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Perceived Knowledge and Attitude of Fisheries Extension Professionals on Usage of ICTs in Tripura

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ABSTRACT

Applications of Information and Communication Technologies (ICTs) offer excellent possibilities for strengthening transfer of technology between research and extension systems and onward transmission to the end-users. The study aims at studying the perceived knowledge and attitude levels of fisheries extension professionals of Tripura on the usage of ICTs concerning their socio-personal characteristics and explores the associated challenges. Data were gathered by pre-tested semi-structured interview schedule from completely enumerated 81 extension professionals of the department of fisheries, posted in the three purposively selected districts of Tripura during April- August 2021. The majority of respondents belonged to the middle age group (61.73%) and had medium level knowledge (78.57%) and attitude (85.18%) towards the use of ICT tools. Age and designation were negatively correlated, whereas education was positively and significantly correlated with knowledge and attitude level of fisheries extension professionals on usage of ICT tools separately. The Directorate of Fisheries of the state should develop meticulous strategies for each level of fisheries extension professionals to address the main challenges related to the use of ICT tools revealed in the study, which may bring a paradigm shift in fisheries farm information communication.

INTRODUCTION

Fisheries and aquaculture play a vital role in providing food and the cheapest source of protein for the growing population (Majagi et al., 2020; Sajeev et al., 2021). The fishery is one of the important sources of livelihood for more than 1,92,249 people of Tripura, and more than ninety-five per cent of people of Tripura are consuming fish (DoE&SP, 2021). The fisheries sector in the north-eastern region of India holds an important position in the socio-economic upliftment and the cultural context of the people in the area (Singh et al., 2017). To meet the domestic demand for fish, the role of public extension service has vital role for the transfer of technology (FAO, 2004). One of the major factors behind decreased farm output is limited access to extension services by the farmers, limits the exploitation of production potential of culture fisheries in Tripura (Akuku et al., 2014). In this regard, Information and Communication Technologies (ICTs) have the tremendous potential to address this issue through quick delivery of the farm information in far flung areas of the state to increase and sustain the fish production and productivity in the state (Sebeho, 2017; Joshy, 2018; Mishra et al., 2020).

The development of affordable ICTs over the past twenty-five years created an environment for people across the globe to have greater access to telecommunication and Internet services (Yates et al., 2010; Schwab, 2016). ICTs in agriculture evolved as an emerging field focused on enhancing development of agriculture and

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allied sectors in India (Patra et al., 2020). At present, the extension personnel in state line departments have the major responsibility of transferring technologies to the farming community from time to time (Lahiri et al., 2017; Panda et al., 2019; Kavaskar & Sharmila, 2020). ICTs are essential for extension workers because they enable them to access up to date information and expert knowledge that facilitate in dissemination of farm information as front liners in extension service delivery (Richardson, 1997; Tologbonse et al., 2011). Those frontline extension workers who are a direct link between farmers and other actors in the farming knowledge and information system are well-positioned (Jat et al., 2021). The use of ICT to access expert knowledge or other types of information could be beneficial to them and farmers as well (Rajalahti & Swanson, 2010; Kahenya et al., 2014; Ravikumar et al., 2015; Kale et al., 2016). ICT tools offer an opportunity for cost-effective dissemination of fishery information and knowledge to remote locations and diverse populations (Kapange, 2010, Lahiri et al., 2020). So there exists a need to understand and measure the utilization of ICT tools by the different categories of extension personnel in the fisheries line department in Tripura. The present study aims at studying the perceived knowledge and attitude levels of fisheries extension professionals of Tripura on the usage of ICTs in relation to their socio-personal characteristics and explores the associated challenges in accessing ICT tools for the fisheries extension professionals.

METHODOLOGY

The study was conducted at the three purposively selected districts of Tripura, based on a higher concentration (West Tripura) and lower concentration (Unakoti and North Tripura) of fisheries extension professionals under the Department of Fisheries, Govt. of Tripura (DoF, 2018). The respondents for the study were the Fishery Inspectors (FI), Fishery Officers (FO), and Fishery Assistants (FA), posted in different blocks of the selected districts who were selected through complete enumeration of the fisheries extension professionals (FI, FO, and FA) under all the twenty-one (21) blocks of the selected districts as part of primary data collection, and the sample size was eighty-one (81). The knowledge level and attitude towards the use of ICTs tools in fisheries extension on the use of ICTs of the respondents were considered as dependent variables. Knowledge scores were obtained on Yes/No (Yes-1, No-0) on a pretested scale having set of questions on knowledge level on usage of under different ICT tools (Total possible score ranged from 0 to 84), whereas attitude scores were obtained on Likert type scale on 5-point continuum ranging from strongly agree and strongly disagree. The total obtainable score ranged from 21 to 105. Based on literature review and consultation with the experts, certain relevant explanatory variables were selected that might be adequately able to address said purposes and scopes of objectives of the study. Data were collected in pre-rested semi-structured interview schedule during April- August 2021.

Analyses and interpretation of collected data were done to draw a logical conclusion by utilizing frequency and percentage, arithmetic means, and standard deviation, Spearman's Rank Correlation Coefficient (Spearman, 1904), and Kruskal-Wallis test (Kruskal & Wallis, 1952). The Statistical Package for the Social Sciences (SPSS 20.0) was used to analyze the collected data. A set of eighteen important challenges was identified in consultation with extension professionals and also experts in the field of ICTs to assess the challenges associated with the use of ICT tools by fisheries extension professionals. The responses were ranked by using the Garret ranking method (Garret, 1969).

RESULTS AND DISCUSSION

Knowledge and attitude perspectives of ICT usage relating to socio-personal features

The majority of respondents belonged to the middle age group (61.73%) and old age group (35.80%), as depicted in Figure 1, similar to the study of Baruah and Mohan, (2021). It might be due to the less new recruitments of the extension personnel in the recent past. On the other hand, a higher percentage of the respondents under the middle age group with higher work experience that helps to strengthen the department with a skilled and experienced workforce. 37.04 per cent of the respondents in the study area belonged to Schedule Tribes followed by general category (28.39%), which was in line with the existing reservation criteria of various post recruitment in the department, and found satisfactory compared to their proportionate representation (DoE&SP, 2021). But, there was a dismal gender ratio in terms of fishery extension professionals in the Department of Fisheries in the state, as the majority of respondents were male (81.48%) in comparison to female (18.52%), well supported by Thomas & Laseinde (2015). The existing gender imbalance in the fisheries extension professionals in the department might be resulting in some sort of gender bias in the dissemination of information to the fish farming communities in the state. As expected, the majority of the respondents had small families (up to 5 members) (60.49%) and used to stay in a nuclear family (70.37%), as most of them were posted away from their native place and live separately, Kusumalatha et al., (2021) also reported on similar line. The respondent had heterogeneous education qualifications in the study area as the majority of the respondents had secondary education because the criteria for the recruitments for fisheries assistant (FA) is secondary level education. But, education was necessary for the respondents for using ICT tools (Shashidhara, 2020). Hence, FAs were hypothetically always in a disadvantageous position in handling ICT tools, whereas performances might be better in the case of higher officials, as 33.33 per cent of officials had education up to Graduation or above (Al-Zahrani et al., 2017). The respondents had a medium level of social participation, which was not a healthy sign for fishery extension work. The extension service has weak relationships and professional links with other agricultural research and development organizations (Baig & Aldosari, 2013). The annual income of the professional was reasonably on the higher sides as they were the salaried staff. The majority of the respondents (59.26%) were having annual income between Rs. 300000- Rs. 600000 because of their work experience and also their level of designation in the department.

The majority of the respondents (90.12%) had medium exposure to ICTs based information dissemination tools like radio, TV, cell phone, computer, and internet etc. (Shashidhara, 2020).

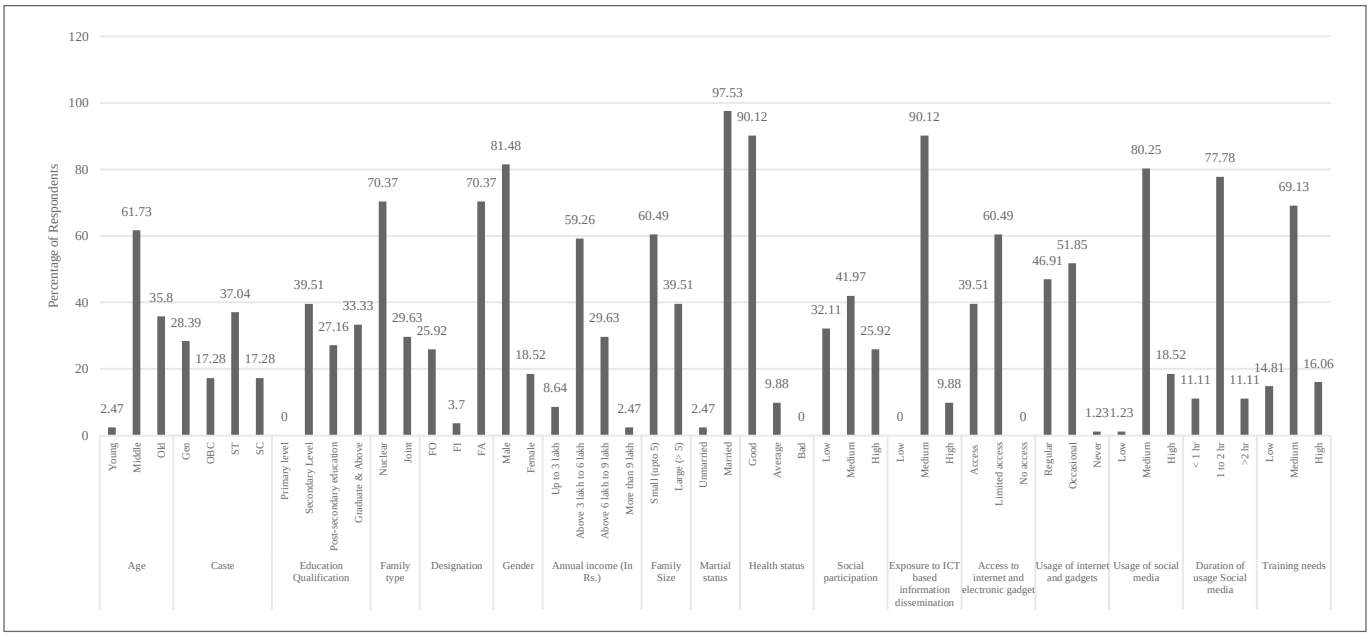

Figure 1. Socio-personal characteristics of fisheries extension professionals (n=81)

Table 1. Descriptive variables

S.No.	Variables	Mean	Standard Deviation	Range
Dependent variables				
1.	Knowledge level of fisheries extension professionals on usage of ICT tools	25.18	17.56	18-62
2.	Attitude of fisheries extension professionals on usage of ICT tools	66.49	4.55	59-84
Socio-personal variables				
1.	Age	43.55	8.50	28-59
2.	Designation	2.44	0.88	1-3
3.	Caste	2.23	1.05	1-4
4.	Gender	1.18	0.4	1-2
5.	Family size	4.5	1.4	2-10
6.	Family type	1.3	0.46	1-2
7.	Educational qualification	4.0	0.85	3-5
8.	Marital status	1.97	0.16	1-2
9.	Health status	1.09	0.30	1-2
10.	Annual income	4.99	2.04	3-10
11.	Social participation	4.75	3.99	1-12
12.	Exposure to ICT based information dissemination	3.02	1.32	2-10
13.	Access to internet and electronic gadgets	1.4	0.50	1-2
14.	Usage of internet and electronic gadgets	1.46	0.52	0-2
15.	Usage of social media	1.74	0.83	0-4
16.	Duration of usage social media	1.64	0.79	0-4
17.	Training needs on ICTs and cyber extension based on perceived level of difficulties	74.37	14.92	27-103

This finding indicates that the respondents had knowledge and skills about ICTs to disseminate the extension services to the farmers. The majority of the respondents (60.49%) had limited access to the internet and electronic gadgets because many rural areas of this study had limited access to the basic telecommunication services that support key ICTs like the telephone, internet, etc. The majority of the respondents (51.85%) were using the internet and gadgets occasionally in their daily work because they were faced with problems operating ICTs devices and also poor internet connectivity in remote areas. The majority of the respondents (80.25%) were using social media up to the medium level in their daily life because they were sharing knowledge and information through social media (Mishra et al., 2021). But, it might not be sufficient, as the majority of the respondents (77.78%) were using social media for only 1-2 hours in a day. The reason mostly they were busy with fieldwork and also office work. These were found to be some grey areas in terms of ICT mediated extension approaches in farm information dissemination in the department of fisheries in Tripura. The majority of the respondent (69.13%) come under a medium level of training need, as they perceived a medium level of difficulties on ICTs and cyber extensions like the computer, mobile phone, internet, TV, radio, and email. 16.06 per cent of the respondents also had high need of training on ICTs (Patel et al., 2020; Kusumalatha et al., 2021).

Table 2. Knowledge and attitude level of fisheries extension professionals on usage of ICT tools

Variables	Categories	Percentage	Mean	Standard deviation
Status of Knowledge on usage of ICT tools	Low (<8)	2.38	25.18	17.56
	Medium (8 to 42)	78.57		
	High (>42)	15.48		
	Total	100		
Status of Attitude on usage of ICT tools	Low (<61)	1.19	66.49	4.55
	Medium (61-71)	85.18		
	High (>71)	13.10		
	Total	100		

The results reveal that the majority of respondents (85.18%) had a medium level of attitude towards the use of ICTs tool, as depicted in Table 2. The findings indicate that the respondents were enthusiastic about using different ICT tools to disseminate required farm information to farmers. The higher educational status of the respondents must have helped them in creating a positive attitude towards emerging technologies. But, only 13.10 per cent of them had a high level of attitude towards ICT tools. So, there is a need for significant transformation in levels of attitudes to high-level towards the use of ICT tools in fisheries extension (Helen et al., 2020). The knowledge level of fisheries extension professionals on usage of ICT tools indicates again that majority of the respondents (78.57%) had a medium level of knowledge on usage of ICTs tools. It shows that the fisheries extension personnel need to be trained on the use of ICTs so that they can facilitate extension services up to a great extent (Sharmila & Kavaskar, 2017).

Table 3 suggests that there was a significant difference in the knowledge level of fisheries extension professionals on usage of ICT tools among the respondents in the three districts because test statistic (0.042) suggests rejecting the null hypothesis at an asymptomatic significance level of 0.05. On contrary, no significant difference was found in attitude level of fisheries extension professionals on usage of ICT tools among the respondents in the three districts because test statistic (0.879) suggests retaining the null hypothesis at an asymptomatic significance level of 0.05. The results of knowledge level and attitude of the fisheries extension professionals on ICT tools among the three districts differ. It was probably because the fisheries extension professionals posted in the remote areas, where ICT facilities were less, had the similar attitude like the professionals posted in better areas, but better exposure and frequent use of ICT tools by the fisheries extension professionals posted in better areas helped them to acquire more knowledge on ICT tools than those were posted in the remote areas.

The Spearman Rank Correlation Coefficient was calculated to find out the relationship about knowledge level and attitude of fisheries extension professionals on usage of ICT Tools with socio-personal variables by considering knowledge level and attitude of fisheries extension professionals on the use of ICT tools separately as dependent variables and different socio-economic characteristics, the extent of utilization of ICT tools and training needs of fisheries

Table 3. Kruskal-wallis test for spatial differences knowledge level and attitude of fisheries extension professionals

S.No.	Null Hypothesis	Test	Sig.	Decision
1.	The knowledge level is same among respondents of three selected district	Independent-Samples Kruskal-Wallis Test	0.042	Reject the null hypothesis.
2.	The attitude score is same among respondents of three selected district	Independent-Samples Kruskal-Wallis Test	0.879	Accept the null hypothesis.

Asymptotic significances are displayed. The significance level is 0.05.

Table 4. Spearman rank correlation coefficient between independent variables and knowledge level and attitude score of the respondent on usage of ICT tools

Dependent Variables →	Knowledge Score		Attitude Score	
Independent Variables ↓	Correlation Coefficient	Sig. (2-tailed)	Correlation Coefficient	Sig. (2-tailed)
Age	-0.417**	0.0001	-0.301**	0.006
Designation	-0.270*	0.0148	-0.317**	0.004
Caste	-0.131	0.2447	0.10	0.394
Gender	-0.020	0.8565	0.10	0.387
Family size	0.064	0.5699	0.05	0.648
Family type	0.101	0.3683	0.11	0.334
Education	0.350**	0.0014	0.274*	0.013
Marital status	-0.218	0.0506	-0.11	0.313
Health status	0.130	0.2466	-0.18	0.102
Annual income	0.211	0.0581	0.19	0.098
Social participation	0.156	0.1652	0.251*	0.024
Training needs	-0.737**	0.0000	-0.348**	0.001

* 5% level of significance, ** 1% level of significance

Table 5. Garret score of the constraints faced by respondents

Constraints	Total Garret score	Percentages	Rank
Insufficient modern ICTs equipment	3431	5.13	12
Supply of electricity	3503	5.24	11
Unavailability of ICTs device	3802	5.69	10
Load-shading/power-cut/low voltage	4483	6.71	5
Unavailability of UPS/Generator	4550	6.81	3
Power instability	4561	6.82	2
Unavailability of Wi-Fi services	4700	7.03	1
Faulty internet connectivity	4509	6.74	4
Limited internet coverage	4336	6.49	6
Lack of useful software to run internet	4321	6.46	7
Shadow mobile/Internet connectivity	4014	6.00	8
Unavailability of computer antivirus	3882	5.81	9
Lack of expertise on usage of ICT tools	3349	5.01	13
Lack of motivation to acquire the required skill set	3199	4.79	14
Low computer literacy among extension workers	2470	3.69	17
Time management problems in learning to use ICT	2271	3.40	18
Use of ICT causes health problems like eye pain, body pain etc.	2529	3.78	16
Lack of confidence to use ICT	2944	4.40	15

extension professional on ICT tools as independent variables. The Spearman Rank Correlation Coefficients are presented in Table 4.

The age was negatively correlated with both knowledge level and attitude towards ICT tools of the fisheries extension professionals (Shashidhara, 2020) whereas designation was negatively correlated at 5 per cent level of significance with knowledge level and 1 per cent level of significance with attitude towards ICT tools of the fisheries extension professionals. These signify that higher age group and higher level (designation) fisheries extension professionals possessed lesser knowledge and lesser positive attitude towards information and communication technologies. But, quite expectedly, education was positively correlated at 1 per cent level of significance with knowledge level, and at 5 per cent level of significance with attitude towards ICT tools of the fisheries extension professionals, whereas training need was negatively correlated at 1 per cent level of significance with the both (Patra et al., 2020).

Challenges associated with use of ICT tools by the fisheries extension professionals

The major problems faced by respondents, as presented in Table 5 were unavailability of Wi-Fi services (C7), power instability (C6), unavailability of UPS/Generator (C5), faulty internet connectivity (C8), load-shading/power-cut/low voltage (C4) (Patra et al., 2020). Thus, the Department of Fisheries in the state should develop a meticulous strategy to improve the situation by augmenting high-speed internet facilities in all the offices with Wi-Fi facilities. Uninterrupted power facilities may also be assured by providing high capacity backup facilities in the offices so that the fisheries extension activities may not get disturbed due to load shedding.

CONCLUSION

The use of ICTs in fisheries extension systems in Tripura at present is far from satisfactory level. Young professionals are needed in the department, and the inclusion of fresh blood into the fisheries department may change the scenario drastically, as the study suggests. The dismal gender ratio among fishery extension professionals in the department needs also to be corrected. Internet facilities also need to be improved by augmenting high-speed internet with Wi-Fi facilities in all the offices, and uninterrupted power facilities may be assured by providing high capacity back-up facilities in the offices. Thus, a meticulous and comprehensive strategy needs to be adopted for different levels of fisheries extension professionals in the state department of fisheries for the inclusion and efficient utilization of ICT mediated fishery extension system in the state to fulfill the information demand of the fish farmers in the state.

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