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Nature of Variations in Managing Information by Fish Farmers: A Case Study from West Tripura District, India

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ABSTRACT

The present study was undertaken to analyze the information management behaviour of fish farmers in West Tripura, Tripura. An ex-post-facto research design was followed for the study and West Tripura district was purposively selected based on the prevalence of fish farmers in the district. A sample of 80 fish farmers were selected randomly from the eight selected villages from four blocks of the district. A structured interview schedule was used to collect the information through personal interview. The results showed that majority of the respondents belonged to medium category (62.50%) of information management behaviour, followed by low (21.25%) and high (16.25%) categories. A positive and significant relationship was observed between information management behaviour of fish farmers with independent variables i.e., education, annual income, experience in fisheries, extension contact, achievement motivation, economic motivation, information source exposure, credibility of information source and training exposure.

Highlights

◉ Majority of the fish farmers had medium level (62.50%) of information management behaviour followed by 21.25 percent and 16.25 percent of the respondents who had low and high level of information management behaviour.

◉ 70 per cent of the respondents sought information from individual contact through friends and neighbours; Krishi Vigyan Kendras (KVK); College of Fisheries (COF), CAU (I); Indian Council of Agricultural Research (ICAR)and from FEOs.

◉ 98.75 per cent of the respondents had the habit of evaluating information through discussion with neighbours/friends and through the acceptability of the information based on their past experience.

◉ Education, annual income, experience, extension contact, achievement motivation, economic motivation, information source exposure, credibility of information source and training exposure had positive and significant relationship with Information management behaviour.

Keywords: Information Management Behaviour, Fish Farmers, West Tripura

Tripura is a north eastern hilly state of India bordered by Assam and Mizoram to the east and Bangladesh to the north, south, and west. The state comprises of eight districts viz., Dhalai, Khowai, Shipahijala, Gomati, Unakoti, North Tripura, South Tripura and West Tripura. The state has a total water area of 3, 32,17.46 ha of which West Tripura contributes 3,400.14 ha. In the year 2013-14, Tripura produced about 6, 21,259.10 MT of fish whereas West Tripura's production was 6,390.99 MT which

was about 10.43% of the total production in the state (Anonymous 2014). Fishery plays a very important role in the state not only for food but also for improvement of the socio-economic condition of the rural people who are living below the poverty line. Fish is one of the most important daily diets of 95 per cent of its population with its annual per capita consumption being the highest amongst the inland states of the country (Singh *et al*. 2016). Tripura needs judicious exploitation of its resources to mitigate the

problem of demand and supply of quality food particularly the availability of adequate fish. The fisheries in Tripura is facilitated by a network of institutes comprising of Department of Fisheries, Government of Tripura and its units at different districts of the state; Indian Council of Agricultural Research Complex for NEH Region, Tripura Centre; Krishi Vigyan Kendras (KVKs); College of Fisheries, CAU (I); Fish Farmers Development Agencies (FFDAs); Self-Help Groups (SHGs); Non Governmental Organizations (NGOs); fish farmers and entrepreneurs. Scientists from different institutes have made efforts for the development of new farm innovations and technologies. However, there is a wide gap between what could be achieved and what is being achieved by these fish farmers. Meena *et al.* (2014) in her study also found that knowledge, education, mass media exposure and land holding were very imperative variables for minimizing adoption gap. Thus, the technology dissemination system must be geared up to organize campaigns, field days, demonstrations, exhibitions, *kisan gosthi*, *kisan mela*, discussions with farmers, etc. so that farmers could acquire latest knowledge, that can lead to reduction in adoption gap in relation to feeding practices of dairy animals. There has been information explosion around the globe and our fish farmers have to keep pace with the latest development which creates a situation wherein fish farmers are unable to understand and cope up with the vast amount of information available. There is a huge gap between those who use ideas and those who produce them; a good technique of information management will certainly mitigate this problem. The information management behaviour has been conceptualized as a composite measure of information seeking, evaluation and preservation behaviour of the individual fish farmer. Thus, present study was conducted to study the information management behaviour of the fish farmers in West Tripura.

MATERIALS AND METHODS

The study was conducted in West Tripura (23.8997° N, 91.4048° E) district of Tripura in the year 2017-2018. The district stood highest in the numbe r of fish farmers with vast fishery resources (Debnath *et al.* 2013). Out of the 8 blocks in the district, four blocks were selected with the help of purposive

sampling method viz., Mohanpur (23.9654° N, 91.3710° E), Mandai (23.8603° N, 91.4797° E), Jirania (23.8132° N, 91.4362° E) and Lefunga (23.9163° N, 91.3722° E) and two villages were purposively selected from each block based on the population of fish farmers. From each village, 10 fish farmers were randomly selected for the sampling. Thus, a total of 80 fish farmers were selected from the villages for the study. In the context of the present paper, the information management behaviour (IMB) was operationally defined as the activities performed by an individual fish farmer for seeking, evaluation and preservation of (scientific) information with regard to the improved fish farming practices. There are three dimensions of information management behaviour (IMB) which are stated as below.

Information seeking behaviour: The Information seeking behaviour refers to the activities performed by an individual fish farmer in relation to acquisition of scientific information with regard to the improved fish farming practices from various information sources. The procedure suggested by Saha and Devi (2014) with little modification was followed for measuring information seeking behaviour of the respondents. Based on the available literature and discussion with extension functionaries/experts, all possible information sources were exhaustively listed under different headings viz., individual contact, group contact and mass contact. The frequency of contact of different information sources was measured on a four point continuum: 'Regularly', 'Occasionally', 'Rarely' and 'Not at all' with a scoring of 4, 3, 2 and 1 respectively.

Information evaluation behaviour: After having received information from various sources, the fish farmers may evaluate their worthiness based on the past experience as well as the applicability and appropriateness in the existing situation. Information evaluation behaviour was measured in terms of 8 different acts which were likely to be performed by the individual for the evaluation of the information and consequent acceptance of information. Each act performed by an individual was assigned a numerical score. Thus, the theoretical information evaluation score of an individual ranged between 0 to 8.

Information storage/preservation behaviour: After evaluation of the scientific farm information by the fish farmers, they may storage or preserve

them for future use. The information preservation behaviour of the farmers has been operationally defined as the activities performed by an individual fish farmer for storage/preservation of the received practices of fish farming for future reference. Thus, the theoretical information preservation score of an individual ranged between 0 to 6. The scores of all the items were summed up to obtain the information preservation behaviour of an individual respondent. This was quantified by using the scale used by Saha and Devi (2014). The information management behaviour of the respondent was the sum of the entire three dimensions viz., information seeking, evaluation and preservation behaviour as given below:

Information Management Behaviour = Information Seeking Behaviour + Information Evaluation Behaviour + Information Preservation Behaviour

Analytical Tools

I. Frequency and percentage: While the frequency (or absolute frequency) of an event is the number of times the event occurred in an experiment or study, percentage is a fraction expressed with 100 as its denominator. It was used to any set of data for comparison.

II. Arithmetic mean: It is defined as the sum of all values of the observation divided by the total number of observations. Symbolically, it is represented as,

$$\bar{X} = \frac{\Sigma X}{n}$$

Where,

X = Mean of scores;

ΣX = Sum of individual scores;

n = Number of observations.

III. Standard deviation: Standard deviation is the square root of the arithmetic mean of the square of all deviations, the deviations being measured from the arithmetic mean of the distribution. It is commonly denoted by the symbol σ (sigma). It is less affected by sampling errors and is a more stable measure of dispersion. The standard deviation of the data grouped in the form of a frequency distribution is computed by the formula.

$$\sigma = \sqrt{\frac{fd^2}{n}}$$

Where,

σ = Standard deviation;

f = Frequency of class;

d = Deviation of mid-value of the class from population mean;

n = Total number of observations.

IV. Ranking: Ranking, as an expression of respondents' assigned priority about their feeling against a set of structured questions/statements, was utilized in the present study for classifying the responses in order of perceived importance and also for preparing an order of the observed data emanated from the study.

V. Spearman's rank correlation: The rank correlation coefficient is the measure of correlation that exists between the two sets of ranks. In other words, it is a measure of association that is based on the ranks of the observations and not on the numerical values of the data. For calculating rank correlation coefficient, first of all the actual observation needs be replaced by their ranks, giving rank 1 to the highest value, rank 2 to the next highest value and following this very order ranks are assigned for all values. If 2 or more values happen to equal, then the average of the ranks which should have been assigned to such values had they been all different, is taken and the same rank (equal to the said average) is given to concerning values. The second step is to record the difference between ranks (or 'd') for each pair of observations, then square these difference to obtain a total of such differences which can symbolically be stated as Σdi^2. Spearman's rank correlation coefficient, r was worked out as under:

$$\text{Spearman's 'r'} = 1 - \left\{ \frac{6\Sigma di^2}{n(n^2-1)} \right\}$$

Where,

n = Number of paired observation;

d = difference between corresponding ranks.

The value of spearman's rank correlation coefficient will always vary range +-1, +1, indicating a perfect positive correlation and -1 indicating perfect negative correlation between two variables.

In case the sample consists of more than 30 items, then the sampling distribution of 'r' is approximately normal with a mean of zero and a standard deviation of $\frac{1}{\sqrt{n-1}}$ and thus, the standard error of r is:

$$\sigma_r = \frac{1}{\sqrt{n-1}}$$

RESULTS AND DISCUSSION

Distribution of respondents according to their information management behaviour depicted in Table 1 revealed that 62.50 per cent of the respondents had medium level of information management behaviour, followed by 21.25 percent and 16.25 percent of the respondents who had low and high level of information management behaviour respectively.

Table 1: Distribution of the respondents as per information management behaviour category

Sl. No.	Information management behaviour	Number	%
1	Low	17	21.25
2	Medium	50	62.50
3	High	13	16.25
Total		80	100

Information seeking behaviour of respondents: It can be observed from Table 2 that majority of respondents (55.00 %) belonged to the medium level of information seeking behaviour followed by 27.50 per cent of the respondents who belonged to low information seeking behaviour category whereas only 17.50 percent of the respondents belonged to high Information seeking behaviour category.

Table 2: Distribution of respondents based on information seeking behaviour

Sl. No.	Information seeking behaviour	Number	%
1	Low	22	27.50
2	Medium	44	55.00
3	High	14	17.50
	Total	80	100

Information seeking pattern: The respondents were distributed as per information seeking behavioural category as depicted in Fig. 1. Generally, the information is communicated through personal contact, group contact and mass media method. The figure reflects that 70 per cent of the respondents had middle level of information seeking behaviour from individual contact through friends and neighbours; Krishi Vigyan Kendras (KVK); College of Fisheries (COF), CAU (I); Indian Council of Agricultural Research (ICAR), Tripura Centre and with FEOs.
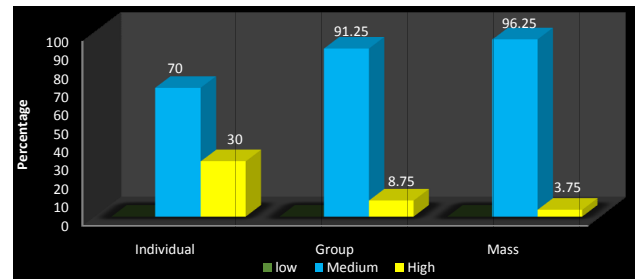

Fig. 1: Respondents as per information seeking behavioural category

Among group contact method, majority (91.25%) of the respondents had middle level of information seeking behaviour through group meeting, demonstration and training programme. Information seeking behaviour among mass contact methodis also dominant in middle category through listening to agricultural/fisheries programme in radio, watching agricultural/fisheries programme in television, reading agricultural/fisheries magazine/leaflet/booklet and participating in Agri fair/exhibitions. Through group discussion, meeting and training programmes, fish farmers exchanged and shared information concerning to fish farming activities. Hence, they frequently sought information from the above sources which may be due to high credibility attached to these sources.

Further, it can be clearly observed from Table 3 that the respondents regularly sought farm information from different individual contact sources like friends and neighbors (73.75%), KVK/COF/Research Stations (50%) and FEO (48.75%). Participation in demonstration and training programmes were the most occasionally used information sources among group contact method. Majority (53.75%) of the respondents regularly depended on group meeting for seeking farm information. In case of mass contact method, most of the respondents (83.75%) sought information in a regularly basis by listening to agricultural/fisheries programme in radio. A high

Table 3: Information seeking behaviour of the respondents

Information Sources	Frequency of Use							
	Regularly		Occasionally		Rarely		Never	
	No	%	No	%	No	%	No	%
Individual Contact								
KVK/ COF/Research Stations	40	50.00	35	43.75	5	6.25	—	—
FEO	39	48.75	38	47.50	2	2.50	1	1.25
Friends and Neighbours	59	73.75	21	26.25	—	—	—	—
Group contact								
Participation in group meeting	43	53.75	32	40.00	5	6.25	—	—
Participation in demonstration	27	33.75	46	57.50	7	8.75	—	—
Participation in training programme	27	33.75	46	57.50	7	8.75	—	—
Mass Contact								
Listening to Agricultural/Fisheries programme in Radio	67	83.75	12	15.00	—	—	1	1.25
Watching Agricultural/Fisheries programme in Television	2	2.50	67	83.75	10	12.50	1	1.25
Reading Agricultural/Fisheries magazine/leaflet/booklet	7	8.75	58	72.50	14	17.50	1	1.25
Participation in Agri fair/ exhibitions.	32	40.00	46	57.50	2	2.50	—	—

proportion (83.75%) of the fish farmers occasionally sought information from agricultural/fisheries programme in television followed by agricultural/fisheries magazine/leaflet/booklet (72.50%).

Information evaluation behaviour: The information evaluation behaviour of the fish farmers presented in Table. 4 revealed that maximum (78.75%) of the respondents had medium level of information evaluation behaviour whereas only 15 per cent and 6.25 per cent of the respondents had high and low level of information evaluation behaviour respectively.

Table 4: Distribution of respondents based on information evaluation behaviour

Information evaluation behaviour	Number	%
Low	5	6.25
Medium	63	78.75
High	12	15.00
Total	80	100.00

The findings in Table 5 reveal that 98.75 per cent of the respondents had the habit of evaluating information through discussion with neighbours/friends and through the acceptability of the information based on their past experience. The possible reasons for the respondents to discuss with neighbor and friends may be due to the

high credibility and accessibility attached to these sources. A major proportion (93.75%) of the respondents depended on discussed with family members for evaluating the information. Eighty five per cent of the respondents considered the economic feasibility of information or technology in evaluating the information which may be due to their poor economic condition. 33.75 per cent of the respondents were found to evaluate the effectiveness of information through discussion with progressive fish farmers.

Table 5: Distribution of respondents according to various methods/ acts used for information evaluation (N=80)

Act of information evaluation behaviour	%	Rank
Discussion with neighbours and friends	98.75	I
Acceptance based on past experience	98.75	II
Discussion with family members	93.75	III
Considering its economic feasibility	85.00	IV
Discussion with progressive fish farmers	33.75	V
Discussion with extension personnel	22.50	VI
Considering with small scale trial	8.75	VII
Accepted as such	0.00	--

Other sources for evaluation of information by sizeable proportion of respondents were through discussion with extension personnel (22.50%) and through small scale trial in their

farms (8.75%). Discussion with extension personnel and conducting farm trail in small scale require continuous supervision and adequate facilities due to which relatively less number of the respondents used these sources for evaluating the effectiveness of any information.

Information storage behaviour: After the information is sought and evaluated, one is likely to preserve it for future use or reference. An attempt was made to find out the various methods of information storage/ preservation used by the fish farmers. Data collected are presented in Table 6. It is evident from the table that 100 per cent the respondents retained farm information through memorization followed by 85 per cent of the respondents who shared the information orally with family members. The respondents also retained the information by preserving newspaper cuttings (78.75%); preserving the leaflets, bulletins, booklets, etc (65%) and maintaining a diary/notes of farm information (36.25%). None of the respondents were found to preserve the information in CD, floppy or any other digital medium. The reason may be due to their ignorance and less exposure to different ICT tools for the preservation of these information. Hence, it can be inferred from the study that the majority of the fish farmers did not have systematic techniques of information storage which could end up in distortion and loss of the information sought by them.

Table 6: Distribution of respondents according to various methods/ acts for preservation/ storage of information. (N =80)

Act of information preservation/storage behaviour	%	Rank
Memorizing	100	I
Telling family members to remember	85.00	II
Preserve the news paper cutting	78.75	III
Preserve leaflets, bulletins, booklets, etc.	65.00	IV
Taking down in a note book/ diary	36.25	V
Preserve the information in CD/floppy/ hard disc	—	—

Relationship among socio-personal, socio-economic and communicational characteristics of the fish farmers and their information management behaviour:

A close observation of results from Table 7 reveals that a positive and significant relationship was

found between information management behaviour of fish farmers with their independent variables i.e., education, annual income, experience in fisheries, extension contact, achievement motivation, economic motivation, information source exposure, credibility of information source and training exposure. The finding revealed that education of the fish farmers had significant relationship with the information management behaviour since the fish farmers who were educated had an opportunity to access to the different print media and were likely to be more receptive to new ideas. Moreover, they are more likely to have frequent contacts with extension personnel thereby acquiring more farm information. The experience in fisheries activities by the fish farmers was found to be positive and highly significant with the information management behaviour which may be due to their vast exposure to different fisheries activities thereby making them easier to seek, evaluate and preserve the different farm information. Extension contact, information source exposure and credibility of information source and training exposure also showed positive and highly significant relationship with the information management behaviour. Frequent extension contact by the respondents may provide them more exposure to different farm information sources and depending on the worthiness of these sources, fish famers' perceived credibility may also differs.

Table 7: Relationship between information management behaviour with independent variables

Independent Variables	'R' value	Dependent variable
Age	0.074	
Education	0.254*	
Annual income	0.529**	
Experience in fisheries	0.290**	
Social participation	0.207	
Cosmopoliteness	0.025	Information management behaviour
Extension contact	0.533**	
Achievement motivation	0.315**	
Economic motivation	0.314**	
Information source exposure	0.776**	
Credibility of information source	0.634**	
Training exposure	0.639**	

**Significant at 1 % level / *Significant at 5 % level.

CONCLUSION

Majority of the fish farmers in the study area exchanged and shared information concerning fish farming activities through different localite sources like friends and neighbours. The reason may be due to the high credibility attached to these sources. Thus, there is a need of employing communication strategies which facilitate active participation of the fish farmers. The access of fish farmers to the most competent source of information such as contact with extension personnel, faculty and scientists was found to be relatively low. This could be enhanced by developing a regular programme of interaction between the fish farmers and the aforesaid sources of information, so that the fish farmers may be kept up to date with the latest innovations and developments in the field of fisheries. Fish Famers in the study area mostly relied on memorization for storing the needed information which is not desirable to store the technical information for longer time. This implies that the fish farmers might not have an access to the relevant literatures which are available with the extension personnel. Printed words being more authentic and credible, can be preserved safely for longer period of time. Efforts should be made by the extension functionaries to prepare and extend the required information on fish farming in a very simple and informative way written in local languages to be easily understood by the fish farmers. Farm publications should be prepared based on the needs and problems of the fish farmers and these information should be shared more widely and frequently.

REFERENCES

Anonymous 2014. Fisheries Statistics. 2013-14. Department of Fisheries, Government of Tripura. http://fisheries.tripura.gov.in/statistics.html. Accessed on 10 June, 2018.

Debnath, B., Biradar, R.S., Anathan. P.S. and Pandey, S.K. 2013. Estimation of demand for different fish groups In Tripura. *Agricultural Economics Research Review,* **25**(2): 255-266.

Meena, B.S., Chauhan, J., Shanthy, T.R. and Singh, B.P. 2014. Adoption Gap and its Path Analysis in Feeding Practices of Dairy Animals. *Indian Res. J. Ext. Edu.,* **14**(2): 87-90.

Saha, B. and Devi, R. 2014. Information management behaviour of traditional fish farmers in Assam, *Indian Res. J. Ext. Edu,* **14**(1): 11-16.

Singh, Y.J., Ojha, S.N., Pandey, D.K., Upadhyay, A.D., Ananthan, P.S., Bharati, H. and Mehta, R.K. 2016. Extent of linkage among scientists, extension personnel and fish farmers in Tripura. *India. Indian Res. J. Ext. Edu,* **16**(2): 55-59.