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DETERMINATION OF COMMUNICATION BEHAVIOR OF EARTHEN POND FISH FARMERS

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Abstract

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This study aims to determine the communication behavior of earthen pond fish farmers in Milas district of Mugla province that is located in the southwest of Turkey. The main material of the study is constituted from the surveys that are conducted with 56 farmers in Milas district. Within the context of farmers' communication behavior, their frequency of listening to radio, watching television, reading newspaper and using computer and internet is investigated. Moreover, farmers' frequency of travelling to the province and district areas is examined. Logit analysis is applied in order to determine the factors that have impact on the usage of PC/internet, following the magazines related to earthen pond fish farming and listening to radio. It is determined that farmers' fishery experience has a positive effect on listening to radio but farmers' usage of credit has a negative effect on listening to radio. It is designated that as fishery experience, cooperative membership and the number of ponds have a positive effect on PC/internet utilization, being active in agriculture and usage of credit have a negative effect on it. It is identified that while the number of ponds of farmers has a positive effect on following the magazines related to earthen pond fish farming regularly, agricultural experience and ownership status has a negative effect on it.

Key words: communication behavior, extension, earthen pond fish farming

Introduction

Information is considered a vital resource, alongside land, labor, capital and skills. People need information for their day-to-day activities and for the development of their environment and their selves (Mtega, 2012). Information is an indispensable factor in the practice of farming and it is the basis of extension service delivery (Okwoche et al., 2012). Access to the right information at the right time in the right format and from the right source may shift the balance between success and failure of the farmer (Opara, 2008). The information needs may be grouped into five headings: agricultural inputs; extension education; agricultural technology; agricultural credit; and marketing (Adekoya, 2010). Communication makes technical Know-How accessible to increase knowledge about the production, transformation, organization, and marketing dimensions of agriculture (Okwu, Iorkaa, 2011). Access to information is very essential for increased productivity by fish farmers (Ugboma, 2010). Agricultural information are always meant to get to rural farmers via extension workers, community libraries, radio, television, film shows, agricultural pamphlets, state and local government agricultural agencies etc. (Obidike, 2011). In many farming populations, access to information is often variable, partly due to differences in farmers' circumstances and ability to adopt technological options and availability of extension-communication infrastructure (Escalada and Heong, 2004).

Rural communication is an interactive process in which information, knowledge and skills, relevant for development are exchanged between farmers, extension/advisory services, information providers and research either personally or through media such as radio, print and more recently the new "Information and Communication Technologies" (ICTs) (Del Castello, Braun, 2006).

It is important that the farmers are open to the messages coming from mass media, have tendency to go other social systems and set close relationship with the extension agents. In terms of communication, if these three elements are in harmony with each other, spreading and adapting innovations will be much easier (Kalanlar, 2005).

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Cosmopoliteness referred to the orientation or exposure, or involvement of an individual respondent, which are external to his own social system (Masud, 2006). Das Gupta and Chowdhury (2002) found a significant relationship between adoption of technologies and cosmopoliteness. Cosmopoliteness of fish farmers showed significantly positive relationship with adoption of critical inland fish culture technologies, implying there by that those farmers with higher contact beyond there own social system had more adoption (Pounraj and Rathakrishnan, 2011).

For the farmers to adopt the new technologies and put them to use, the new idea must reach their farms and homes through effective extension communication methods such as mass media channels (Abubakar et al., 2009). Radio and TV communication has proved the most powerful force for social and technological change in developing countries, as well as in developed countries. In developing countries, radio and TV are especially important as sources of agricultural news and technology dissemination (Ahmad et al., 2007). Radio remains the most powerful, and yet the cheapest, mass medium for reaching large numbers of people in isolated areas. Thanks to the revolution of the transistor, even the remotest villages have access to rural radio, which builds on the oral tradition of rural populations (Balit, 1999).

The advent of personal computers, the internet and mobile telephone during the last two decades has provided a much wider choice in collection, storage, processing, transmission and presentation of information in multiple formats to meet the diverse requirement and skills of people (Asenso-Okyere, Mekonnen, 2012).

Main objective of this study is to determine farmers' communication behavior. Another objective is to specify the socioeconomic factors that affect farmers' usage of media.

Material and Methods

The main material of the study is primary data collected by survey from the farms, which are engaged in earthen pond fish farming in the villages of Milas district. Data include the production period of 2009-2010. As of 2011, the number of farms which do earthen pond fish farming in earthen ponds is 142 in the district (Anonymous, 2011). Accordingly, the sample size is 47 with 90% significance level and with a 10% error margin. To determine the sample size, the proportional sampling is used (Newbold, 1995). In case the farms included in the sample of the study do not want to participate in survey, the extra questionnaires, 20% of sample size, were conducted and 56 questionnaires were taken under review.

$$n = \frac{Np\,(1\text{-}p)}{(N\text{-}1)\,\sigma_{px}^{\,2} + p(1\text{-}p)}$$

In the equation: n: Sample size; N: Number of population; p: Proportion (p:0.50); σ_{px}^{2}: Variance of proportion (for α =0.10, σ_{p}=0.06079).

Logit analysis is applied in order to determine the factors that have impact on the usage of PC/internet, listening the radio and ability to follow the magazines related to earthen pond fish farming for farmers. Table 1 shows the variables that are employed in the model.

Results

Socio-economic characteristics of the farmers

Age, education period, household size, agricultural experience and fishery experience are utilized in terms of socio-economical characteristics of farmers that practice earthen pond fish farming. The average age of the fish farmers is 48 and the education period is 7.39 years. It draws attention that having around 20.39 years of agricultural experience, farmers have around 8.09 years of fishery experience. The household size is detected as 3.80.

96.43% of the farmers have membership to chamber of agriculture. When farmers' membership status to agricultural cooperatives is analyzed, it is determined that 32.14% of them have membership to TARIS (TARIS Figs, Raisins, Cotton and Oilseed Agricultural Sales Cooperatives Union) and 30.36% of them have membership to agricultural credit cooperative.

General characteristics of the farms

When the utilization condition of the land before earthen pond fish farming is analyzed, it is determined, that 51.79% of the land is agricultural land and 48.21% of the land is empty land that is not used for agricultural production. Cotton has the first place in products that the farmers' grow before the ponds are established. 79.31% of the farmers stated that cotton was the product that had been grown before the ponds have been established. Wheat, barley, oat, artichoke and clover are among the other produced crops. The percentage of farmers who has ongoing agricultural activity is 51.79%.

All of the farmers make production using earthen ponds and instead of producing seed fish by themselves, all of the farmers obtain them from the hatcheries in the district. Generally, sea bass and sea bream are the species that are produced. Additionally, it is determined that three farmers produce corb and one farmer produce turbot.

While 96.43% of the farmers indicate that the water is supplied to the ponds from artesian, 3.57% of them indicate that water used in the ponds is spring water. Water is transported to the ponds via plastic pipes and in order to increase the oxygen level of the aerators are exploited.

Table 1
Variables used in logit regression analysis

Dependent variables	Independent variables
RAD:1 if earthen pond fish farmer listen to the radio, zero otherwise	AGE: 1 if earthen pond fish farmer age is <50, zero otherwise
PC:1 if earthen pond fish farmer use PC/internet, zero otherwise	EDU: 0 if earthen pond fish farmer have primary school degree or less, 1 more educated
MAG: 1 if earthen pond fish farmer read to the aquaculture magazines regularly, zero otherwise	POP: 1 if household size is >3 person, zero otherwise
	EXP: 1 if experience in fisheries is >4 year, zero otherwise
	COOP:1 if earthen pond fish farmer is cooperative member, zero otherwise
	POND:1 if numbers of ponds are >4, zero otherwise
	AGR:1 if earthen pond fish farmer do agricultural activity, zero otherwise
	AGRE: 1 if experience in agriculture is >19 year, zero otherwise
	REC:1 if earthen pond fish farmer keep farm records regularly, zero otherwise
	CRE:1 if earthen pond fish farmer get credit, zero otherwise
	INF:1 if earthen pond fish farmer having satisfactory information about fisheries, zero otherwise
	MAR:1 if earthen pond fish farmer have fish marketing problem, zero otherwise
	OWN:1 if earthen pond fish farmer have ownership of earthen pond fish farm, zero otherwise

Being able to be conducted in an atmosphere which is close to the sea and salinity, earthen pond farming can also be conducted in places with salinity levels between 6-9‰ which is located away from the sea, the brackish water (Altan, 2009). Average salinity rate is found as 10.71‰ in the research.

Communication behavior of the farmers

It is determined in the study that 48.21% of the farmers listen to radio. While 32.14% of the farmers indicated that they occasionally listen to radio, 16.07% of them listen to radio every day. On the other hand, the percentage of the farmers, which do not listen to radio, is 51.79% (Table 2). The study of Usman et al. (2012) shows the radio-listening producers rate as 68.6%. The study of Okwu and Daudu (2011) confirmed that the 66.77% of the producers listen to radio in order to reach information. Another study conducted by Adejoh et al. (2009) designates that the rate of producers that use radio as an information resource is 45.8%. Ani and Baba (2009) specifies that the 53.3% of the producers use radio as an information resource. The research conducted by Farooq et al. (2007) shows that 75% of the producers use radio as an information resource. Fawole (2006) and Irfan et al. (2006) in their studies indicate that 43% and 40.8% of the producers use radio as an information resource, respectively.

It is determined that all of the farmers watch television. It is identified that 80.36% of the farmers watch television on daily basis and 19.64% of them watch television occasionally (Table 2). The study of Usman et al. (2012) determines the producer rate who watches television as 4.3%. The study conducted by Adejoh et al. (2009) is designated that the rate of producers that use television as an information resource is 29.2%. Ani and Baba (2009) and Farooq et al. (2007) determined from their studies that the producers that use television as a resource of information is 20% and 80.83%, respectively. Fawole (2006) and Irfan et al. (2006) designated from their studies that the producers that use television as a resource of information is 68% and 64.2%, respectively.

It is determined that, while the rate of farmers that never read newspaper is 28.57%, the rate of farmers that occasionally read newspapers is 50% and the rate of farmers that read newspaper every day is 21.43% (Table 2). On the other hand, the study conducted by Oladeji (2011) shows the farmer rate that read newspaper every day as 43.40%. Adejoh et al. (2009) indicates that the rate of farmers that use newspaper

Table 2
Farmers' usage of media sources

Frequencies	Never	Occasionally	Every day	Total
Frequency of radio listening	29	18	9	56
Frequency of watching TV	-	11	45	56
Frequency of reading newspaper	16	28	12	56
Frequency of using PC/internet	25	12	19	56

as a source of information is 25%. Irfan et al. (2006) is determined in their study that 44.2% of the producers use printed media as an information resource.

In this study the rate of the farmers that follow any printed media, related fishery (newspaper, magazine etc.) is determined as 44.64%. On the other hand, the study of Fawole (2006) indicates that 32% of the producers use agricultural magazines as a source of information.

It is determined that, as 44.64% of the farmers do not use computer or internet, 21.43% of them uses computer or internet occasionally and 33.39% of them uses computer or internet every day (Table 2). The study conducted by Akinbile and Alabi (2010) determines that the 7.50% of the farmers use internet every day. Another study conducted by Usman et al. (2012) shows that 7.1% of the producers use internet (Usman et al., 2012).

It is determined that 58.93% of the farmers attend at least one seminar or meeting related to earthen pond fish farming. The rate of farmers that undergo earthen pond fish farming training is 3.57%. 33.93% of the farmers visit the district every day and 64.28% of them visit the district 2-3 times a week. 42.86% of the farmers indicated that they visit the province once in six months and 30.35% of them indicated that they visit the province once in three months.

Agricultural extension workers are important as they promote the adoption of new agricultural technologies. Extension worker is an important link between research organizations and farmers (Ahmad et al., 2007). In this respect, extension workers-farmer relationship plays a vital role to convey new technologies to farmers. 7.14%, 3.57%, 41.07% and 48.22% of the farmers indicated that they go to food, agriculture and livestock directorate of district/province at least once in a week, once in fifteen days, once in one or two months and once in four or six months, respectively. Farmers indicated that they go to food, agriculture and livestock directorate of district/province in order to apply for livestock farming support (seed fish support, etc.) and/or for other bureaucratic reasons.

Logit regression analysis is applied in order to determine the factors that have impact on the listening the radio, usage of PC/internet and ability to follow the magazines related to earthen pond fish farming for farmers. According to the analysis, it is determined that farmers' fishery experience has a positive effect on listening to radio but farmers' usage of credit has a negative effect on listening to radio. It is designated that as fishery experience, cooperative membership and the number of ponds have a positive effect on PC/internet utilization, being active in agriculture and usage of credit have a negative effect on it. It is identified that while the number of ponds of farmers has a positive effect on following the magazines related to earthen pond fish farming regularly, agricultural experience and ownership status has a negative effect on it. In other words, farmers with less agricultural experience and whose farm is rental, follow the magazines related with earthen pond fish farming more (Table 3).

Discussion

It is determined that the earthen pond fish farming in Milas district is shown a fast growth. Inasmuch as, it is identified that the 82.14% of the farms included in this study has started their operation either in 2001 or in the following years.

The study shows that the farmers make use of media intensively. It is determined that all of the farmers watch television, 48.21% of them listen to radio, 55.36% of them utilize pc/internet, 71.43% of them read newspaper and 44.64% of them follow any printed media (newspaper, magazine, etc.) related to fishery. Therefore, mass media **should be used** more intensively in agricultural extension activities related earthen pond fish farming.

Conclusion

It was determined that almost none of farmers did not receive training related to earthen pond fish farming. This shows that the local information and scientific information cannot meet properly. For this reason, first, a training and extension program related with earthen pond fish farming should be prepared and the information transfer should be performed to producers ranging from animal breeding to marketing or from alternative energy resources to legal regulations for fishery.

Table 3
Results of Logit Model

Coefficient			
Independent variables [a]	RAD	PC	MAG
CONSTANT	-0.1803477 (1.766648)	0.5658967 (2.175547)	1.737339 (1.872229)
AGE	-0.1351715 (0.8280415)	1.536019 (1.140911)	-0.3287298 (0.8781208)
EDU	0.046729 (0.7582056)	1.295548 (0.9454614)	-0.319573 (0.8384633)
POP	0.3732211 (0.6988253)	0.7140857 (1.004496)	-0.3128875 (0.774141)
EXP	1.627736* (0.8368816)	2.672278* (1.387457)	0.1566994 (0.8302844)
COOP	-0.1176253 (0.754116)	1.966523* (1.026797)	1.42581 (0.9546129)
POND	0.4888012 (0.6763691)	1.910781* (1.018446)	2.472561** (0.8614633)
AGR	0.3593536 (0.6982364)	-2.616133***(0.9565786)	-1.195178 (0.7990609)
AGRE	-0.1353085 (0.827031)	-1.806871 (1.20465)	-1.823353* (0.9759339)
REC	0.0143339 (0.6912782)	0.8169409 (0.9693471)	0.4432459 (0.7754371)
CRE	-2.231809** (1.104002)	-4.551227** (1.910408)	-0.6953762 (1.060612)
INF	0.0162021 (0.7215252)	-0.5563001 (0.8689285)	-0.1965811 (0.769334)
MAR	0.2299659 (0.7087331)	1.671093 (1.085357)	-0.3702011 (0.8062174)
OWN	0.5476724 (1.018473)	-0.224274 (1.387434)	-1.885634* (1.144581)

[a]For variable definitions see Table 1.
[b]Numbers in paranthesis are standart errors.
*, **, and *** represent statistical significance at 10 percent, 5 percent, and 1 percent levels, respectively.

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