Awareness and Utilization of Computers by Shrimp Farmers

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A study was conducted in Thiruvallur and Thoothukudi districts of Tamil Nadu to assess the shrimp farmers awareness and utilization of computers, and their constraints. The major sources of awareness utilized by the farmers are personal localite channels like fellow farmers and friends (42 percent) and mass media channels (34 percent) followed by, extension agency contact (18 percent), and internet (8 percent). Regression analyses on the awareness scores among the respondents revealed that the eight independent variables explained 71 percent of the variance in the farmers' awareness on use of computers. Further the results also revealed that four variables viz., age, farming experience, farm size, and mass media exposure would have to be strengthened to increase the awareness on the utility of computers in shrimp farms. 78 percent of the respondents used computers for non-aquacultural activities followed by 4 percent of them who had exposure to programming and database design, and 22 percent of the respondents had exposure to e-mail services. Lack of technical knowledge and technical support were the main constraints found in the awareness and utilization of computers by shrimp farmers.

Key words : Internet services, Programming, Database design.

Aquaculture has emerged as an important issue on the global food production agenda. Emerging technological changes in aquaculture can enable the farmers to improve their performance with the aids from allied sciences including information technology. Spectacular growth in information and communication technologies, specifically the use of computers, has the potential to offer a new generation of tools for shrimp farmers.

Iddings & Apps (1990) found that complexity of farm, degree of external support, experience, availability of information, and personality and approach to learning were the main factors influencing the usage of computers by farmers.

Computers are used for farm tasks ranging from financial management to increasing production efficiency (Beetley & Gifford, 1988). Many software packages have been developed for farming operations, and several studies have revealed that farmers are using personal computers more to make management, production and marketing decisions (Lazarus & Smith, 1988; Quinlin & Martin, 1990).

Launched in June 2000, e-Choupal, has already become the largest initiative among all Internet-based interventions in rural India. The e-Choupal services today reach out to more than 3.5 million farmers growing a range of crops - soyabean, coffee, wheat, rice, pulses, and shrimp - in over

31,000 villages through 5372 kiosks across seven states (Madhya Pradesh, Karnataka, Andhra Pradesh, Uttar Pradesh, Maharashtra, Rajasthan and Kerala) (ITC, 2005). The e-Choupals help shrimp farmers with trends and prices in the major markets in real time.

Today, one of the major roles of internet in aquaculture is globalization of aquaculture research, education, extension and marketing. An observational study by Lippert et al., (1998) provides evidence that extension agents in South Carolina and Georgia were receptive to using the Web as a means of training a group of professionals who had traditionally depended on more personal face-to-face interactions. For online transactions, ornamentalists often use electronic payment services to facilitate check or credit card transactions over the Internet (Kam et al., 2005). The Internet is also providing low-cost avenues for online product promotion. Online marketing is becoming more accessible with low-cost payment services.

Aquaculture Network Information Center (AquaNIC) is the gateway and provides access to all electronic aquaculture information at the national and international level, and increase the quantity and quality of electronic information available to the aquaculture industry.

For a decade, hatchery related software and computers are becoming integral part of the hatchery operations. Still, most of the shrimp farmers have been averse to the use of computers in their farm operations. Several studies have identified the reasons for not using computers in their farm operations by the farmers. These reasons include the time constraints for learning new technologies like personal computers, cost of the computer, and lack of technical knowledge, level of farmers' education, farm size, and type of the farming (Bowen & Escolme, 1990; Taylor et al., 1991).

With this in view, a research study was conducted with the following specific objectives: (i) To determine the level of computer awareness, constraints associated with farmers in the awareness and utilization of computers among shrimp farmers in Thiruvallur and Thoothukudi districts, (ii) To identify the sources from which the farmers elicit information about the utility of computers in the shrimp farms.

Materials and Methods

The data used in this study were collected from a survey of 50 shrimp farmers in Thiruvallur and Thoothukudi districts of Tamil Nadu. The variables for sources of awareness about personal computer adopted by Findlay et al., (1993) were used in this study with suitable modifications. Eight independent variables such as age, education, farming experience, farm size, occupation, mass media exposure, social participation, extension agency contact were measured and analysed. The sources of awareness about information of communication channels with special reference to computer knowledge were assessed by means of two-point rating scale viz., 'yes' and 'no' which were assigned scores of 1 and 0 respectively (Deboral Vimala, 1989). The dependent variable such as awareness index was calculated using the ratio of actual score obtained to the maximum possible score method based on adding the scores expressed by the respondents on all items.

A well-structured and pre-tested interview schedule was used to collect the independent variables and data about sources of awareness and utilization of computers in their farm operations. Multiple responses were permitted for the collection of data about the sources of awareness and utilization of computers in their farm operations. Statistical techniques such as percentage analyses, correlation analysis, and multiple regression coefficients were calculated to analyse the data.

Results and Discussion

The findings revealed that 38 percent of the farmers have not completed primary school. 36 percent of the farmers had high school education. 26 percent of the farmers surveyed had graduated from college. Majority of the farmers (72 percent) had more than five years of experience and rest (28 percent) of the farmers had less than or equal to five years of farming experience, 40 percent of the farmers had high level of mass media exposure.

The findings revealed that 52 percent of the farmers had occasional contacts with

extension personnel of state department of fisheries and other institutional agencies. 28 percent of the farmers had regular contacts with extension agencies. One fifth (20 percent) of the farmers informed that they were not members in any organization while majority of them (80 percent) were members in more than one organization viz., farmers associations, panchayats etc.

More than one fifth (26 percent) of the respondents indicated that they never heard of computer usage on farms. Table 1 shows the sources of awareness about the utility of computers in shrimp farms. It was seen that 42 percent of the respondents had first heard about computer usage in shrimp farms from their fellow farmers and friends. Further, the findings revealed that 34 percent of the respondents could get awareness about computers from mass media channels like TV, newspaper and radio, followed by 18 percent of the respondents who came to know through extension agency, and only 8 percent of the respondents got the information about the use of computers in shrimp farm from the internet services.

Utilization of computers by shrimp farmers for various activities is depicted in

Table 1. Sources of awareness about the utility of computers in shrimp farms

Sources of awareness	Frequency of responses (n=50; 57 Multiple responses)
Mass media exposure (TV, newspaper, radio)	17 (34)
Fellow farmers	11 (22)
Neighbors / Friends	10 (20)
Extension agency contact	9 (18)
Other Sources	6 (12)
Internet services	4 (8)

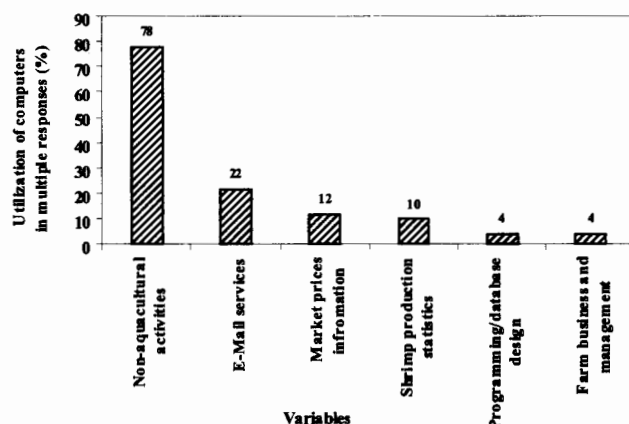(Figures in parentheses indicate percentage to total)

Fig 1.   Utilization of computers by shrimp farmers

Fig 1. It was seen that more than three fourth (78 percent) of the respondents used their computers most frequently for non-aquacultural activities such as writing personal letters, accounting, figuring their net-worth, and preparing bank statements. The findings revealed that 26 percent of the respondents had exposure on usage of internet services for eliciting the information about farm business and management, market prices, and shrimp production. 22 percent of the respondents had exposure in the e-mail services and only 4 percent of the respondents had exposure on programming and database design.

Table 2 presents the correlation and regression coefficients computed between the awareness scores and the independent variables of shrimp farmers. The correlation analysis indicated that the variables education, mass media exposure, social participation and extension agency contact had significant and positive association with awareness scores and farming experience

Table 2. Relationship between the awareness index scores and independent variables of shrimp farmers

Independent Variables	Correlation coefficient	Regression coefficient
Age	-0.261	-0.056
Education	0.701**	0.142*
Farming experience	-0.294*	-0.037
Farm size	-0.152	-0.170
Occupation	0.151	0.035
Mass Media Exposure	0.360*	-0.255
Social participation	0.728**	0.705**
Extension agency contact	0.523**	0.156

* Significant at 5 percent level　　$R^2 = 0.71$　F = 12.29**
** Significant at 1 percent level

has negative association with awareness scores.

It could inferred from the about findings that the level of social participation has helped the farmers to have interaction with the members of the society, farmers association, and departments and thereby gain knowledge about the usage of computers in shrimp farms. It is quite logical that a person with more education develops knowledge about various technologies and their usages in aquaculture. The farmers with more education have more faith in advanced technologies and endeavor to adopt these technologies in their fields. They would have taken much interest to read and understand literature and they gather information through the aquaculture journals and also through other sources such as newspaper, internet etc. Regular contacts and interactions with the extension agencies of research institutions as well as other government departments would help the farmers to increase their awareness and improve their knowledge level on latest technological innovations in shrimp culture. Mass media channels can play a significant role in disseminating the information already available at the research institutions to the farming community in an efficient manner.

Findings of the multiple regression analysis revealed that the coefficient of determination (R^2) was 0.71 which indicated that 71 per cent of variation in the awareness about the utility of computers in shrimp farms was explained by the independent variables and the F-value was highly significant. Among the regression

coefficients the variables such as education and social participation had significant positive influence. It is obvious that the farmers who were members of local institutions like farmers association, panchayat etc., have the opportunity to interact with farmers of adjacent shrimp farming area and members of various organsations working with shrimp farming and know about usage of computers in shrimp farming.

When the farmers were asked to give reasons for lack of awareness about the usage of computers in shrimp farms, 61 percent indicated that they did not have technical knowledge, and others (39 percent) due to lack of technical support.

While advanced technologies such as internet, and computers hold great promise for aquaculture management at the farm as well as the regional level, technologies potential in aquaculture has not yet been realised. Obstacles for adoption are mainly attributed to the difficulty in perceiving and quantifying the potential benefits as well as the tendency to distrust new technologies. One fifth of the respondents identified that the extension services, can play a dominant role in imparting computer application training and technical support for farmers, and also for explaining the usage of computers in farming operations. The training in advanced technology helps the farmers to increase their efficiency and profitability of shrimp production.

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