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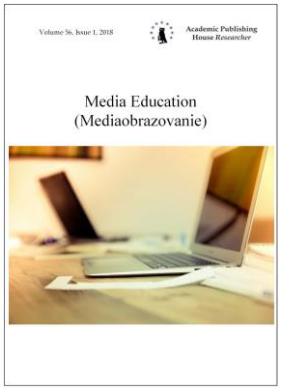

A Study of Use of Mobile Phone for Marketing Purpose by Fishermen of the Indus Delta

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Abstract

The research about the role of mobile phone in different parts of the world shows that the fishing community is also increasingly adopting mobile phone and it is resulting in a more efficient fish market and reduction in uncertainty.

The mobile phone is resulting in greater market integration and improvement in the quality of life of fishermen. Moreover, the mobile phone has also been helpful in connecting isolated fishermen communities to mainstream society and disaster risk reduction during the emergency. Similarly, the mobile phone is also playing an important role in helping the ordinary fishermen to get connected with the market and the device is emerging as a highly useful source of essential market information for fishermen communities. Purpose of the study: This article is based on an impact assessment study regarding mobile phone use by fishers of the Indus Delta for the marketing of their fish products. It also envisages the impact of socio-demographic factors on the usage of mobile phones by the fishing communities for better marketing of their output from the fisheries profession. Due to the increasing importance of mobile phones in creating market efficiency in rural markets all around the world, a study was conducted to investigate the impact of mobile on fish marketing in the deltaic region of Sindh Pakistan. Methodology: The data was accumulated by a cross-sectional survey. The data collection instrument was a close-ended questionnaire, and SPSS software was used to analyze the data. Main Findings: It was observed that the majority of the respondents acknowledged the role of mobile phone for receiving market information. That includes enquiring about fish prices, information about dealer buyer, and suitable market to sell their fish products. Applications of this study: this study will be helpful for the government to make policies to facilitate and improve the profession of fisheries for the fisher community in Pakistan. Novelty: This is the first systematic and scientific study to be conducted upon the fishermen of Indus Delta and their mobile usage pattern for fish production marketing purposes.

Keywords: mobile phone, fishermen, marketing information, Indus Delta.

1. Introduction

The role of the fisheries profession in rural economies is deemed as necessary because it is one of the primary sources of employment in rural areas of the developing countries. Moreover, fishing is also essential in terms of food security and constitutes a critical source of nutritious food for poor populations of rural areas of the world (Finegold, 2009). Because fish is an important part of the human food and any reduction in fish production may result in serious problems in terms of

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food security (Kent, 1997). In this context, it is further observed that better marketing of fish products leads to increasing the income of fishers and improvement in overall economic situations of the communities, whereas communication is considered important in marketing. Furthermore, the extensive use of the mobile phone has resulted in positive impacts on the rural economy and business environment of rural areas (Musingafi, Zebron, 2014).

Moreover, the increasing use of mobile phones has generated greater market integration and efficiency which has resulted in an improvement in earnings as well as in the quality of life in fishermen communities (Abraham, 2006). The fish is considered as a perishable commodity, and the risk of wastage in case of delayed marketing is high but timely information through mobile phones is helpful to the fishermen to a greater extent to avoid such a situation (Jensen, 2007). The research studies conducted in different parts of the world suggest a positive link between better marketing of fish and the use of the mobile phone (Abila et al., 2013; Salia et al., 2011; Srinivasan, Burrell, 2015).

In this way, keeping in view the prior said impacts of mobile phones in ushering social and economic connectivity in rural economies a study was conducted to evaluate the role of mobile phones in creating market efficiency in the fisheries sector in Pakistan. Two districts of coastal areas of Sindh province, Pakistan were selected for this study to evaluate the impacts of mobile usage on the marketing of fish related products by the fishermen communities. The findings are expected to fill the research gap related to the changing communication patterns in coastal areas of Pakistan and the impacts of these changes on earning of fishermen communities through better access to the markets. The objectives of this study were related to the role of mobile phones in creating market connectivity, increasing earning, reducing the transport expenditures of the fishermen of the Deltaic region. The studies conducted in different parts of the world show that various socio–demographic factors do influence the use of the mobile phone for marketing purposes in rural communities. These socio–demographic factors not only affect the adoption of mobile phone technology but also they help the individuals to get maximum benefits by using mobile phone for economic gains and professional business (Zainudeen, Ratnadiwakara, 2011). Therefore, the impact of socio-demographic factors on the use of the mobile phone by the fishermen of the Indus Delta was also analyzed in this study.

2. Materials and methods

Research Objectives: To analyze the role of mobile phone in providing relevant information for better marketing of fish and related products to the fishermen of the Indus Delta; To analyze the impacts of socio–demographic factors on the use of mobile phones by the fishermen of the Indus Delta for the marketing of their produce.

Research Questions: What role the mobile phone plays in providing relevant market information to the fishermen of the Indus Delta? What are the impacts of socio–demographic factors on the use of mobile phones by the fishermen of the Indus Delta for the marketing of their fisheries–related products?

Methodology: A cross-sectional survey method was used to get data for this research study as survey technique is being widely used for communication research studies based on quantitative data collection (Hansen et al., 1998; Mishra, 2012).

Fishermen communities living in the Indus Delta region of the Sindh province, Pakistan, were the targeted population of this study. Moreover, the respondents who were actively involved in the fishing profession were sampled from the coastal villages of District Thatta and District Badin in Sindh province, Pakistan. The respondents were selected by applying a purposive sampling technique because Singleton, Straits, Straits and McAlister (Singleton et al., 2009) suggest that purposive sampling is a suitable alternative of a random sampling when the complete inventory of the population is not available.

As the research tool is greatly helpful in the measurement of behavioral phenomena in numerical terms (Gunter, 2000). Hence, a questionnaire was prepared based on literature review, past studies, and having formal and informal discussions with the groups of fishermen, for acquiring data. The questionnaire-based on closed-ended questions aimed at collecting relevant data to analyze the role of mobile phones in providing relevant information for better marketing of fish products. The questionnaire also contained questions related to demographic information and the profession related variables of the respondents.

The teams visited the coastal villages of the two districts to collect the data. In this way, the data was collected from a total of two 200 respondents. The sample was selected by applying a purposive technique. The two coastal districts were selected because they cover the deltaic region of Sindh, Pakistan and are densely populated with the fishermen community. The data is presented and analyzed by using SPSS software.

3. Discussion

The mobile phone is resulting in greater market integration and improvement in the quality of life of fishermen. Moreover, the mobile phone has also been helpful in connecting isolated fishermen communities to mainstream society and disaster risk reduction during the emergency (Abraham, 2006). Similarly, the mobile phone is also playing an important role in helping the ordinary fishermen to get connected with the market and the device is emerging as a highly useful source of essential market information for fishermen communities. The greater accessibility to the market is thus resulting in increasing the income of fishermen (Adejoh et al., 2017).

The mobile phone is helpful to all stakeholders of the fisheries sector, including fish sellers and boat possessors as they were very quick to adopt cell phone technology for the occupational purpose. They were found using the device for the promotion of their business, coordination with dealer/buyers, and access to price information (Aricat, Ling, 2018). The mobile phone has provided the ground to fishermen for communicating with brokers and dealers at the port to sell the fish at a better price (Chhachhar, Omar, 2012). Moreover, Different mobile phone applications are also helpful for fishermen involved in fishing that includes G.P.S, fish remote sensing applications (Sabu, Shaijumon, 2017). GPS is the most effective application as it helps in increasing the income, quantity, and safety of life. The use of these mobile applications helps save the time, energy of fishermen during the process of fish catching and fish marketing (Salam, Arman, 2013).

In this context, Adejoh et al (Adejoh et al., 2017) in the recommendation of their study about the use of mobile phone for information dissemination among fish marketers of Nigeria suggest that government should invest more in increasing the availability of mobile signals in rural areas and initiate some programs for the training of fish farmers for the use of the mobile phone in the marketing of fish as a part of their extensive services for improvements in fish markets. Similarly, research studies from South Asia also suggest that the use of mobile phones causes a considerable fall in price dispersion and implementation of the law of one price in the fisheries sector. The fishermen are also able to avoid wastage of their products.

Hence, the use of the mobile phone is economically beneficial for both the producer and consumer (Jensen, 2007). The purpose of the mobile phone is significantly contributing to the economic growth of the rural economies through the sharing of information and reducing the cost of acquiring knowledge, especially in developing countries (Lum, 2011). The impact of the use of the mobile phone on the efficiency of the rural market is visible as the free flow of information leads to positive changes in markets of rural economies. Thus, it is observed that easy access to information empowers the rural communities, improves skills and linkages between poverty alleviation agencies (Bhavnani et al., 2008).

4. Results

Demographic information

Table 1. Composition of the fishermen by demographics

Demographic Variables	*Number*	*Percentage (%)*
Gender		
Male	200	(100.0)
Female	0	(0.0)
Mother tongue		
Sindhi	200	(100.0)
Other	0	(0.0)
Marital status		
Married	173	(86.5)
Unmarried	27	(13.5)
Education level		

Uneducated	137	(68.5)
Primary to High School	59	(29.5)
College & University	4	(2.0)
Age group		
Up to 40 years	139	(69.5)
41 – 50 years	22	(11.0
Above 50 years	39	(19.5)
District		
Badin	100	(50.0)
Thatta	100	(50.0)

Source: Primary data

Table 1 presents results about the demographic characteristics of the respondents surveyed in this study. First, from the perspective of gender, the data mentioned that all (100.0 %), surveyed respondents were male and they said themselves as Sindhi language speakers (100.0 %). Similarly, the overwhelming majority of the respondents (86.5 %) showed their marital status as being married. However, as far as their education level was concerned then in this regard, the proportion of over three fifths (68.5 %) said that they were uneducated.

Furthermore, the second–highest proportion of bigger than one fourth (29.5 %) was educated, however, at varying levels from primary to high school. Finally, the little remaining proportion (2.0 %) had a college and university education. About the age of the respondents, it was found that the proportion of over three fifths (69.5 %) was up to 40 years old. Moreover, the second–highest proportion of nearly one fifth (19.5 %) was above 50 years old. However, the last proportion of one–tenth (11.0 %) mentioned that they belonged to the age category of between 41 to 50 years old. Hence, overall, it was observed that in the context of demographic characteristics, the typical fisherman surveyed in this study was Sindhi speaking, male, and married. Further, the typical surveyed fisherman was uneducated and up to 40 years old.

Professional Information

Table 2. Composition by profession–related variables

Professional variables	Number	Percentage (%)
Profession		
Fisheries	200	100.0
Other	0	0.0
Profession adoption mode		
Inherited	190	95.0
Personal choice	7	3.5
Circumstances	3	1.5
Boat ownership		
Yes	83	41.5
No	117	58.5
Professional experience		
Up to 10 years	42	21.0
11 to 20 years	90	45.0
Above 20 years	68	34.0
Monthly income		
Up to 10000 Rs.	124	62.0
11000 to 20000 Rs.	52	26.0
Above 20000 Rs.	24	12.0

Source: primary data

Table 2 contains data regarding the professional information of the fishermen surveyed. The data showed that all the surveyed respondents (100.0 %) were fishermen by profession. Moreover, when they were asked to describe how they adopted the fisheries profession, then in

response, the proportion of over four–fifths (95.0 %) said that they inherited fisheries. However, among the remaining number of fishermen 3.5 % said the fisheries profession was their personal choice, and 1.5 % expressed that due to circumstances, they adopted the fisheries profession.

Regarding boat ownership, the proportion of over two fifths (41.5 %) of the respondents expressed that they own their boat. However, against it, the remaining proportion of almost three fifths (58.5 %) responded that they hire or borrow boat if they needed for fish catching.

Regarding the professional experience of the fishermen, it was known that the first highest proportion (45.0 %) had 11 to 20 years of professional experience, and the second–highest proportion (34.0 %) of the respondents mentioned that their professional experience was over 20 years. However, the last proportion of above than one fifth (21.0 %) answered that they had professional experience of up to 10 years.

Lastly, subject to the monthly income of the fishermen it surfaced that the first highest part of over three fifths (62.0 %) of the respondents said that they earned monthly up to 10,000 PK rupees. Furthermore, the second–highest part of over than one quarter (26.0 %) of the respondents answered that their monthly earning from the fisheries profession was from 11,000 to 20,000 PK rupees. Whereas, the last fraction of over one–tenth (12.0 %) of the surveyed participants mentioned that they earned monthly above 20,000 PK rupees.

Mobile phone use for marketing purpose

In this study, about the six various uses of mobile phones related to marketing of the fish, products were questioned from the surveyed fishermen. Added to that those six statements were measured on a three–point scale ranging from Often = 3 to Never = 1. Those marketing related statements asked from the fishermen follow as: (a) I use mobile to know fish product prices, (b) I use mobile to talk with fish product dealers/buyers, (c) I use mobile to find suitable market to sell fish products, (d) I use mobile to seek professional fish marketing advice, (e) I use mobile to get information to change market for selling fish products, (f) I use mobile to receive fish product price alerts.

Table 3. Mobile phone use for marketing purpose

Mobile phone use for marketing purpose		*Factors*	
	Mean	1	2
Factor 1: Fishmarket information	*2.43*		
To know fish product prices	2.52	.89	
To talk with fish product dealers/buyers	2.42	.94	
To find a suitable market to sell fish products	2.39	.93	
To seek professional fish marketing advice	2.39	94	
Factor 2: Fishmarket communication	1.69		
To get information to change the market for fish products	1.65		.97
To receive fish product price alerts	1.73		.97
Cronbach' Alpha (Reliability score %)	83		
Eigen value		3.67	1.72
% of variance		57.68	32.12

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization (Eigen value > 1). Higher mean scores equal greater mobile usage. Scale ranges from Often = 3 to Never = 1. Source: Primary data

Exploratory factor analysis was run for assessing the interrelationship among the six items of the reported usage of cell phones for marketing purposes. Hence, in result two factors, named as first, "*Fish market information*" and second, "*Fish market communication*" with Eigenvalues higher than one emerged, and those explained a total of 89.80 % variance. Table 3 enlists each of the six items, which appeared into two factors related to "mobile phone use for fish products marketing" with corresponding factor loadings. The reliability of the construct mobile phone use for fish product marketing was tested by using a reliability test of Cronbach's coefficient alpha (.83). Bartlett's test of sphericity was (1204.00) ($p < .000$), and the KMO value was .77, $p < .001$. Moreover, all the items had high–reliability scores, which indicated that mobile phone use for fish product marketing could be factor analyzed.

In this way, the factor one "*fish market information*" with average mean value (Mean = 2.72) collected a total of four items. Whereas, among those four items the highest mean score (Mean = 2.52) was grabbed by the item "to know fish product prices", and the item received the second–highest score (mean = 2.42) "to talk with fish product dealers and buyers". Whereas, the remaining two items under the factor one "to find a suitable market to sell fish products" and "to seek professional fish marketing advice" got comparatively low but exactly equal mean scores (mean = 2.39 and mean = 2.39 respectively).

Moreover, the second factor, which was named *"Fish market communication"* stood with an average mean score (Mean = 1.69) and collected to the remaining two items. Thus, among those two items, the highest mean score (Mean = 1.73) was calculated for the item "to receive fish product price alerts." However, the lowest mean (Mean = 1.65) under the second factor was accounted for by the item "to get information to change the market for selling fish products." Hence, the data in the factor one in table 5 indicate that that majority of the respondents acknowledged the role of cell phone for receiving market information (M = 2.43) as the highest number of them (M = 2.52) used cell phones for enquiring about fish product prices. The second most important area where fish catchers used cell phones is for information regarding dealer or buyer (M = 2.42). Similarly, the majority of the respondents (M = 2.39) also used mobile phones for information about suitable markets to sell their commodities and professional market advice. Further, in the context of market–related communication, the trend of usage of mobile phone by the fishermen was relatively low as less number of the fishermen was using the mobile phone to seek information to change the market for fish products (M = 1.65) and changing the market on the basis of information received through mobile phone.

Mobile phone use for marketing purpose and socio–demographic group differences

Education status differences

See Table 4 that presents data about the mobile phone use for marketing purposes and education level of the surveyed fishermen in this study.

Table 4. Mobile phone use for marketing purpose and education status

Education status				
Mobile phone usage for marketing purpose	*Uneducated Mean rank*	*Educated Mean rank*	*MW–U*	*P–Value*
Factor 1: Fishmarket information				
To know fish product prices	95.07	112.31	3571.50	.02
Talk with fish dealer/buyer	92.03	118.91	3155.50	.00
Find suitable market to sell fish products	91.46	120.16	3077.00	.00
Seek professional fish market advice	91.82	119.38	3126.00	.00
Factor2: Fishmarket communication				
To get information to change the market to sell fish products	100.76	99.93	4279.50	.91
To receive fish product price alerts	100.83	99.79	4270.50	.89

Note: High scores equal a greater level of mobile usage. The scale ranges from Often =3 to Never = 1. Source: Primary data

In this regard under the first factor called as "fish market information" it was observed that about the first item statistics showed that the educated fishermen (median = 3.00; mean rank = 112.31) on average scored greater on "using mobile phone for getting information about fish product prices" than the uneducated fishermen (median = 3.00; mean rank = 95.07). Mann – Whitney U – number was statistically significant U = 3571.50 (Z = –2.26), p = .02. Similarly, about the second item, descriptive statistics showed that the educated fishermen (median = 2.50; mean rank = 118.91) on average scored greater on "using mobile phone for getting information about dealers and buyers" than the uneducated fishermen (median = 2.50; mean rank = 92.03). Mann – Whitney U – value was statistically significant U = 3155.50 (Z = –3.41), p = .00. Regarding the third item "using mobile phone for getting information about the suitable market" as well the descriptive statistics mentioned that the educated fishermen (median = 2.00; mean rank = 120.16) on average accounted meaner score than those fishermen who mentioned themselves uneducated

(median = 2.00; mean rank = 91.82). Mann – Whitney U – coefficient was statistically significant U = 3077.00 (Z = –3.61), p = 00. Context to the fourth item "using mobile phone for getting professional market advice", the descriptive statistics expressed that the educated fishermen (median = 2.00; mean rank = 119.38) on average stroke higher mean score than those fishermen who were uneducated (median = 2.00; mean rank = 91.82). Mann – Whitney U – value was statistically significant U = 3126.00 (Z = –3.47), p = 00.

Additionally, regarding the second factor which magnetized two items and was named as "fish marketing communication", it was analyzed that about the first item "to talk to change market for selling fish products" the uneducated fishermen (median = 1.00; mean rank = 100.76) on average scored greater points than the educated fishermen (median = 1.00; mean rank = 99.93). However, Mann – Whitney U – digit was statistically non–significant U = 4279.50 (Z = – .11), p = .91. In the same vein, regarding the second item "to receive fish product price alerts" under the second–factor statistics showed that the uneducated fishermen (median = 1.00; mean rank = 100.83) on average rated higher mean score than the educated fishermen (median = 1.00; mean rank = 99.79). But Mann – Whitney U – value was not statistically significant U = 4270.50 (Z = – .14), p = .89.

Age category differences

Table 5. Mobile phone use for marketing purpose and age categories

Age categories				
Mobile phone usage for marketing purpose	*Up to 40 Mean rank*	*Above 40 Mean rank*	*MW–U*	*P–Value*
Factor 1: Fishmarket information				
To know fish product prices	102.43	96.11	3971.50	.41
Talk with fish dealer/buyer	102.74	95.39	3927.50	.36
Find suitable market to sell fish products	101.95	97.20	4038.00	.55
Seek professional fish market advice	101.60	97.99	4086.50	.65
Factor 2: Fishmarket communication				
To get information to change the market to sell fish products	106.51	86.62	3404.50	.00
To receive fish product price alerts	106.92	85.87	3347.00	.01

Note: High scores equal a greater level of mobile usage. The scale ranges from Often =3 to Never = 1. Source: Primary data

To assess the age category differences and mobile phone usage for marketing purpose (see Table 5) Mann–Whitney U statistical test was run. Then in result, it was observed that under the first factor called "fish market information" the descriptive mean scores of the first four items (median = 3.00; mean rank = 102.43, median = 2.50; mean rank = 102.74, median = 2.00; mean rank = 101.75, and median = 2.00; mean rank = 101.60 respectively) on average were higher of those fishermen who were up to 40 year old than those fishermen who were above than 40 year old (median = 3.00; mean rank = 96.11, median = 2.50; mean rank = 95.39, median = 2.00; mean rank = 97.20, and median = 2.00; mean rank = 97.99 respectively). However, the p values, as mentioned in Table 5, of all the above said four items under factor one were statistically non–significant, > 0.05.

Whereas, under the second factor which had two items and was called "fish market communication" it was observed that the fishermen who were up to 40 years old (median = 1.00; mean rank = 106.51) on average rated higher mean score on the statement "to get information to change market to sell fish products" than those fishermen who were above than 40 years old (median = 1.00; mean rank = 86.62). Mann – Whitney U – number was statistically significant U = 3404.50 (Z = – 2.59), p = .00.

Similarly, regarding the second item "to receive fish product price alerts" the fishermen who were up to 40 years old (median = 1.00; mean = 106.92) on average scored higher mean than those fishermen who were above than 40 years old (median = 1.00; mean = 85.87). Mann – Whitney U – value was statistically significant U = 3347.00 Z = –2.78, p = .01.

Professional experience differences

Table 6. Mobile phone use for marketing purpose and professional experience

Professional experience				
Mobile phone usage for marketing purpose	*Up to 10 Mean rank*	*Above 10 Mean rank*	*MW–U*	*P–Value*
Factor 1: Fishmarket information				
To know fish product prices	98.79	100.96	3246.00	.80
Talk with fish dealer/buyer	108.31	98.42	2990.00	.27
Find suitable market to sell fish products	106.99	98.78	3045.50	.37
Seek professional fish market advice	106.36	98.94	3072.00	.41
Factor 2: Fishmarket communication				
To get information to change the market to sell fish products	116.45	96.26	2648.00	.02
To receive fish product price alerts	121.43	94.94	2439.00	.00

Note: High scores equal a greater level of mobile usage. The scale ranges from Often =3 to Never = 1. Source: Primary data

Regarding professional experience differences and mobile phone usage for marketing purposes (see Table 6) Mann–Whitney U statistical test was run. Then in result, it was observed that under the first factor called "fish market information" the descriptive mean score (median = 3.00; mean = 100.96) regarding the first item "using mobile phone to know fish product prices" on average was higher of those fishermen who had professional experience above than 10 year in comparison with those fishermen whose professional experience was just up to 10 year (median = 3.00; mean = 98.79). However, in the contrast the mean scores of the remaining three items under the first factor (median = 2.50; mean = 108.31, median = 2.00; mean = 106.99, and median = 200.; mean = 106.36 respectively) on average were higher of those fishermen who were up to 10 year professionally experienced than those fishermen who mentioned themselves as having professional experience above than 10 year (median = 2.50; mean = 98.42, median = 2.00; mean = 98.78, and median = 2.00; mean = 98.94 respectively). Nevertheless, the p values, as mentioned in Table 6, of all the above discussed four items under the factor one were statistically non–significant, > 0.05.

Whereas, under the second factor which had two items and was called "fish market communication" it was seen that the fishermen who were up to 10 year professionally experienced (median = 1.00; mean rank = 116.45) on average rated higher mean score on the statement "to get information to change market to sell fish products" than those fishermen who had above than 10 year experience (median = 1.00; mean rank = 96.26). Mann – Whitney U – value was observed to be statistically significant U = 2648.00 (Z = – 2.36), p = .02. Similarly, regarding the second item "to receive fish product price alerts," the fishermen who were up to 10 years professionally experienced (median = 100.; mean = 121.43) on average scored higher mean value than those fishermen who had above than 10–year professional experience (median = 1.00; mean = 94.94). Mann – Whitney U – value was statistically significant U = 2439.00 Z = – 3.09, p = .00.

Monthly income differences

See Table 7 regarding mobile phone use for marketing purposes and the monthly income of the surveyed fishermen in this study.

In this regard under the first factor called "fish market information" it was found that about the first item descriptive statistics showed that those fishermen whose monthly income was above than 10000 PK rupees (median = 3.00; mean rank = 110.18) on average scored higher on the item "using mobile phone for getting information about fish product prices" than those fishermen who had monthly income just up to 10000 PK rupees (median = 300.; mean rank = 94.56). Mann – Whitney U – value was statistically significant U = 3976.00 (Z = –2.14), p = .03. Additionally, under the first factor regarding the remaining three items it was analyzed according to descriptive statistics that the fishermen having monthly income above than 10000 PK rupees (median = 2.50; mean rank = 103.53, median = 2.00; mean rank = 102.59, and median = 2.00; mean rank = 108.00 respectively) on average scored greater points than those fishermen who had monthly income up to 10000 PK rupees (median = 2.50; mean rank = 98.65, median = 2.00; mean = 99.22, and

median = 2.00; mean = 95.90 respectively). However, Mann – Whitney U – digits were statistically non–significant as their p values (see Table 7) were greater > 0.05.

Table 7. Mobile phone use for marketing purpose and monthly income

Monthly income				
Mobile phone usage for marketing purpose	*Up to 10000 Mean rank*	*Above 10000 Mean rank*	*MW–U*	*P–Value*
Factor 1: Fishmarket information				
To know fish product prices	94.56	110.18	3976.00	.03
Talk with fish dealer/buyer	98.65	103.53	4482.00	.52
Find suitable market to sell fish products	99.22	102.59	4553.00	.66
Seek professional fish market advice	95.90	108.00	4142.00	.11
Factor2: Fishmarket communication				
To get information to change the market to sell fish products	104.97	93.21	4702.00	.10
To receive fish product price alerts	104.06	94.69	3211.00	.19

Note: High scores equal a greater level of mobile usage. The scale ranges from Often =3 to Never = 1. Source: Primary data

Whereas, regarding two items under the second factor the descriptive statistics showed that those fishermen whose monthly income was up to 10000 PK rupees (median = 1.00; mean rank = 101.97, and median = 1.00; mean rank = 104.06 respectively) on average rated higher mean scores on the statements " to get information to change market to sell fish products" and "to receive fish product price alerts" than those fishermen whose monthly income was above than 10000 PK rupees (median = 100.; mean rank = 93.21, and median = 1.00; mean rank = 94.69). However, Mann – Whitney U – values were not statistically significant U = 4702.00 (Z = – 1.63), p = .10 and U = 3211.00 (Z = – 1.30), p = .19 respectively.

5. Conclusion

In the context with the research question of the study about mobile phone usage for marketing fish products among the fishermen communities, it was found that most of the respondents acknowledged the role of mobile for receiving market information. In a study Aricat and Ling (Aricat, Ling, 2018) also provided similar findings. The highest number of them was using a mobile phone, particularly for enquiring about fish prices. Whereas the second most important area is where fishermen use mobile to seek information about dealer or buyer. These findings rectify the results of scholars (Abila et al., 2013; Salia et al., 2011; Srinivasan, Burrell, 2015). According to Adejoh, Adah, and Shaibu (Adejoh et al., 2017) the greater accessibility to the market is thus resulting in increasing the income of fishermen. Similarly, most of the respondents also used mobile for information about suitable markets to sell their commodities and professional market advice. In a study, Chhachhar and Omar (Chhachhar, Omar, 2012) concluded that the mobile phone has provided the ground to fishermen for communicating with brokers and dealers at the port to sell the fish at a better price. However, in the regard of market–related communication, the trend of mobile phone usage by the fish catchers was relatively low as less number of fishermen was found using mobile phone for getting information to change the market on the basis of information received through mobile phone.

Regarding the impacts of socio-demographic factors upon the usage of mobile for marketing purpose the findings mentioned that on average the educated fishermen used mobile phones more for receiving market updates in comparison to their uneducated fellows. Similarly, relatively a higher number of fishermen belonging to the age group up to 40 years old and the fishermen with relatively high–income level were observed using mobile phones highly for marketing purposes.

Suggestions

Fish Marketing questions and issues may be probed by the qualitative research technique as well to further investigate the matter. Moreover, the study was limited to the respondents practically involved in fishing, therefore, it is suggested that other stakeholders of fish marketing chain including brokers, retailers, and importers may also be interviewed in both qualitative and quantitative studies to develop more understanding about impacts of mobile on the marketing of fish in Pakistan.

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