

RESEARCH ARTICLE



Assessing labour migration patterns in marine fisheries sector across the coastal States of Gujarat and Maharashtra

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* **Corresponding author.**

shyam.icar@gmail.com

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Shyam S Salim^{1*}, Vinaya Kumar Vase², J Jamshi¹, A M Shinu¹, N R Athira¹, Bhargav Bhatt²

¹ ICAR- Central Marine Fisheries Research Institute, Kochi, Kerala, India

² ICAR- Central Marine Fisheries Research Institute, Veraval, Gujarat

Abstract

Objectives: Assessing the demographic characteristics of migrant fisher folks of coastal states of Gujarat and Maharashtra, with special focus on causes of migration, challenges and achievements in livelihood. **Methods:** The primary statistical tool of descriptive analysis, percentage analysis, Garrette ranking etc. have been carried out to assess various parameters of the study. Binary logistic regression was carried out to analyse the determinants for predicting willingness for continuing migration of fishermen. **Findings:** The expected rise in income and anticipated desire of enjoying a better standard of living and the seasonality are the key factors which necessitate the fishermen to migrate. The study identified unemployment as the main problem faced by the workers in fishing industry which necessitates the need for the labour migration. Moreover, income inequality, climate change, demographic shift and conflicts also contributed towards labour migration, in search of employability and security. **Novelty:** Marine fisheries sector is one of the most important sectors contributing much for the Indian economy but still facing disguised unemployment. Income inequalities, climate change, demographic shift and conflicts had contributed much for the migration of labour in search of employment and security. This proposed study is an investigative research over the labour migration and alternative avocation in the marine fisheries sector of the districts of Gujarat and Maharashtra as labour migration has become an adaptive or coping strategy of fishermen of the study area which scrutinizes the relevance of this study.

Keywords: Migration; labour migration; alternative avocation; marine fisheries

1 Introduction

Labour migration, generally defined as the cross border movement of workers for the purpose of employment, has become an increasingly important feature of the globalizing world, which raised many important economic, social and political concerns. Income inequalities, climate change, demographic shift and conflicts had

contributed much for the migration of labour in search of employment and security. More recently, various studies portrayed the idea of migration as an adaptive or coping strategy, which is gaining acceptance. Migrant workers add up to the growth and development of the host area, while benefiting their home area through the remittance. Migration in the marine fisheries sector may indeed be a relevant adaptive mechanism of the fisher folks to survive themselves in a situation of changing fish-catch, disguised unemployment etc. in a particular location. The movement of fisher folks has latent impacts upon the economies of both the home area and the host area.

Seasonal and circular migration has long been part of the livelihood portfolio of poor people across India⁽¹⁾. Although India lacks panel data on seasonal migration, a lot of studies have opined that seasonal migration for employment is growing both in terms of absolute numbers but also in relation to the size of the working population as a whole⁽²⁻⁵⁾. In the studies conducted at the Ananthapur and Rayadurga districts of Andhra Pradesh,⁽⁶⁾ pointed out three types of migration happening in India. Type I migration is meant for coping and survival, Type II is for additional income, whereas Type III is for better income or better work environment.

India is the fourth largest fishing nation in the world. Most of the people in the coastal region considered fishing as a main occupation. Marine fisheries, being one of the important sectors of the country, contributes much for the food security and provides direct employment to over 1.5mn fisher people, along with other indirect dependents in the primary, secondary, and tertiary sectors associated with fishing. Still, disguised unemployment is prevalent in the country, which urges the fishermen to migrate to distant waters with better resources and better earning potential. According to⁽⁷⁾ the fishers in India are undergoing a transformation in terms of improvement in the social security measures which is evident through the improvement in the literacy standards, health profile, income and engagement in the different alternative avocations.

Fisheries sector has been faring high in terms of its forex earning potential and employability of vast majority of coastal community in the primary, secondary, and tertiary sectors. However, the plight of marine fisherfolk amplified by inequitable distribution of earnings leading to indebtedness and marginalization is a much debated issue for the planners and policy-makers. Improvements in technology has led to unbridled capital investment in this sector and has attracted more and more people from the adjacent coastal transects who necessarily do not belong to the fishing community. Seafood exports from India is exploring new heights with increasing opportunities for value addition and branding of products. This has led to mushrooming of export units employing large number of skilled and unskilled workers. Further over the years, there is increase in the coastal fisher population inducing more and more people in fishing and allied activities. Disguised unemployment is rampant in all sectors since earnings from marine fisheries are not proportionate to the increase in stakeholders. This has instigated labour migration induced by the earning potential in the distant waters coupled with limited resources in their vicinity⁽⁸⁾. In this context the present study attempts to estimate the pros and cons of labour migration in the marine fisheries sector by analyzing the cases of fisher folks from various part of the country who migrated to coasts of Maharashtra and Gujarat. The empirical evidence presented in the paper explores the reasons, problems, income and savings, and the seasonality of the migrants.

2 Objectives

The study focuses on estimating the migrant population of fisher communities of India. Though the migration has resultant a positive impact, it can equally constitute the challenges of survival to the migrant communities. The focus of this study gives answers to these research questions through specific objectives as follows:

- Assessing the demographic characteristics of migrant fisher folks of coastal district
- Identifying the prominent causes of fishermen for migration in relation to their livelihood
- Estimating the challenges and achievements incurred through migration

3 Methods

The study was done across the coastal states of India using the primary data collected from the migrant fishermen involved in different fisheries related jobs in the trawl boats as well as in the harbours using simple random sampling method during March – May 2019. About 200 respondents were included in the study, Maharashtra (100), and Gujarat (100). According to the Marine Fisheries Census2010; Gujarat, The total number of active full-time fisher folk in Gujarat is 65002, out of which 32% (21052) are from Junagadh coast and in Maharashtra it is 67615 where 33% are from Ratnagiri district. The average crew size under mechanized, motorized and non-motorized sectors includes 8, 15 and 3 respectively. For an annual fishing operation based on the number of fishing trips performed the labor demand will require around 1.5 million man days in Junagadh coast. This labour demand estimates caters to only 15% of the Junagadh fisher folk population necessitating the need for migrant labour employment The respondents were personally interviewed using a well-structured interview schedule.

The major parameters considered in the study includes the demographic profile, education status, average income, asset particulars, savings, indebtedness, expenditure pattern, details of migration, reasons for migration, problems during migration, and the major socio economic achievements through migration. Socio economic parameters of sample migrants are important for determining the level of knowledge, skills , adaptability and employment index, the socio economic characteristics of sample migrants such as family size, age, education level, occupational pattern etc., have a greater bearing on the migration and bending with the change in demographics.

The analysis was done on the basis of the opinion of the migrants from the coastal district. Descriptive statistical analysis was done on the data using excel and R language. The pattern of expenditure of the migrants at the home as well as the host place is plotted using the R software. The Garette ranking technique is used to analyse the rankings given by the respondents for the reasons of migration, problems of migration and the major socio economic achievements through migration. The Garrett's ranking technique is usually used to rank the preference indicated by the respondents on different factors. The ranks assigned by the respondents for different factors are converted into scores. The factors with the highest mean value or Garrett score are considered to be the most important factor. For converting the scores assigned by the exporter towards the particular problem, per cent position was worked out using the formula

$$\frac{\text{Percent position}}{N_i} = 100X (R_{ij} - 0.5)$$

Where,

R_{ij} = rank given for the i th problem by the j th consumer in State

N_j = number of attributes

Binary logistic regression was also carried out to analyse the Determinants for predicting willingness for the long run continuing migration of fishermen. The analysis was done with a view to measure the extent of each independent variables (age, family status, education levels, seasonality and disguised employment, income and savings, debt and financial commitments, persuasion, technical skills and knowledge and others) on the dependent variable (willingness for continuing migration) of the respondents. Binary logistic regression - determines the impact of multiple independent variables presented simultaneously to predict membership of one or other of the two dependent variable categories. As per the study the equation of binary regression model is as follows:

$$\text{Logit}(p) = \exp(a + b_1x_1 + b_2x_2 + b_3x_3 + \dots)$$

As in least-squares regression, the relationship between the logit(P) and X is assumed to be linear.

$$p = \frac{\exp(a + b_1x_1 + b_2x_2 + b_3x_3 + \dots)}{1 + \exp(a + b_1x_1 + b_2x_2 + b_3x_3 + \dots)}$$

In the equation above: P can be calculated with the following formula

where:

P = the probability that a case is in the determinants of migration

a = the constant (or intercept) of the equation

b = the coefficient (or slope) of the predictor variables.

x_1, x_2, x_3 are the independent variables (age, family status, education levels, etc)

4 Results and Discussion

The collected data were analyzed and the results were discussed under the following heads.

Socio-economic characteristics

The major findings about the socio-economic characteristics of the migrant labour are depicted in [Table 1](#) from which it can clearly be noted that the majority of the respondents are from the age ranging from 20 to 40 constituting 77 percent in Gujarat and 86 percent in Maharashtra of the total respondents indicated that the youth and middle-aged people constitute the major portion of the migrant labours of both Gujarat and Maharashtra. 55 percent of the respondents of Gujarat are possessing high school qualification whereas in Maharashtra major share of 46 percent has primary education as their highest qualification. Also, 27 percent of the respondents from Maharashtra are illiterate whereas in Gujarat it is about only 10 percent. The income status of the migrants was also scrutinized, which indicates that about 87 percent of the respondents of Gujarat and 95 percent

of Maharashtra are earning an amount between Rs.10,000 and Rs.30,000 whereas 3 percent of the respondents of Gujarat and 4 percent of Maharashtra are earning between Rs.30,000 to Rs.50,000 per month. The results point out that the income profile of the respondents of both the states are almost similar.

Table 1. Socio economic characteristics of migrants

Age distribution (%)			Education Status (%)			Income status (Rs).		
Age	Gujarat	Maharashtra	Grade	Gujarat	Maharashtra	Amount	Gujarat	Maharashtra
<20	4	4	Primary	15	46	<10000	8	0
20 to 40	77	86	High school	55	2	10000.-30000	87	95
40 to 60	18	9	Higher secondary	15	22	30000-50000	3	4
>60	1	1	College education	5	2	50000-70000	2	1
			Illiterate	10	27	>70000	0	0

Nativity and Religion

The Ratangiri fishing village of Maharashtra was observed to have a diversified environment due to the migrant labourers from different natives, which has a significant positive impact on people’s livelihood and well-being .15 percent of migrants are from Madhya Pradesh and Bihar, 7 per cent from Chhattisgarh and west Bengal, 5 per cent from Jharkhand, Assam and Karnataka,14 per cent from Uttar Pradesh and Odisha, 2 per cent from Manipur, 1 per cent from Tamil Nadu. This would create creates economic sustainability and flexibility in India. From the [Figure 1](#), it can be concluded that in Maharashtra 86 per cent of respondents were Hindus, 11 per cent were Muslim and 2 per cent were Christians. While in Gujarat 95 percent of respondents were are Hindus, 4 percent were Muslims and 1 percent were Christians.

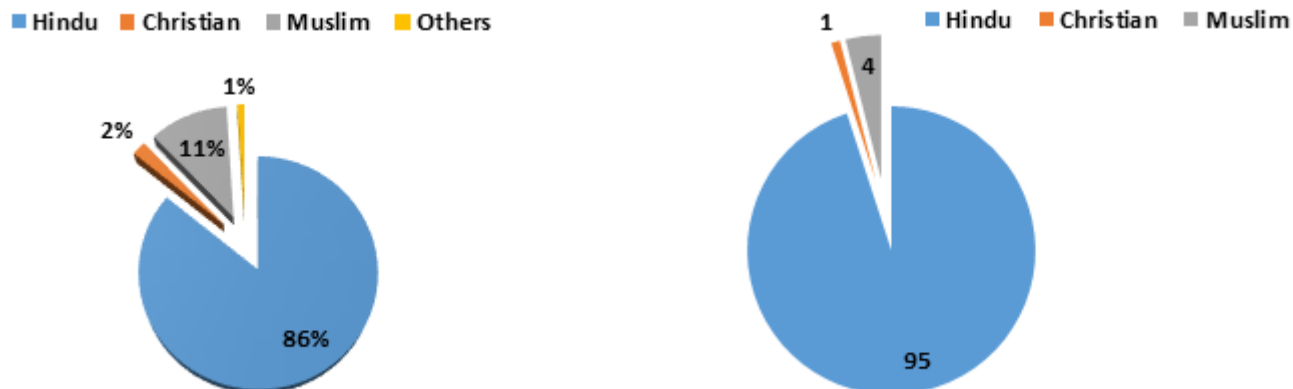


Fig 1. Religion distribution of the migrant fisher’s folks in Maharashtra and Gujarat

Income and Expenditure pattern

The expenditure pattern of the migrants were analyzed and results are indicated in [Table 2](#). The average size of the family of both the study areas were found to be four and hence the per capita expenditure is calculated and is detailed in [Table 2](#), which indicates that the majority of the expenses of both Gujarat and Maharashtra is meant for food 61 percent and 54 percent respectively. The other major expenses at the workplace are found to be for clothing, health care, education and others. The average total expenditure of Gujarat and Maharashtra is Rs. 6380 and Rs. 9553 respectively.

Table 2. Pattern of expenditure

Item	Gujarat	Maharashtra
Food	3592(61)	5191(54)
Clothing	638(10)	563(6)
Shelter	638(10)	1142(12)
Fuel/electricity	255(4)	533(6)
Health care	383(6)	500(5)
Education	574(9)	1623(17)
Social expenses	0	0
Others	0	0
Total	6380	9552

(Figures in the parentheses indicates percentage to total)

Flow of migrant population

There are several factors that can influence the fisherfolks to migrate. The results of flow of migration shows a decreasing trend over the years from 2012-2018 (Figure 2). The analysis of the age-wise distribution of respondents revealed that that young generations have the drive for seeking better opportunity for a better livelihood. Another intruding factor attracting the migrant fisher folks is the marine fish production. The state-wise marine fish production in India^(9,10) shows that the Marine fish production in Maharashtra was comparatively increasing till 2016, and a decreasing trend is observed from 2016 to 2017 and the migrant flow from 2017 to 2018 has been declined from 36% to 11% which infer that a change in marine fish production has adverse effect in the migrant population flow. Even though over the period Gujarat stands as the highest fish producing state in the country the trend of migrant labours has a decreasing trend as similar to that of Maharashtra. The other available alternative livelihood options were marked as the major reasons for these declined flow of migration.

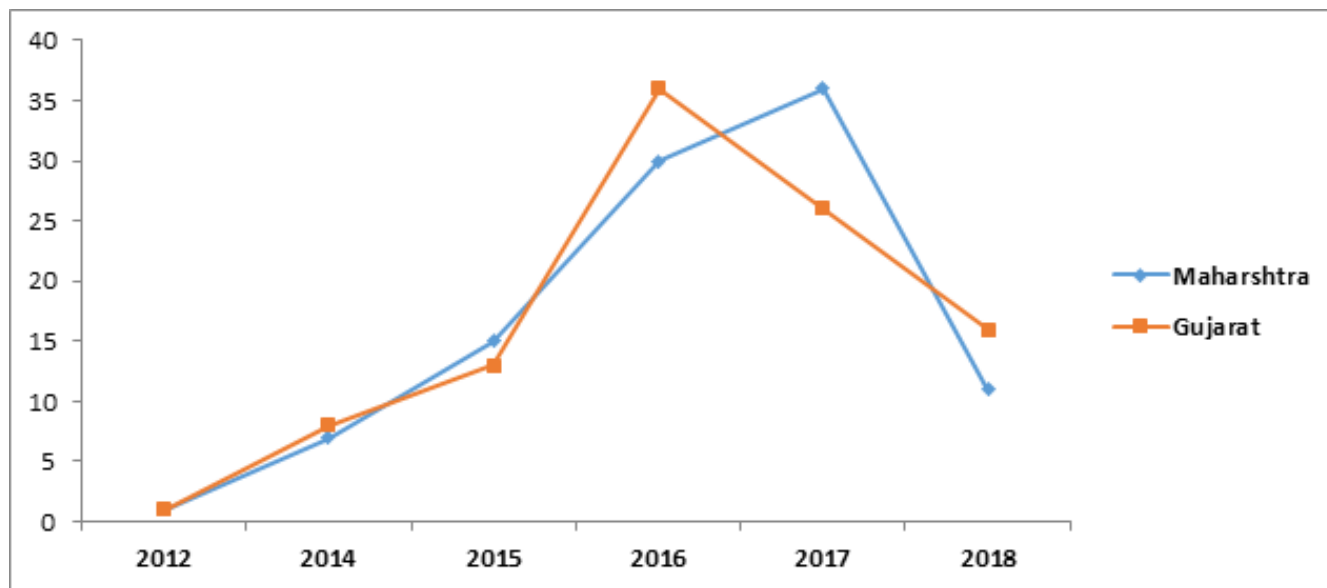


Fig 2. Migrant flow of Maharashtra and Gujarat

Reason analysis for Migration

The reason analysis of migration was done on the basis of the opinion of the migrants from the study locations. The major reasons opined by the migrants were analyzed using Garrett ranking and the ranks with score are presented in Table 3.

Table 3. Reasons for migration

Parameters	Gujarat		Maharashtra	
	Score	Rank	Score	Rank
Low Income	80	I	91	I
Low level of education	61	II	85	II
Debts & financial commitments	54	III	84	III
Seasonality of employment	54	IV	83	IV
Persuasion by friends	51	V	82	V
Disguised unemployment	50	VI	81	VI
Lack of technical knowledge	43	VII	81	VII
Interest towards travelling	43	IX	77	VIII
Others	32	VIII	79	IX

The factors with the highest mean value or Garrett score are considered to be the most important factor. Accordingly, the most important reasons for migration conceived by the respondents are low income and low level of education in both the states. The same parameters were found out as the most important economic factors contributing for the migration of fishermen, in the study conducted by Dhas and Raj (2014) at the Colachel village of Kanyakumari district. Apart from this, debts and financial commitments, disguised unemployment, interest towards migration were suggested as the prior reason for migration.

Challenges in migration

The challenges of migration were estimated from the extensive problems pointed out by the respondents. Major details regarding the challenges faced by the migrants at the work place are difficulty in language, lack of education, competition among migrants, competition among locals, lack of experience, cultural lag, discrimination in terms of revenue sharing, inadequate skills other than fishing. Major details regarding the problems and constraints faced by the migrants at the work place were analysed using Garrette ranking technique and are represented in Table 4, from which a clear picture of the problems can be drawn.

According to the study, the respondents marked difficulty in language as the first major constraint, 89 per cent in Gujarat and 87 per cent in Maharashtra followed by lack of education (76 per cent in Gujarat and 86 per cent in Maharashtra), the competition among migrants

56 per cent in Gujarat and 85 per cent in Maharashtra are the most common challenges faced by the workers. Competition is found among the migrants working in the harbours of the study area, due to which the workers are ready to reduce their monthly wages slightly in order to avail the opportunities. Apart from this, lack of experience, cultural lag, discrimination in terms of revenue sharing and inadequate skills are the key challenges of migration of fishermen.

Table 4. Challenges amongst migrant fishers

Parameters	Gujarat		Maharashtra	
	Score	Rank	Score	Rank
Difficulty in Language	89	I	87	I
Lack of education	76	II	86	II
Competition amongst migrants	56	III	85	III
Competition among locals	56	IV	83	IV
Lack of experience	53	V	82	V
Cultural lag	52	VI	81	VI
Discrimination in terms of revenue sharing	51	VII	80	VII
Inadequate skills other than fishing	48	VIII	79	VIII
Others	47	IX	77	X

Details regarding the money sent by the migrants to their home are also analyzed and the results are depicted in Figure 3 which reveals that about 53 percent of the respondents from Gujarat and 42 per cent of the workers from Maharashtra monthly remit an amount between Rs.15, 000 and Rs.25, 000. About 32 percent of the migrants in Gujarat send Rs.5, 000 and Rs.15, 000, while in Maharashtra it is about 35 percent. 14 percent of the respondents of Gujarat are sending an amount up to less

than Rs.5, 000, monthly where it is 22 percent in Maharashtra. Only one percent of the respondents of both the states sent an amount above Rs.25,000 monthly. This indicates that he migrants have better financial conditions, and good savings by their job profile and also the same amount has been reflected in the savings of their families since they most of the migrants are family members.

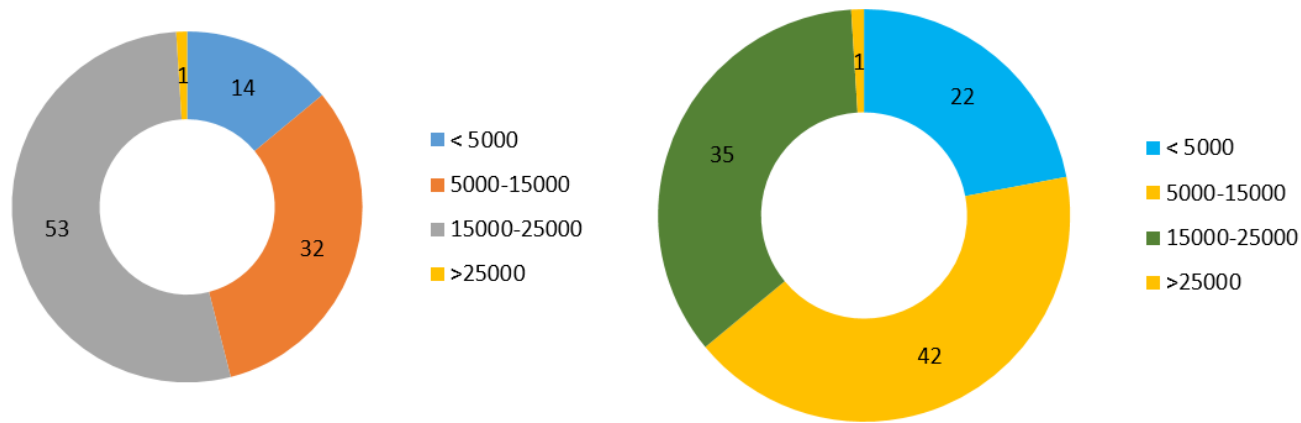


Fig 3. Details of migrant fishers income folks in Gujarat and Maharashtra

Employment during closed season / Alternative avocations

The 45 days of trawl ban period is considered as the off-season for the migrant workers. According to the respondents, the trawl ban period is the only period during which they are unemployed and no assistance is provided by the owners or government during this period. Most of them return to their home during this time period. An infinitesimally small portion of the respondents (19 percent from Gujarat) and (22 percent from Maharashtra) are departing for alternate avocations, mostly at their home town, during the closed season. The details regarding the alternative avocations and the income drawn from them are described in Table 5.

Table 5. Alternative avocations during ban period

Avocation	Gujarat (%)	Maharashtra (%)
Carpentry/Masonry	12	10
Painting/Plumbing	10	10
Boat repair	15	20
Net mending	43	12
Others (mainly farming)	20	48

The results point out that the major alternative avocations depended by the workers during the closed seasons are on daily wages. Net mending and farming were the major alternative allocations involved by most of the respondents which is about 43 percent of the respondents from Gujarat and 48 percent from Maharashtra. It is also found out that monthly an average amount of Rs.2,280 earned as income ranging from Rs.9,80 to Rs.3,580 and about Rs.3,320 earned as income ranging from Rs 1100 to Rs 5540 by the respondents in Gujarat and Maharashtra respectively through various alternative avocations in which the migrants are engaged during closed season.

Achievements of Migration

According to the respondents, their socioeconomic status has much improved through migration, which can be ascertained with analyses done in the study. The major achievements through migration, according to the details collected are depicted in Figure 4. The study revealed that construction of house was the first major achievement in Gujarat (35 percent) whereas in Maharashtra (42 percent) it is the increased savings of the respondents. Improved Quality of life (12 percent in Gujarat and 13 per cent in Maharashtra, Marriage of respondents (Gujarat (10 percent), Maharashtra (9 percent), improved social status

(Gujarat (9 percent), Maharashtra (7 percent), Possessed Assets (Gujarat(6 percent), Maharashtra (5 percent), Debts repayment (Gujarat (3 percent), Maharashtra (2 percent) were the other major achievements of the respondents earmarked in this study. The results also highlights that despite all the constraints incurred, not only the socio economic status but also the migrants have more of positive impacts than pitfalls due to migration. These force them to further continue migration than finding job opportunities in their native places.

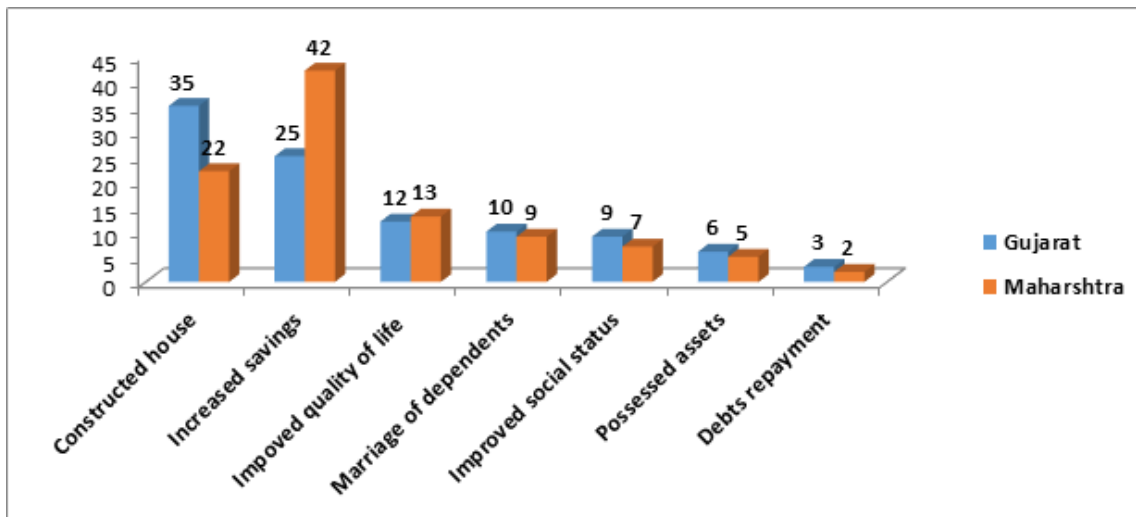


Fig 4. Major achievements through migration

Determinants for predicting willingness for continuing migration of fishermen

The determinants for predicting willingness for the long run migration of fishermen was estimated using binary logistic regression analysis with a view to measure the extent of each independent variables (age, family status, education levels, seasonality and disguised employment, income and savings, debt and financial commitments, persuasion, technical skills and knowledge and others) on the dependent variable (willingness for continuing migration) of the respondents. The fitting statistics of the model ($\chi^2 = 563.98$ with d. f. of 515 and Sig. = 0.0570), indicates that the model is valid and there is close association between the dependent and the independent variables. The data of the regression analysis is presented in Table 6.

Table 6. Determinants for predicting willingness for continuing migration of fishermen

Parameters	Estimate	Std. Error	P-value
Threshold [Willingness = 1] ^a	2.336	1.565	0.044*
Threshold [Willingness = 1] ^a	-1.569	1.696	0.352
Age	-0.028	0.033	0.50
Family Status	-0.532	0.008	0.12
Education Levels	0.550	0.131	0.005**
Seasonality and disguised employment	0.486	0.012	0.003**
Income and Savings	1.557	0.165	0.005**
Debt and financial commitments	0.786	0.361	0.007**
Persuasion	-0.077	0.265	0.125
Technical knowledge and skills	0.003	0.105	0.001*
Others	-2.361	0.015	0.001*

^aLink function : logit

* Significant difference from zero (p)

The results show that the salient factors significantly associated with the willingness for the long run migration of fishermen are their education levels, seasonality and disguised employment, income and savings, debt and financial commitments,

technical knowledge and skills and others where significance levels are less than 0.05 shows high degree of association Among the significant factors the low income, low education levels, debt and financial commitments and disguised employments are often the major reasons that drives the respondents for continuing their migration to a vast extent.

The study found that majority of the achievements, construction of own house, increased savings, improvement in the social status, possessed assets and the quality of education provide to their children were all the outcomes of these continued migration of the fishermen to other places. Regardless of their nativity, the workers are earning and saving much better through migration and are leading a peaceful life with minimal financial liabilities. Moreover, in order to ensure better livelihood with better opportunities proper policy measures should be adopted through enhancing job opportunities in their natives and thereby conserving financial consistency.

5 Conclusion

In a country with dearth of quality manpower for fisheries sector coupled with younger generation weaning away from fishing and other related activities, labour migration is a necessary phenomenon. Currently, the migrant workforce is contributing much for the fisheries sector and the economy of India and hence is found favorable for the economy as a whole. Still, over period of time it can create some social pressures. In the long run, there could arise the chances of wage losses and conflicts between the local and migrant labour. The readiness of migrants to work at lower wages might affect the standard of living of the fishermen over years. Consequently, there is an immediate need to ensure that fishermen especially the younger generations of the local fishers are to be motivated coupled with technology support so that the attrition can be kept under control. Hence, sufficient measures have to be taken for skill development and other measures in order to attract the younger generations to fisheries.

The study includes the migrated fishermen and found that majority of the fishers were migrated with their families. These migrants spend considerable period of the year in migrated state and engaged in fishing activities related to harvest and post-harvest operations and move to their native place during festivities and fishing holidays. The social status of the respondents increased after migration. Savings give strength to the households. The average annual savings are increased due to migration. Most of the migrants have brought their own property which increased their social status. The study identified low income and education levels as the main reasons for migration. The construction of own house, increased savings, improvement in the social status, possessed assets and the quality of education provide to their children were the major achievements of migration of fishermen whereas difficulty in the language and competition amongst the fellow migrants were the major constraints during migration. The study revealed that regardless of their nativity, the workers are earning and saving much better through migration and are leading a peaceful life with minimal financial liabilities. Moreover, the young generations has drive for seeking better opportunity for a better livelihood. Hence, it needs to provide proper policy measures to protect the rights of the migrants working in both the boat and the harbor. Proper training programs over the newly evolving fishing methods also have to be provided to build up the capacity of the workers. Even though the migrants are experiencing many problems, the benefit that they enjoy outweighs most of the costs.

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