Adoption Behaviour and Impact of Technology Transfer among Fish Farmers

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The extent of adoption of eleven improved fish farming practices has been studied among 80 fish farmers. The multiple regression analysis revealed a R^2 value of 0.5718. Among the characteristics of fish farmers, distance of fish farm from home, knowledge about improved fish farming and fish yield per hectare had significant positive influence towards their adoption behaviour. The mean impact score of fish farmers was 72.91.

The adoption of improved fish farming practices has assumed greater significance in the context of wider yield gaps in fish farms. Studies by NCAER (1981) and Vasantha Kumar (1986) reveal that the average fish production in Tamilnadu has been increased to about 1000 kg/hectare in the village fish farms by adopting the improved fish culture techniques. Still, it could be seen that a wide gap existed between the yield recorded in the demonstration farms (3000 kg/hectare) and that of the fish farmers. In this context, as part of a larger study, an attempt has been made to study the extent of adoption of improved fish farming practices among the fish farmers and the influence of various characteristics towards their adoption behaviour and impact perception.

Table 1. *Extent of adoption of improved fish farming practices among fish farmers*

Improved practices	Extent of adoption					
	Non adoption		Partial adoption		Full adoption	
	No.	%	No.	%	No.	%
Testing of soil and water	52	65.00	—	—	28	35.00
Control of aquatic weeds	—	—	79	98.75	1	1.25
Control of weed fishes/predators	19	23.75	6	7.50	55	68.75
Stocking of recommended species of fish	—	—	—	—	80	100.00
Stocking density of fingerlings	—	—	23	28.75	57	71.25
Manuring of tanks with organic manures	1	1.25	66	82.50	13	16.25
Application of urea	34	42.50	37	46.25	9	11.25
Application of super phosphate	36	45.00	41	51.25	3	3.75
Application of muriate of potash	57	71.25	12	15.00	11	13.75
Supplementary feeding with rice bran and oil cake	9	11.25	67	83.75	4	5.00
Periodical netting to check the growth rate and health of fishes	—	—	23	28.75	57	71.25

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Materials and Methods

The study was conducted among the 80 fish farmers selected randomly from the six fish farmers development agencies of Tamil-Nadu. The adoption behaviour of fish farmers has been measured by using an adoption quotient formula developed for the study by taking into consideration the weightages, magnitude of adoption and potentiality for adoption of the 11 improved fish farming practices. The impact of technology transfer was measured by using an impact index developed for this study. In order to determine the influence of various independent variables of fish farmers towards their adoption behaviour and impact perception, 21 variables were selected and their measurement procedures were determined. Data were collected from the selected fish farmers by using interview schedules.

Results and Discussion

The adoption quotient scores obtained by the fish farmers ranged from 34.54 to 84.09. The mean adoption quotient score of

Table 2. *Multiple regression analysis of characteristics of fish farmers with their adoption behaviour* (n = 80)

Var. No.	Independent variables	Partial regression coefficient	Std. partial regression coefficient	SE of partial regression coefficient	't' value
X_1	Age	.0163	.0128	.1459	.1121
X_2	Educational status	–.2100	–.0629	.3721	–.5644
X_3	Occupational status	1.0506	.0526	2.1478	.4891
X_4	Area of the fish farm possessed	.0073	.0029	.3237	.0226
X_5	Ownership pattern	.2299	.0065	3.8602	.0595
X_6	Duration of water availability	–1.3612	–.2416	.6261	–2.1740*
X_7	Main source of water availability	.8541	.0693	1.2725	.6711
X_8	Average depth of water	–.7283	–.1291	.5707	–1.2760
X_9	Distance of fish farm from home	1.8365	.2072	.8875	2.0692*
X_{10}	Fish farming experience	.0072	.0038	.2052	.0352
X_{11}	Size of family	.1111	.0316	.3958	.2808
X_{12}	Annual income	–.0001	–.1482	.0001	–.9583
X_{13}	Social participation	.0739	.0141	.7265	.1018
X_{14}	Contact with extension agencies	.8479	.1372	.8142	1.0413
X_{15}	Utilization of personal-localite sources	–.1507	–.0278	.6099	–.2472
X_{16}	Utilization of mass media	.6993	.1130	.7431	.9411
X_{17}	Profitability	.7764	.0469	1.9338	.4015
X_{18}	Marketing behaviour	–.5058	–.0791	.6404	–.7897
X_{19}	Attitude towards improved fish farming	.0185	.0112	.1730	.1073
X_{20}	Knowledge about improved fish farming	.3108	.3078	.1200	2.5897**
X_{21}	Fish yield obtained per hectare	.0116	.4882	.0031	3.7036**

$R^2 = 0.5718$; $F = 3.6891$**

** Significant at .01 level of probability

* Significant at 0.05 level of probability

all the fish farmers was 56.31 (S.D: =10.04). The extent of adoption of individual fish farming practices among the fish farmers is given in Table 1.

The results revealed that the fish farmers had not adopted the practices such as testing of soil and water (65%), control of weed fishes/predators (23.75%), and application of urea (42.5%), super phosphate (45%) and muriate of potash (71.25%). It was also seen that there were quite high partial adoption among the fish farmers with respect to the improved practices such as control of aquatic weeds (98.75%), application of manures and fertilizers (82.5%) and supplementary feeds (83.75%). The low level of adoption of certain practices might be probably due to the lack of facilities for testing of soil and water, lack of knowledge about

Table 3. *Multiple regression analysis of the characteristics of fish farmers with their impact perception*

Var. No.	Independent variables	Partial regression co-efficient	Std. partial regression co-efficient	SE of partial regression co-efficient	't' value
X_1	Age	-.0415	-.0223	.2105	-.1973
X_2	Educational status	-1.8429	-.3781	.5377	-3.4271**
X_3	Occupational status	.0073	.0002	3.1051	.0023
X_4	Area of fish farm possessed	.3493	.0971	.4679	.7465
X_5	Ownership pattern	-3.6277	-.0703	5.5680	-.6515
X_6	Duration of water availability	.6105	.0742	.9390	.6502
X_7	Main source of water availability	1.2172	.0676	1.8447	.6598
X_8	Average depth of water	.0383	.0046	.8346	.0459
X_9	Distance of fish farm from home	-.4171	-.0320	1.3505	-.3088
X_{10}	Fish farming experience	.0681	.0248	.2961	.2298
X_{11}	Size of family	-.7276	-.1419	.5708	-1.2745
X_{12}	Annual income	.0005	.4043	.0002	2.6198**
X_{13}	Social participation	-1.2984	-.1695	1.0459	-1.2414
X_{14}	Contact with extension agencies	1.1018	.1221	1.1865	.9286
X_{15}	Utilization of personal-localite sources	-1.0204	-.1288	.8806	-1.1587
X_{16}	Utilization of mass media	2.1434	.2371	1.0838	1.9776*
X_{17}	Profitability	5.7638	.2387	2.8024	2.0567*
X_{18}	Marketing behaviour	1.5152	.1624	.9298	1.6295
X_{19}	Attitude towards improved fish farming	.0123	.0051	.2497	.0496
X_{20}	Knowledge about improved fish farming	-.2294	-.1556	.1828	-1.2553
X_{21}	Adoption behaviour	.0764	.0523	.1901	.4019
X_{22}	Fish yield per hectare	.0084	.2425	.0050	1.6764

R^2 = 0.5893; F = 3.7179**

** Significant at 0.01 level of probability

* Significant at 0.05 level of probability

recommended practices and unwillingness to spend more on fertilizers, especially when there was inadequate water supply. The studies by Sen & Das (1986) also reported significant low and medium levels of adoption by the fish farmers of Tamil Nadu state.

In order to determine the influence of various characteristics of fish farmers towards their adoption behaviour, multiple regression analysis has been done and the results are presented in Table 2.

The R^2 value (0.5718) revealed that 21 characteristics taken together accounted for 57.18 per cent of the variation in the adoption behaviour of fish farmers. It is seen that the standardised partial regression co-efficients of three characteristics, namely, distance of fish farm from home, knowledge about improved fish farming and fish yield obtained per hectare were positively and significantly influencing the variation in the adoption behaviour of fish farmers. Further, the variable, duration of water availability was found to have significant negative influence towards the variation in their adoption behaviour.

The results revealed that fish farmers with less water availability were high adopters than those who had more water availability. Here, similar to the influence of higher proximity of fish farm on the higher adoption behaviour, the risks involved in fish farming for getting equally good yield with less water availability might have influenced them to adopt more of the improved practices. Hence, in the extension work of the fisheries extension personnel, these variables, namely, distance of fish farm from home, knowledge about improved fish farming, fish yield obtained and duration of water availability may be given importance so as to improve the extent of adoption among fish farmers.

The impact scores of the fish farmers ranged from 40.00 to 93.33 and the mean score was found to be 72.91 (S.D. = 14.67). The higher impact perception among the majority of the fish farmers indicated the overall benefits that could be obtained by utilizing the inland water resources for the fish farming enterprise in spite of few operational constraints. The results of multiple regression analysis on the characteristics of fish farmers and their impact perception are given in Table 3. The R^2 value indicated that the 22 variables taken together had explained 58.93 per cent of the variation in the impact perception of fish farmers. It is seen that the standardised partial regression co-effcients of three characteristics of fish farmers, namely, annual income, profitability perception and utilization of mass media were significantly and positively influencing the variation in their impact perception. The variable, educational status was found to have significant negative influence. Thus, these four variables were found to be the key variables in influencing the impact perception of fish farmers.

The study suggests that the average fish production per hectare could be increased tremendously by improving the adoption behaviour of fish farmers through the accelerated extension efforts of fisheries extension personnel. The study also reveals that the Fish Farmers Development Agencies had made a significant impact among the fish farmers through their technology transfer efforts.

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