Decision-making Behaviour of Traditional Fishermen in Relation to the Adoption of Improved Fishery Technologies

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This study investigates the decision-making behaviour of traditional fishermen in relation to the adoption of improved fishery technologies. Out of eight quantitative variables studied, education and number of crew members had significant and positive correlation with their overall decision making behaviour. In the multiple regression analysis, the R^2 value was 0.2718 and non-significant. Further, the inter-personal sources played a crucial role in the decision-making process of fishermen.

The stage concept in the decision-making and adoption processes had been probed by many social researchers (Rogers & Shoemaker, 1971; Eilon, 1979; Srinivasan & Chunawalla, 1983). Decision-making is ideally a rational process and in each stage of the decision-making process, decisions are made on the adoption or rejection of an innovation. The present study has been undertaken to investigate the decision-making behaviour of traditional fishermen in relation to the adoption of imporved fishery technologies, the correlates of their decision-making behaviour and the relative importance of the selected sources for innovation decision-making.

Materials and Methods

The data for this study were collected from 50 traditional fishermen randomly selected from six fishing villages of Ernakulam district in Kerala. The decision-making behaviour was measured by an index developed for this study. For calculating the index score, the responses of fishermen were obtained on each of the six selected technological practices and the scores were given for their positive or negative position on the five stages of decision-making process namely, desire to know about the technology, getting all relevent information, evaluation of the technology, decision to use the technology and final adoption of the technology.

The extent of adoption was calculated by the ratio of number of technologies adopted to the number of technologies recommended and expressed in percentages. In order to study the correlates of decision-making behaviour, eight socio-personal variables were selected and their measurement procedures were operationalised. To determine the relative importance of the five decision-making sources viz., fellow fishermen,government personnel,friends and neighbours,family members and independently,the paired comparison technique (Edwards,1969) was used. The reliability of the scale values was tested by computing the Absolute Average Discrepancy. Structured interview schedules were used for the data collection among the fishermen.

Results and Discussion

The overall decision-making behaviour scores obtained by the respondents ranged from 30 to 51. The mean decision-making behaviour score was 41.26 with a standard deviation of 3.95. Data in Table 1 revealed that 14.0 per cent of the respondents had higher scores whereas the majority (72.0 percent) had only medium scores. It indicated that these respondents did not have positive decisions on the various stages of decision-making and this might be due to their partial interest, unplanned adoption

Table 1. *Decision-making behaviour of traditional fishermen in relation to the adoption of fisheries technologies*

Decision-making behaviour	Extent of adoption Low (15.8)	Medium (15.8-38.1)	High (>38.1)	Total (n=50) No.	%	x^2
Low (<37.3)	1	6	0	7	14.0	
Medium (37.3-45.2)	2	33	1	36	72.0	3.92^{NS}
High (>45.2)	0	6	1	7	14.0	
Decision-making behaviour:	$\bar{X}$ = 41.26 SD = 3.95		Extent of adoption:	$\bar{X}$ SD	= 26.99 = 11.11	

Table 2. *Means, Standard deviations and F or t values of decision making behaviour indices of traditional fishermen classified in terms of five independent variables*

Variables		n	Decision-making behaviour index Mean	S.D.	F/t
Types of fishing					
a.	Seine net fishing	42	41.40	3.64	
b.	Cast net fishing	21	42.09	3.50	$F=0.7455^{NS}$
c.	Gill net fishing	12	40.00	5.46	
d.	Others	3	41.33	2.08	
Ownership pattern					
a.	Owners	6	40.50	4.85	
b.	Share holders	27	43.07	2.73	F=8.7822**
c.	Fishing labourers	17	38.65	3.92	
Sources of information					
a.	Institutional	27	42.52	3.85	
b.	Non-institutional	50	41.26	3.95	$F=1.4205^{NS}$
c.	Mass media	9	43.00	2.69	
Subsidiary Occupation					
a.	With subsidiary occupation	35	41.43	4.00	$t=0.4570^{NS}$
b.	Without subsidiary occupation	15	40.87	3.94	
Organisational membership					
a.	Members	44	41.59	3.85	$t=1.6299^{NS}$
b.	Non members	6	38.83	4.17	

**Significant at 0.01 level of probability

goals, and other obstacles in adoption such as higher investment, lack of appropriate technologies and situational constraints.

As is evident from Table 1, the extent of adoption mean score was low (26.99 %) and 90 percent of the respondents were found to be in the medium category of adoption. Further, the non-significant chi-square value ($x^2 = 3.92$) indicated that the decision-making behaviour had no association with the extent of adoption. It revealed that their decisions on the various stages of decision-making process had no association with their final adoption of the technologies studied and suggested that the technological adoption might have been influenced by several other factors related to clientele system, environment, technology and communication.

Five characteristics were measured qualitatively and their mean scores are given in Table 2. The non-significant 'F' and 't' values showed that the respondents did not differ significantly in their decision-making behaviour among the different categories of these characteristics except the ownership pattern. The variable, ownership pattern, had shown significant relationship with the decision-making behaviour. Here, the shareholders were found to have more positive decisions and higher scores than the fishing labourers, possibly,due to the economic constraints of fishing labourers in the adoption of technologies.

The correlation coefficients between the decision-making behaviour scores of selected technologies and the eight socio-personal variables measured quantitatively are given in Table 3. It is evident from Table 3 that the economic variables viz, annual income and number of family members had significant and positive association with the decision-making behaviour in the adoption of improved methods of fishing craft maintenance. Better technological attributes,rather than the variables studied might have influenced the decision-making behaviour in the adoption of synthetic fishing net materials.

As regards the production of fishery products, the variable,number of family

Table 3. *Correlation analyses between the socio-personal variables of traditional fishermen and their decision-making behaviour in relation to the adoption of selected fishery technologies*

Socio-personal variables	Correlation coefficients for the selected practices (n=50)					
	I	II	III	IV	V	VI
Age	-0.1777	0.1629	0.2633	0.0722	0.0294	-0.1011
Education	0.1724	0.0684	-0.0493	0.1247	0.1769	0.3602*
Experience	-0.1995	0.1297	0.3003*	0.1429	0.0541	-0.0663
Number of fishing days	0.1646	-0.1291	0.0957	-0.0356	0.0758	0.0814
Number of Crew members	0.2045	-0.0863	0.0669	0.1991	0.1405	0.4051**
Number of family members	0.3142*	-0.0655	-0.0847	0.3116*	0.1305	0.0832
Number of working members in the family	0.2191	0.0907	-0.0489	- 0.0124	0	0.0143
Total annual income	0.2896*	0.0806	0.0285	0.0775	0.0631	0.0919

*Significant at 0.05 level; **Significant at 0.01 level; I = Use of improved methods of fishing craft maintenance; II = Use of synthetic fishing net materials; III = Use of ice & hygienic handling; IV = Preparation of fishery products; V = Use of improved fish curing methods; VI = Use of inboard/outboard engines

members, was found to have positive and significant association and it might be due to the possibility of producing the fishery products as a small-scale enterprise employing the fisherfolk. Due to the situational constraints, the improved fish curing practices had not been adopted by any of the respondents and probably, as a result of this, the variables studied had not given any association with the decision-making related to its adoption. Education and number of crew members were the other variables which had significant and positive association with the decision-making behaviour related to the adoption of engines (Table 3) and also with their overall decision-making behaviour (Table 4).

The partial regression coefficients of the eight variables with their decision-making behaviour scores are given in Table 4. The R^2 value (0.2718) revealed that the eight variables taken together had accounted for 27.18 per cent of the variation in the decision-making behaviour of fishermen and this influence too was statistically non-significant. Further, it is evident from Table 4 that none of the selected variables had significant influence over the variation in their decision-making behaviour. These results suggest that some more key variables have to be included in the future studies alongwith a good number of adopter respondents.

The scale values of sources derived from the paired comparison technique (Edwards, 1969) are given in Table 5. Judged in terms of the relative importance, 'fellow fishermen' was ranked first, followed by government personnel, friends and neighbours, family members and independently.

Tables 4. *Multiple regression analysis of the socio-personal characteristics of traditional fishermen with their decision- making behaviour scores*

(n:50)

Var. Code	Socio-personal variables	Correlation coefficients	Partial regression coefficients	't' values
X_1	Age	0.0101	-0.1235	0.7143
X_2	Education	0.3027*	1.6721	1.8421
X_3	Experience	0.0177	0.1728	1.0231
X_4	Number of fishing days	0.1023	0.0065	0.5603
X_5	Number of crew members	0.3359*	0.0609	1.8511
X_6	Number of family members	0.2240	0.2345	0.9587
X_7	Number of working members	0.1003	-0.7859	1.1257
X_8	Total annual income	0.2092	0.0004	1.3333

*Significant at 0.05 level; $R^2 = 0.2718$, $F=1\text{-}9131^{NS}$

Table 5. *Scale values of the selected sources for innovation decision-making*

(n=50)

Sources	Scale values	Ranks
Fellow Fishermen	0.4342	I
Government Personnel	0.3152	II
Friends & Neighbours	0.2900	III
Family Members	0.2606	IV
Independently	0.0000	V

Absolute Average Discrepancy (AD) = 0.0514

These results reveal that the interpersonal sources are of prime importance in the decision-making process of fishermen.

Thus, it is evident from this study that the decision-making behaviour and technological adoption are influenced by several factors other than the socio-personal factors of fishermen. As a part of package measures to facilitate the adoption of technologies, more organised efforts have to be undertaken so as to increase the availability of necessary inputs and suporting services. As the interpersonal sources are more important in the various stages of decision-making, training of local leaders and key communicators may be attempted.

References

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