Use of Information and Communication Technology tools among fishermen in Malaysia

Barkatullah Qureshi[1] Mubina Pathan[1] Muhammad Ali Pasha[2] Farman Ali Chandio[1] Ayaz Keerio [2] Abdul Razaque Chhachhar[3]

[1] Sindh Agriculture University Tandojam, Sindh, Pakistan
[2] University of Sindh, Jamshoro, Sindh, Pakistan
[3] Department of Communication Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Serdang, 43400, Selangor, Malaysia

Abstract: The role of information and communication technology towards the society cannot be denied. ICT has played a vital role in the development of different sector of the society such as agriculture, education, health, economic and fisheries. The fishing industry is playing an important role in the economic development of Malaysia. The main objective of this study was to analyse the level of usage of ICT tools among fishermen in Malaysia. The quantitative approach using of survey questionnaire has been adopted to generate the primary data of the study. A total of 200 respondents, comprising of male and female fishermen from the Perak and Kedah states of Malaysia have been selected as the main respondents of the study. The results revealed that the usage level of mobile phone among respondents was moderate with the mean value of M= 2.89 SD= 0.372. The GPS was second most ICT used tool by the respondents during their fishing actives at the sea (M = 1.22 SD= 613). It was revealed that most of the fishermen level of use of ICT tools was moderate.

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Introduction:

ICT increased the productivity and played an important role in economic development. This technology has provided facilities in trade and transport. Furthermore by use of ICT many jobs can be created as well as lives of the people can be improved (Wielicki & Arendt, 2010).

Through implementation of ICT the technical skills such as farming, training and communication skills can be increased. At the same time these technologies can help to decrease the poverty. Use of ICT could provide access to modern techniques hence create employment opportunities ultimately results increase in productivity. Most of the researchers believe that ICT could provide a way for faster improvement of welfare and quality life of people (Sharifah Mariam, 2004, Abbas Zadeh & Elahi, 2007).

ICT can be transferred in remote areas where people can get a good benefit from this technology. ICT can create job opportunities and improve health, education and agriculture facilities in rural areas. The availability of ICT access and adoption of these technologies can reduce the gape of rural and urban areas. ICT plays a vital role in disseminating information and knowledge which is most important for social and economic development of developing countries (Noor et al., 2010, Duncombe & Heeks, 2003).

The fisheries sector of Malaysia plays vital role in the development of the economy of the country. This sector brings dynamic source of animal protein as well as helps rural development by creating employment opportunities. It contributes about 2% to the national Gross Domestic Product (GDP) and provides direct employment to this community. The production through fisheries sector amounted to more than 1,231,300 tonnes valued around RM 4 billion and provided work directly to more than eighty thousand fishermen and more than twenty thousand fish culturists the fisheries sector supplies fish and other sea foods as basic source of nutrition and protein (Annual Fisheries Statistics, 2008).

According to the third National Agricultural Policy (NAP3), Malaysia expected fish need by 2010 two tones. With the total production of half million tons fish in 2001 now the government is taking further steps to increase the fish production by aquaculture. Meanwhile the sea fish productions of catching fish from both west coast and east coast side's economic zone (EEZ) of Peninsular Malaysia have reached the maximum sustainable yield (MSY). There is a need of growth in the marine fish catch from the vast coastal resources and aquaculture (Ali & Abdullah, 2010).

Problem of Research statement

Information and communication technology (ICT) is enhancing the capacity building of different communities. The fishermen is one of the big community in Malaysia were facing different problems and hindrances to enhance their income. Fisheries productivity can be increased in Malaysia

through usage of ICT among Malaysian fishermen. It could bring changes in economic development and enhance the quality of life especially fishermen community. A number of efforts have been taken by the government to encourage the ICT usage in different sectors including fisheries in Malaysia. Fishermen were facing many financial and economic problems in use of ICT. Similarly many fishermen did not take interest to use ICT (Hosseini et al., 2009).

There were many other factors were observed such as lack of interest of ICT service providers in rural areas and low quality of service are major causes of not using ICT tools among fishermen community. The fishermen community do not have proper access to connect directly with market due to lack of proper usage of computer and mobile phones (Odada et al. 2004). Omar et al. (2011) indicated that fishermen are facing many problems and hindrances in ICT usage including the expensive cost particularly computer and sonar. Fishermen still depend on the traditional way having no exposure towards ICT usage and ICT benefits. They are not able to judge the status of the trade and could decide whether to sale their product or to remain at sea to continue fishing. The fishermen hesitate to learn about ICT from experts.

Fowler & Etchegary (2001) revealed that mobile phones were still relatively expensive for the poor farmers and fishermen. In addition to the cost of the phone itself, maintenance factors such as cost of recharging the phones are also important considerations in developing countries regions (Fowler & Etchegary. 2001).

Munyua (2007) indicated in the African context that uncoordinated ICT initiatives have created several problems including the high cost of the technology, poor ICT connectivity, skills and lack of local contents. Furthermore, there is a lack of information sharing culture and low awareness of the role of ICT in development at all levels. These issues raise the questions of finding out the appropriate ICT tools. While mobile phones may be suitable for certain aspects of improving lives of fishermen community, similarly other technologies such as radio or internet could play an equally important complementary role in significant changes of the recent world. We could say that media strongly presented important role in human development. Unfortunately in most communities empowerment projects were not in the habit to think about ICT tools as a pivotal component toward this change.

The main problems of the community were they not fully aware about usage of ICT. There was no routine programme to obtain accurate statistics of the fleets' catch and efforts, through requirement of fishing-vessel operators to provide records of their operation.. Fishermen use ICT such as GPS, sonar, wireless and mobile phones and by use of this technology fishermen save their money, time and energy. Department of fisheries Malaysia and fisheries Authority have started many online services programs for fishermen community where they can easily get information regarding weather and market prices (Shaffril et al., 2012).

Materials and Methods

The research was based on primary data using the quantitative approach whereby the respondents of the study belonged to Perak and Kedah states of Malaysia. Respondents were interviewed based on the questions using survey method. A total of 200 respondents were selected for this study.

The data was obtained from respondents to determine the level of ICT usage among Malaysian fishermen. Respondents for this study were sampled using random sampling from Perak Larut-Matang and Kedah Langkawi.

Results and discussions

This section of the article presents the results and discussion on the main findings of the study, which is based on the data collected from the survey questionnaire on the following, (i) Demographic profile of respondents, (ii) ICT trainings, (iii) fishing experience (iv) level of use of ICT.

Demographic profile

In the terms of the data distribution of the respondents' gender, race, age, education level, income and number of household were included. The result of study showed that in terms of gender majority of the respondents (97.5%) were male, while 2.5% of the respondents were female. It was indicated the majority of male respondents were involved in fishing activity.

In terms of age of the respondents the result revealed that 27.5% of the respondents' age was between 41 to 50 years, while 23% of the respondents were 31 to 40 years. It was revealed that 22.5% of the respondents' age was 51 to 61 years old.

The result showed that 56.5% of the respondent's education level was of primary level, 18.0% of respondent did not receive formal education, while 16% of the respondents hold SRP/PMR certificate furthermore 8.5% of the respondents possessed SPM/SPMV, while only one per cent of the respondents was skill certificate/STPM level of education.

The result revealed about respondents monthly income regarding earned from selling fish. The result revealed that 50% of the respondents earned a total income from selling fish which was between RM500 to RM1000 per month, while 26% of the respondents earned less than RM500 income from selling the fish

in a month. However, 24% of the respondents earned more than RM1000 income from selling the fish in a month. It showed that half of the respondent's income was 500RM to1000RM in a month which they earned from sell their fishing. The result also indicated that 67% households consist of 5 to 6 people per household. While around 33% households have 3 to 4 people per household. Most of the fishermen live in joint family system with their parents. Fishermen go to fishing early in the morning and return to their homes in the evening time.

Table 1 Demographic profile

Profile	Frequency	Percentage %	Mean	SD
Gender			1.02	.156
Male	195	97.5		
Female	5	2.5		
Race				
Malay	162	8181.0		
Chinese	38	1919.0		
Age			46.1	12.5
< 30 years	24	12.0		
31-40 years	46	23.0		
41-50 years	55	27.5		
51-60 years	45	22.5		
> 61 years	30	15.0		
Education level			2.18	.860
Non formal education	36	18.0		
Primary school	113	56.5		
SRP/PMR	32	16.0		
SPM/SPMV	17	8.5		
Skill certificate/ STPM	2	1.0		
			901	541
Income per month				
RM <500				
RM 501-1000	52	26.0		
RM >1001	100	50.0		
	48	24.0		
Number of household			5.51	2.27
< -2	8	4		
3- 4	58	29		
5-6	78	39		
7-8	38	19		
9-10	15	7.5		
> 11	3	1.5		

Trainings and Seminar

Data from table 2 indicated that majority of the respondents (98%) did not attend any course training or seminar about ICT, while 2.0% of the respondent attended training or seminar regarding ICT. However, 1.5% of them attend the courses concerned with GPS whereas 1% of the respondent fishermen attended the courses regarding computers

The results regarding the ICT training also revealed that 1.5% of the courses were organized by the Department of Fisheries (DOF) whereas 0.5% courses were conducted by the Universiti Sains Malaysia (USM). All the courses attended by the respondent fishermen were conducted for only one day (refer Table 2).

Table 2 indicated that the majority of the fishermen have no opportunity for proper trainings and courses regarding the information and usage of ICT tools in their field operations. Moreover, result also highlighted that Department of Fisheries organized the trainings regarding different ICT tools, to enhance their capacity building and improve their skills for use of communication technologies tools. Therefore, it is the need of the time that different programs should be conducted for the fishermen regarding the introduction and usage of various ICT tools at regular intervals. Further, proper and effective of media campaigns should be carried out to create interest among the fishermen community to ensure their participation in different courses of ICT.

Table 2 Trainings and seminar

Variables	Frequency	Percentage
Course/training/seminar		
No	196	98.0
Yes	4	2.0
Name of Course		
No	196	98.0
GPS	3	1.5
Computer	1	.5
Computer course organizer	197	98.5
No	2	1.0
DOF	1	.5
USM		
Days courses conducted		
No	199	99.5
Yes	1	.5

Fishing experience

The results regarding the number of days fishermen spent at sea for their fishing activities indicated that nearly half of the respondents (47.5%) have gone to sea for 16- 20 days in a month. Moreover, 27.0% of the respondents have gone for 21-30 days in a month and 25.5% of the respondents have gone for fishing for 1 to 15 days in a month.

Accordingly, it may be concluded from the results that normal days fishermen required for their fishing activities at sea ranged from 16-20 days respondents have ten years' experience in fishing. The result indicated that most of the fishermen have a 30 years' experience in their field.

The data from Table 3 indicated the results regarding the total fishing experience of the respondent showed a mixed pattern of experience. According to the results, the fishermen who possessed fishing experience of 11 to 20 years comprised 30.5% of the respondents whereas 22% of the fishermen have the experience of less than 10 years. Moreover, 47.5% of the respondents have a total fishing experience of more than 21 years. Therefore, it is clear from the results that most of the fishermen in this study comprised of the old persons who possessed fishing experience of more than 21 years.

Table 3 indicated the results for fishermen category showed that most of the respondents were the boat or ship skippers (79.5%). It may indicate that most of them possess their own fishing boats or ships. On the other hand, only 20.5% of the fishermen responded to that they were members of any of the fishing boats or ships that indicated that they are the workers or helper in the fishing activities.

The result regarding the assistance from the government or its agencies is concerned; it was observed that 84.0% of the respondents did not receive any kind of assistance. It may be because of the inefficiency of the government to address the issue of the fishermen or lack of interest among the fishermen to avail the government assistance. However, 16% of the respondents avail the assistance provided by the government (refer table .3).

Table 3 Fishing Experience

Fishing experience	Frequency	Percentage
Days you going to sea for fishing	51	25.5
1-15	95	47.5
16-20	54	27.0
21-30		
Fishing experience		
< 10	44	22.0
11-20	61	30.5
21-30	53	26.5
>31	42	21.0
Fishermen category	159	79.5
boat/ship skipper	41	20.5
boat/ship crew members		
Assistance from the government		
No	168	84.0
Yes	32	16.0
Financial assistance from the concern parties	134	67.0
No	66	33.0
Yes		
Number of crew members in ship/boat		
0-1 member	132	66.0
2-5 members	68	34.0
Fishing in zone A	163	81.5
Fishing in zone B	37	18.5

Television, radio and Internet

Table 4 result showed that 58.0% of the respondent level of watching television was high, 31.5% of the respondents level was moderate and 10.5% of the respondents were low with mean of 2.47

(SD= .679). The study showed that more than half of the respondents' level to watch television was high. Television provides latest information about weather and market prices as well as tsunami to fishermen.

Most of the fishermen rely on watching television to get information about weather before going to sea. The one another study showed that more than 56% of the respondents watch the television and obtain the information about agriculture and fishing industries. Further it showed that fishermen were having keen interest to watch television in their leisure time and enjoy with their family and friends. Another study indicated that 63% of fishermen watch television and get information regarding the weather before got to sea. Fishermen also contact with metrological department and get feedback on how to improve weather information and reporting mostly yielded responses about increasing the frequency of update one another study indicated that 46% fishermen watch the television and get the information about weather and fishing business in their country it can be concluded that most of the fishermen were interested to watch television and get information about their related issue (Philip & Udoh., 2011, Camp, & Suttotong, 2007, Ikoja & Ocholla, 2003).

However the level of listening radio among fishermen showed that 65.5% of the respondents level of radio listening was low with the mean value1.46 (SD= 0.693). Furthermore, listening radio among fishermen indicated that 23.0% of the respondents were moderate While 11.5% of the respondent usage level of listening radio was high. The fishermen listen to radio in fishing time at sea. Similarly the study was conducted in India showed that 11% fishermen listen to radio about fishing related programs. According to the fishermen such kind of program have increased their knowledge and learnt something new. The small number of fishermen listening to radio because there is the problem of radio signals in their working places and at sea. Fishermen understand that radio increase their knowledge and obtains latest information regarding market prices and up-dates about weather. There is need to provide easy access of radio to fishermen where this community could get benefit from this technology. In another study conducted in India had identified that 16% of the population of fishermen community listened to radio. The results show that most of the fishermen listening radio habits were very low due to lack of signals and appropriate time of broadcasting programs (Ibeun & Mdaihli, 1994, Basavakumar, et al., 2011).

The regarding use of internet among fishermen result showed that 95.0% of the respondents level of usage internet was low with mean score of 1.06 (SD= .302) while 3.5% of the respondents usage level was moderate furthermore result indicated that only 1.5% of the respondents usage level of internet was high. This result showed that most of the fishermen were not use internet because majority of the fishermen have no access of internet at their home and working places. The lack of infrastructure was main problems to not use internet. Internet was very new concept of communication among fishermen community. This technology was famous only among rich people who are involved in this business of fishing (Joshi and Ayyangar, 2010). One another study conducted by Levy & Banerjee (2008) showed that in third world countries the ICT infrastructure is not good to utilize for the development of poor people such as internet system in remote area because it's very expensive especially for fishermen community. The smallholder fishermen shares similar atmospheres and challenges.

Table 4 Television, radio and Internet

Usage level of ICT	High	Moderate	Low	Mean	S.D
Television	58.0	31.5	10.5	2.47	.679
Radio	11.5	23.0	65.5	1.46	.693
Internet	1.5	3.5	95.0	1.06	.302

Mobile phone GPS Radar and others

Table 5 study revealed that (76%) of the respondents usage level of mobile phone was high, 20% of the respondents' usage level was moderate while 4% of the respondents was low. with the mean of 2.89 (SD= 0.372).The study indicates that most of the fishermen use mobile phone to contact with their family and friends when they are at sea. similarly some of the fishermen were taking the advantage of this technology and communicate market brokers to sell their catches in good price. A similar study indicates that mobile phones play very vital role in rising market proficiencies.

Mobile technology has made the information distribution faster and cheaper. By using mobile phones, fishermen have become able to keep themselves up to date with regard to prices and quality of fish in surrounding markets which ultimately enhance their income. Similarly mobile phone has provided access to fishermen to search the best price of their produce in near market. The study was conducted in Ghana Africa result shows that more than half of the 71% fishermen indicated that the mobile phone has supported them to stay in touch both with their buyers and with their customers, and get information by mobile phone from other markets (Jensen 2007, Salia et al. 2011).

The result showed that 10.0% of the respondents usage level of GPS was high, 2.5% of the respondents' usage level was moderate while 87.5% of the respondents' usage level was low with mean 1.22 and (SD= 613). Most of the fishermen were not familiar with this technology and its usage. They were facing many problems in use of GPS in their working places. According to Rahim & Padhy (1994) the big problem among fishermen was illiteracy and use of communication technologies in their business and work place (refer table 5).

Fishermen face difficulties to use GPS technology for increasing their knowledge and skills. Fishermen face the problem that mostly they could not reach on their right direction and destination and many fishermen cross border of the country and prohibited places. The small numbers of fishermen use GPS due to lack of technical knowledge and information. Most of the fishermen have even not heard about these technologies in their life. The result showed that 6.5% of the respondent usage level of wireless was high, 2.0% of the respondents usage level of wireless was moderate however the 91.5% of the respondent usage level of wireless was low and the mean was 1.15 (SD= .508). It was shown that use of wireless among fishermen was not common practice.

Table 5 Mobile phone GPS Radar and others

Usage level of ICT	High	Moderate	Low	Mean	S.D
Mobile phone	76.0	20.0	4.0	2.89	.372
GPS	10.0	2.5	87.5	1.22	.613
Wireless set	6.5	2.0	91.5	1.15	.508

In table 6 result revealed that 3.0% of the respondent usage level of radar was high, 1.5% of the respondents was moderate and 95.5% of the respondents was low with mean 1.07 (SD=.360) the result shows that most of the fishermen usage level was low because fishermen have no facility of radar system in their premises. Fishermen nowadays still use traditional sources and do not depend on information communication technology tools for instance; fishermen have no idea about radar system (Yonah &Cons, 2005). Such technology was not introduced among fishermen there is need to provide training and its importance in the field of fishing industry for the development of fishermen.

The result indicated that 2.0% of the respondent usage level of sonar was high, 1.5% of the respondents were low, while 96.5% of the respondents usage level of sonar were low with mean score of 1.05 (SD= .304).It was found by different studies that sonar help fishermen to indicates the and tracing the fish in deep sea. Sonar could play important role in development of fishermen community (Afanuh, et al., 2008, FAO, 2007). This technology was not common in fishermen because fishermen prefer to use their traditional way to catch the fish in sea.

Further result showed that one per cent of the respondent usage level of echo sounder was high, .5 of the respondents were moderate while 98.5 of the respondent usage level of echo sounder were low. the result clearly indicated that majority of the fishermen were not active in the usage of echo sounder as well as other technology in their working places.

Table 6. Radar, sonar and echo sounder

Usage level of ICT	High	Moderate	Low	Mean	SD
Radar	3.0	1.5	95.5	1.07	.360
Sonar	2.0	1.5	96.5	1.05	.304
Echo sounder	1.0	.5	98.5	1.02	.211

Conclusion

The study result shows that most of the level of usage of ICT expect such as radio, internet, newspaper, magazine, computer, radar, wireless, sonar, GPS and other technologies among fishermen in Malaysia was low. The trend of trainings was also low therefore there is need to provide trainings as well as access to technologies in their areas. According to the results of the present study the contribution of information and communication technology was not fruitful. Based on the analysis fishermen have many problems in use of ICT tools in their working places and there is need to provide facilities to fishermen so that they can improve their lives and increase their income through use of these technologies in their businesses. Government and non-governmental organizations need to start different programmes of ICT that will benefit fishermen in their businesses.

Corresponding Author:
Abdul Razaque Chhachhar Department of Communication Faculty of Modern Languages and Communication, Universiti Putra Malaysia Serdang, 43400 Selangor Malaysia.
Email: archhachhar@gmail.com

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