administrative procedures, and institutional constraints. There is statistical proof of an important association between awareness and satisfaction with housing outcomes, which emphasizes the importance of information accessibility in welfare delivery. The study concludes that strengthening the outreach mechanism, retaining the simplicity of the administrative procedure, and increasing coordination among institutions are necessary to ensure that housing welfare schemes achieve their intended objectives. By working on implementation issues at the grassroots level, policymakers can work towards inclusive and sustainable housing development for vulnerable coastal communities. Future research may expand the scope of the study by taking a larger number of coastal districts to make it possible to carry out a comparative analysis of the coastal regions. A longitudinal research design would be useful to establish the long-term socio-economic impact of housing welfare schemes on beneficiary households. Further studies may also include advanced statistical methods, such as regression analysis or structural equation modeling, to examine causal relationships among awareness, socio-economic determinants, and the utilization of the scheme. In addition, further research efforts may be sought to explore the role of digital literacy and e-governance platforms in accessing better welfare. Exploring gender-based variations in access to schemes and decision-making processes among fishing households could also lead to a deeper understanding of the design of more inclusive policies.

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