



Shrimp Farmers' Usage and Preference of Extension Communication Media in Selected Areas of Bagherhat District of Bangladesh

Md. Mamun-Ur-Rashid^{1*}, Md. Ektar Uddin¹ and A. T. M. Sanaul Haque¹

¹Department of Agricultural Extension and Rural Development, Patuakhali Science and Technology University, Bangladesh.

Authors' contributions

This work was carried out in collaboration between all the authors. Author MMUR designed the study, performed the statistical analysis, wrote the protocol and edited the manuscript, while author MEU wrote the first draft of the manuscript and managed the literature searches. Author ATMSH edited the manuscript and perform literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJAST/2016/24637

Editor(s):

(1) Manjinder Singh, Department of Biological and Agricultural Engineering, University of Georgia, Georgia, USA.

Reviewers:

(1) Fadlullah Olayiwola Issa, Ahmadu Bello University, Zaria, Nigeria.

(2) Ronald Benard, Sokoine University of Agriculture, Tanzania.

(3) Che Su Mustaffa, Universiti Utara Malaysia, Malaysia.

Complete Peer review History: <http://sciededomain.org/review-history/13993>

Original Research Article

Received 28th January 2016

Accepted 16th March 2016

Published 4th April 2016

ABSTRACT

Information, now a day, is considered equally valuable as monetary resources. Extension communication media disseminate precious information that can change the life of many rural poor farmers. This study was progressed with the purpose determining shrimp farmers usage and preference of extension communication media (ECM) in some selected villages of Bangladesh. This study was conducted in a selected union of Bagerhat Sadar Upazila in Bangladesh. Data were collected in the first quarter of June, 2015. This research was predominantly based on primary data. However, secondary sources were also consulted to reveal the present status farming, production and marketing of shrimp in Bangladesh. Data were collected using structured interview schedule from 72 purposively selected shrimp farmers. Usage of ECM was determined based on weighted mean; whereas preference of media was determined considering the frequency and percentage. The association between predictor and criterion viable was measured employing

*Corresponding author: E-mail: murashidpstu@gmail.com;

chi-square analysis. Descriptive statistics such as mean, standard deviation, median, range, etc. were also used to describe the characteristics of respondents. The findings of the study represent that 72.2% of the farmers had moderate to low usage of extension communication sources. According to the choice of the respondents, the most preferred extension communication media were television followed by government and NGO extension agent. Chi-square analysis revealed that among eight selected variables education level, economic status, and availability of extension communication sources had a positive relationship with the usage of extension communication media. This study further revealed that farmers had different types of information need, of which the important aspects were disease management, scientific culture procedure of shrimp, salinity management, credit sources, and market related information. Despite monumental prospects of earning foreign currency, shrimp sector in Bangladesh is still suffering from a number of impediments like chronic viral diseases, increasing salinity, lack of adoption of scientific practices, absence of secured market facilities, availability of credits, etc. Farmer's usage of ECM appears satisfactory. However, their usages did not cohere their preference. Lamentably, their usage of rich and trustworthy ECM is still very limited.

Keywords: Extension communication media; usage; preference; shrimp farmers; Bangladesh.

1. INTRODUCTION

Shrimp industries in Bangladesh have long been playing a prominent role in the national economy. This sector is offering livelihood and employment to many rural poor dwellers. Currently, Bangladesh is one of the top ten shrimp exporting countries of the world [1]. Frozen shrimp products of this country are contributing 3 percent of the global shrimp market [2]. Sadly, the progress of this sector is far less than expectation. Due to shortage of shrimp production, this country, at present, can utilize 66.6% of its total processing capacities [2]. However, a multitude of imminent threats blare the promising future of shrimp sector. Several socioeconomic and environmental impacts accompanied by inappropriate management practices and insufficient plans regarding water quality, seed supply, institutional weaknesses, etc., endanger further growth of shrimp farming in Bangladesh [3].

In reality, investment in dissemination of appropriate need based knowledge can solve many problems of farmers. Lewis's in his *Theory of Economic Growth* labeled the proximate cause of development as the increase of knowledge and its application. Actually, development rests on an extensive range of knowledge-technical knowledge of production processes, commercial knowledge of markets and business practices, personal knowledge of human health and nutrition, knowledge of laws and legal processes, knowledge of political and administrative processes and public policies, knowledge of organization and management, knowledge of emerging fields of science, etc. [4]. However, the

global agricultural knowledge generation is propagating exponentially [5] and traditional knowledge is rapidly superseded or nullified by fast, low cost, better result providing new knowledge. Therefore, developing the understanding of new knowledge source and channelize the information for the application is equally important.

Globally, there is an increasing disparity between the rate of knowledge generation and knowledge dissemination [4]. In reality, the message of an intervention program that goes unheard or unseen can bring no desirable changes in the behavior of targeted users [6]. As agricultural system is turning more complex farmers' access to reliable, timely, and relevant information is becoming crucial to farmers' competitiveness. However, better impact of information is preconditioned with packaged and disseminated in a way preferred by peasants [7]. So, the agricultural development program at design stage needs to know the media use behavior pattern of the farmers for effective technology transfer. In development communication, media selection by the sender and receiver is equally important as the process is interdependent and moves towards the same goal. The treated message should be creative and useful enough for a wider group, whereas the message consumer should have a thirst for credible and profitable information media. In this regard, periodic study on use and preference of media can assist us to understand the trend of media used by the shrimp farmers and its contribution to profitable shrimp production in southern Bangladesh. However the study was directed towards the following specific objectives:

1. To access the performance of shrimp farming sector in Bangladesh.
2. To ascertain the farmer's usage and preference of extension communication media in receiving information.
3. To determine the factors influencing farmers' usage of communication media for receiving shrimp farming information.

2. CONCEPTUAL FRAMEWORK

Information is a prerequisite for the development of agriculture [8]. It is also necessary for successful operation and decision-making in all kinds of business. Communication, on the other hand, is exchange of information between people or places. Basically, communication is sharing ideas, facts, feelings or such kind of things between individuals to establish commonality in understandings. A medium (singular form is media) is a 'channel of communication' through which people send and receive information [9]. Extension, if state simply, is communication. As described by [10], the basis of extension is a two way flow of information between farmers and those advising them. [11] explained extension as conscious use of communication information to help people to form sound opinions and make good decisions. So, extension communication media are means by which extension agents and farmers exchange information.

Bangladesh being one of world's top densely populated countries has markedly different rural communities in terms of socio-economic status as well as knowledge. This variation instigates extension educators to employ a variety of communication channels to disseminate their educational programs. Diversified studies established the fact that producers prefer a blend of communication channels for receiving agricultural information and particularly prefer interpersonal communication methods [12-14]. Lamentably, limited financial resources may coerce extension agents to limit their choice among communication channels [15]. However, efficient transfer of information largely depend upon channeling receiver understandable information, through their prefer method of receiving information [16-18]. Actually, understanding of extension sources and channels adopted by clients to acquire information is an indispensable part of education programming [6].

2.1 Plight of Shrimp Farming in Bangladesh

Shrimp is called the white gold of Bangladesh as it brings more than 500 million USD every year (Fig. 1) and contributing 3.87 percent of GDP [19]. About 12 million rural people of Bangladesh are employed in this sector. It is the second largest export industry of Bangladesh, [20,21] which occupies a total of 162 processing plants [22]. Such a promising sector of Bangladesh is being faded in very recent years. The chief cause of losing the glory of this sector is declining the export growth (Fig. 2). Bangladesh is facing challenges to maintain and uphold its access to greater international markets. Although, shrimp is a top level export item of Bangladesh, its contribution to international market is only 2.5 percent [8]. Bangladesh is lagging behind Thailand, China, Vietnam and India in shrimp production. Therefore, Bangladesh has limited bargaining capacity in international market.

Shrimp farming system in Bangladesh is mostly extensive in nature. This traditional system is tied fed and local feed dependent [23]. Shrimp sector of Bangladesh faces serious production related risk at the farm level that undermines production. Widespread viral infection in farm, change in aquatic environments such as salinity, poor quality fry, and inappropriate management practices inhibit farmers to reach a competitive production level [23,24]. Due to remarkably insufficient production, the processing industries receive only about ten percent of their total capacity. For instance, most of frozen shrimp exports from Khulna region, [25] in a newspaper report disclosed that among the 58 shrimp processing industries in Khulna region 34 has already been closed, which gives a warning of the destruction of Bangladesh's shrimp sector. Moreover, because of fraudulence in processing and packaging [26] the importers have turned their faces towards the new exporters like India and Indonesia in very recent years (Fig. 2). Nonetheless, the poor policy of the government in reaching the international markets is also another prominent lacking that halts growth of shrimp export.

In recent years, Bangladesh is facing a magnitude of the difficulties in upholding its position in the international shrimp market. Fortunately, the loss of international market can easily be minimized by proper and efficient use of the domestic market. The recent experience

shows that price of shrimp is even higher at the domestic market. Farmers are offloading the black tiger shrimp on the internal market in an attempt to recuperate the cost of production in the face of slumping prices and poor demand in western countries [27]. The export price of per kilogram shrimp is BDT 330 (\$4.16), whereas wholesale prices for the same amount in domestic market is BDT 350-370. The retail price of medium to large size shrimp rises even up to BDT 1000 in domestic market. However, the effort is limited in exploring the domestic demand and marketing channel of valuable shrimp.

Shrimp, no doubt, is one of the promising sectors of Bangladesh. Lamentably, the inadequate focus in this sector has declined the production of shrimp at farm level. Eventually, many of the

problems of the shrimp farmers can be solved by effective communication of appropriate and timely information. Use of credible sources for scientific farm management information can reduce production related problems and boost the production, whereas pursuing effective market extension service and food safety regulation can help to get demand borne profitable market. The general shrimp supply chain of Bangladesh (Fig. 3) depicts abundant scope to use scientific farm information at various levels to make the shrimp farming productive and profitable. Therefore, analyzing farmers' communication channels has become a crucial need before going to put an endeavor for linking them with scientific farm information source.

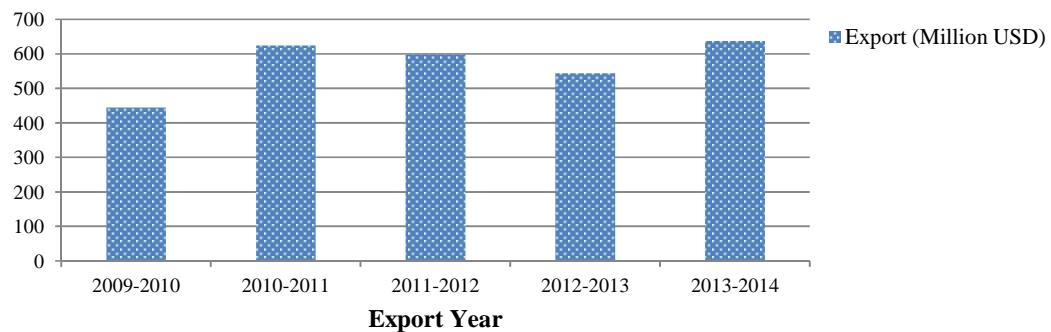


Fig. 1. The recent export value of Bangladeshi shrimp

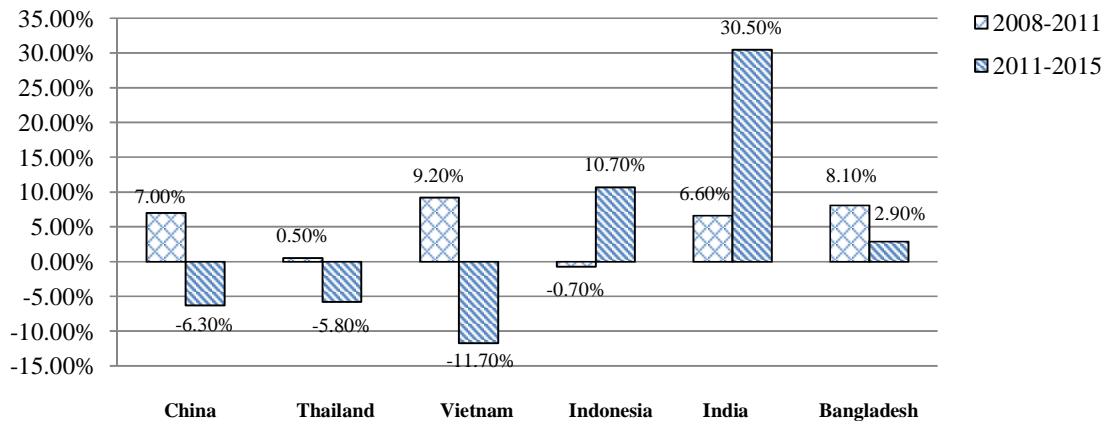


Fig. 2. Comparative annual average export growth rate of Shrimp in Asia during 2008-2015

Source: [24]

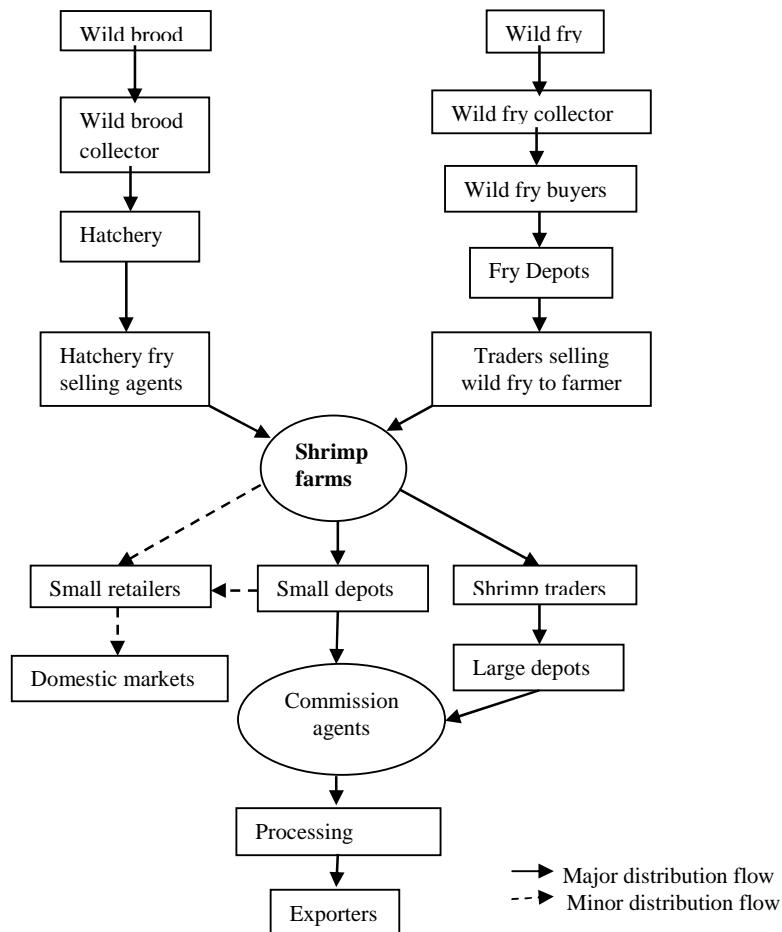


Fig. 3. General shrimp supply chain in Bangladesh

Source: Adapted by authors

3. METHODOLOGY

The study was conducted in three purposefully selected villages of Bagerhat district. With close proximity to the Bay of Bengal, Bagerhat is located in the southwest part of the country and belongs to Khulna division. The selected villages belong to Shat Gambuj Union under Sadar Upazilla of Bagerhat district. The area was selected purposefully because of its fame and heritage in extensive shrimp production in Bangladesh. According to [28], Bagerhat Sadar stands second position in terms of fish production area of the district. About half of the cultured prawn is farmed in Bagerhat district of Bangladesh. This farming system is totally export oriented and brings huge foreign currency. Therefore, the study area bears immense importance in the national economy. Traditionally, the shrimp farmers of this area have a long experience of extensive shrimp farming. The shrimp farmers those are engaged

in shrimp farming for at least one year and have own or leased farm were considered as the respondents of the study. Total shrimp farming population in the selected three villages were about 398. The researchers collected data from 72 purposively selected shrimp farmers as this sample size fulfill the condition of applying chi-square test. As note by [29], chi-square is a crucial non-parametric test and as such no rigid assumptions are necessary in respect of the type of population. The same author further claimed that we require only the degrees of freedom (implicitly the size of sample) i.e. a reasonably large number of items normally be at least 50. Data were collected using structured interview schedule during 15 June 2015 to 25 June 2015. Before going to the final data collection, the researcher pre-tested the schedule for obtaining valid and reliable information.

Eight selected characteristics of the shrimp farmers such as age, marital status, education

level, objectives of shrimp farming, fish farm size, shrimp farming experience, economic status and availability of communication media were considered as the independent variables, whereas the usage of extension communication media by the farmers was designated as the dependent variable of the study. All the independent variables except age and availability of extension media was measured based on ordered scale (Please see Table 1). Availability of the communication media was measured based on a four point rating scale. Media use of the farmers was measured by a four point rated scale frequently-occasionally-seldom-not at all with corresponding score 3, 2, 1 and 0. The scale was used against 12 selected media, therefore the total score of a respondent could be varied from 36 to 0. For measuring media preference, farmers were asked to choose one media in terms of their preference from a list of 12 selected media. Later on frequency of choice was counted. Information need of farmers was assessed based on frequency of response to an open form question related to the information need. Data were analyzed by computer software SPSS (statistical package for social science) 16 version. Descriptive statistics such as mean, standard deviation, range, frequency percentage, etc. was used to describe the characteristics of the farmers. Chi-square analysis was employed in exploring the relationship between media use and selected characteristics of the shrimp farmers.

4. RESULTS AND DISCUSSION

4.1 The Salient Features of Shrimp Farmers' Characteristics

The results of descriptive analysis presented in Table 1 show that most of the shrimp farmers (91.7%) are young to middle aged and a small proportion of them are old (8.3%). This is because shrimp farming needs application of labor, modern management information and market exploration. As a result, this energetic farmer group is dominating over the old group in shrimp farming. The highest proportion of the farmers (88.9%) is married in their personal life. In case of education, more than 80 percent belongs to secondary and above education stage and only about 5 percent of them are illiterate. Almost 95 percent of the farmers established farm for commercial or for both commercial and family consumption purposes. A negligible part of about 5 percent subsistence type farmer cultured shrimp for family consumption only. Furthermore, about 40 to 30 percent farmers owned medium

and large size farm. In case of shrimp farming experience, about 88 percent farmers are experienced. This is because, farmers of this area conventionally culture shrimp over the years. When economic status was considered, it was found that more than 90 percent of the farmers belong to lower middle class to middle class. In terms of media availability, 54.2 percent farmers experienced medium media availability, whereas 26.4 percent reported low availability of communication media.

4.2 Availability and Usage of Extension Communication Media to Shrimp Farmers

The results of media availability arranged in Table 2 show that among the mass media, television has highest availability to the farmers (83.33%). Other available media, according to weighted mean based rank are friends and/relatives, progressive farmers, newspapers, GO and NGO extension workers/officers, etc. However, lowest available media are agricultural magazines and periodicals, private extension workers/officers, and poster/leaflet.

According to results presented in Table 3, 75 percent of the shrimp farmers are medium to high users of extension communication media, whereas 25 percent of them are low users. More detailed results presented in Table 4 show that television is the most widely used communication media followed by relatives and friends, progressive farmers and newspapers. On the contrary, private extension workers/officers, agricultural magazines/periodicals, leaflet/posters and radios are some of remarkably least used media. This result corroborates those of [30-32], where print media were not considered as important media rather friends/relatives were thought important in terms of use.

4.3 Information Needs of the Shrimp Farmers

Findings arranged in Table 5 represented that shrimp farmers had a wide range of information need grossly related to production, input and marketing related issues. Based on the frequency and percentage of the farmers disease management information occupied the top position in the farmers' need list. The second most important information requirement was scientific cultural practice related information followed by salinity management, credit sources, market, and input related information. Endorsing our findings other two studies [33,34] in

Bangladesh and India also identified pest and disease management related information as two crucial topics of information need.

4.4 The Determinants of Farmers' Usage of Communication Media

The results of Chi-square analysis presented in Table 6 show that shrimp farmers' usage of extension communication media significantly varies with the variation of farmers' education level, economic status and availability of extension communication media. It is true that educated people are more cosmopolitan, aware, enlightened and understands the worth of information media use in solving farm problems, [35-37] in their study also stated that educated people are more inclined and exposed to modern

information media and also possesses efficient using skill. Therefore, it has been confirmed that media use of the farmers increase with the progress of their education level. This finding is also consistent with [30,38,18]. Economic status has been revealed as a significant determinant of farmers' media use. [39,37] stressed that the riches have more access and affordability to modern communication media. Consequently, the farmers who had more available media had more uses of those media for receiving farm information. In line with our findings, [33] in their study on farmer's access to information communication media in a selected village of Chandpur district in Bangladesh explored that availability of information communication media has a remarkable contribution to farmers' access to information communication media.

Table 1. Distribution of respondents according to selected characteristics (n=72)

| Respondents characteristics | Frequency | Percentage |
|--|-----------|------------|
| Age (years) | | |
| Young (≥ 35) | 32 | 44.4 |
| Middle aged (36-54) | 34 | 47.3 |
| Old (≤ 55) | 6 | 8.3 |
| Mean=37.93, Standard deviation=10.83, Range=19-65 | | |
| Marital status | | |
| Single | 8 | 11.1 |
| Married | 64 | 88.9 |
| Education level (class) | | |
| Illiterate (0) | 4 | 5.6 |
| Primary (1-5) | 8 | 11.1 |
| Secondary (6-10) | 33 | 45.8 |
| Higher Secondary & above (≤ 11) | 27 | 37.5 |
| Objective of shrimp farming | | |
| Commercial | 35 | 48.6 |
| Family consumption | 4 | 5.6 |
| Both | 33 | 45.8 |
| Fish farm size (acres*) | | |
| Household farmers | 6 | 8.3 |
| Small farmer (≥ 1) | 16 | 22.2 |
| Medium farmer (1.01-2.00) | 28 | 38.9 |
| Large farmer (≤ 2) | 22 | 30.6 |
| Shrimp farming experience (years) | | |
| Beginner (1-2) | 2 | 2.8 |
| Moderately experienced (3-5) | 7 | 9.7 |
| Experienced (≤ 5) | 63 | 87.5 |
| Economic status (Taka**) | | |
| Ultra poor ($\geq 36,000$) | 2 | 2.8 |
| Poor (36,001-48,000) | 3 | 4.2 |
| Lower middle class (48,001-1,20,000) | 30 | 41.7 |
| Middle class (1,29,001-4,80,000) | 36 | 50 |
| Rich ($\leq 4,80,000$) | 1 | 1.4 |
| ***Availability of media (Score) | | |
| Low (3-8) | 19 | 26.4 |
| Medium (9-18) | 39 | 54.2 |
| High (≤ 19) | 14 | 19.4 |
| Mean=13.02, Standard deviation=6.37, Range =3-28 | | |

Note: *1 acre= 0.404, **78 Tk= 1USD, ***Availability of extension communication media (Score for each selected media= easily availablex3+moderately availablex2+ hardly availablex1+ Unavailablex0)

Table 2. Distribution of respondents according to availability of extension communication media

| Media | Easily Available | | Moderately available | | Hardly Available | | Unavailable | | WM* (Rank) |
|-----------------------------------|------------------|-------|----------------------|-------|------------------|-------|-------------|-------|---------------|
| | f | % | f | % | f | % | f | % | |
| Mass media | | | | | | | | | |
| Radio | 12 | 16.67 | 7 | 9.72 | 15 | 20.83 | 38 | 52.78 | 0.90(7) |
| Television | 40 | 55.56 | 15 | 20.83 | 5 | 6.94 | 12 | 16.67 | 2.15(1) |
| News paper | 12 | 16.67 | 15 | 20.83 | 23 | 31.94 | 22 | 30.56 | 1.23(4) |
| Agricultural magazine/periodicals | 4 | 5.55 | 2 | 2.78 | 13 | 18.06 | 53 | 73.61 | 0.40(11) |
| Poster/leaflet | 9 | 12.50 | 2 | 2.78 | 12 | 16.67 | 49 | 68.05 | 0.59(9) |
| Interpersonal media | | | | | | | | | |
| Govt. extension worker/officer | 13 | 18.06 | 7 | 9.72 | 20 | 27.78 | 32 | 44.44 | 1.01(6) |
| NGO extension worker/officer | 10 | 13.89 | 11 | 15.27 | 21 | 29.17 | 30 | 41.67 | 1.01(6) |
| Private extension worker/officer | 3 | 4.17 | 7 | 9.72 | 13 | 18.06 | 49 | 68.05 | 0.50(10) |
| Progressive farmer | 20 | 27.77 | 12 | 16.67 | 13 | 18.06 | 27 | 37.50 | 1.34(3) |
| Opinion leader | 12 | 16.67 | 17 | 23.61 | 15 | 20.83 | 28 | 38.89 | 1.18(5) |
| Input dealers | 12 | 16.67 | 8 | 11.11 | 12 | 16.67 | 40 | 55.55 | 0.88(8) |
| Friends and/or relatives | 30 | 41.67 | 11 | 15.28 | 14 | 19.44 | 17 | 23.61 | 1.75(2) |

Note: *Rank is based on weighted mean {Weighted mean for each media = (Easily availablex3+ Moderately availablex2+ Hardly available x1+ Unavailablex0)/72}

Table 3. Distribution of shrimp farmers according to communication media use

| Usage of media | Shrimp farmers | | M | SD | Range |
|--------------------|----------------|-------|-------|------|-------|
| | f | % | | | |
| Low (3-9) | 18 | 25.0 | | | |
| Medium (10-18) | 34 | 47.2 | 14.41 | 6.81 | 3-32 |
| High (≤ 19) | 20 | 27.8 | | | |
| Total | 72 | 100.0 | | | |

Note: Usage of extension communication media (Score for each selected media) = frequentlyx3+ occasionallyx2+ Seldomx1+ Not at allx0

Table 4. Distribution of the respondents according to usage of extension communication media

| Media | Frequently | | Occasionally | | Seldom | | Not at all | | WM* (Rank) |
|-----------------------------------|------------|-------|--------------|-------|--------|-------|------------|-------|---------------|
| | f | % | f | % | f | % | f | % | |
| Mass media | | | | | | | | | |
| Radio | 7 | 9.72 | 12 | 16.67 | 15 | 20.83 | 38 | 52.78 | 0.83(8) |
| Television | 48 | 66.67 | 9 | 12.50 | 7 | 9.72 | 8 | 11.11 | 2.34(1) |
| News paper | 17 | 23.61 | 18 | 25.00 | 12 | 16.67 | 25 | 34.72 | 1.37(4) |
| Agricultural magazine/periodicals | 2 | 2.78 | 6 | 8.33 | 15 | 20.83 | 49 | 68.06 | 0.45(11) |
| Poster/leaflet | 8 | 11.11 | 9 | 12.50 | 17 | 23.61 | 38 | 52.78 | 0.82(9) |
| Interpersonal media | | | | | | | | | |
| Govt. extension worker/officer | 12 | 16.67 | 23 | 31.94 | 16 | 22.22 | 21 | 29.17 | 1.36(5) |
| NGO extension worker/officer | 16 | 22.22 | 20 | 27.78 | 8 | 11.11 | 28 | 38.89 | 1.33(6) |
| Private extension worker/officer | 6 | 8.33 | 11 | 15.28 | 12 | 16.67 | 43 | 59.72 | 0.71(10) |
| Progressive farmer | 20 | 27.78 | 16 | 22.22 | 5 | 6.94 | 31 | 43.06 | 1.57(3) |
| Opinion leader | 6 | 8.33 | 21 | 29.17 | 12 | 16.67 | 33 | 45.83 | 1.00(7) |
| Input dealers | 14 | 19.44 | 8 | 11.11 | 14 | 19.44 | 36 | 50.00 | 1.00(7) |
| Friends and/or relatives | 28 | 38.89 | 16 | 22.22 | 8 | 11.11 | 20 | 27.78 | 1.72(2) |

Note: *Rank is based on weighted mean {Weighted mean for each media = (frequentlyx3+ occasionallyx2+ seldomx1+ not at allx0)/72}

Table 5. Information need of the shrimp farmers

| Aspects | Frequency | Percentage | Rank |
|---|------------------|-------------------|-------------|
| Disease management, especially virus disease | 60 | 83.33 | 1 |
| Scientific cultural practice of shrimp | 28 | 38.89 | 2 |
| Salinity management of water | 26 | 36.11 | 3 |
| Sources offer credit in easy terms and conditions | 25 | 34.72 | 4 |
| About fair market price | 24 | 33.33 | 5 |
| Quality feed sources | 23 | 31.94 | 6 |
| Sources of healthy PL (Post Larvae) | 18 | 25.00 | 7 |
| Source of quality inputs e.g. fertilizer, medicine etc. | 3 | 4.17 | 8 |

Table 6. Chi-square output of the determinants of use of communication media by the farmers

| Variable | X² | P-value |
|---|----------------------|----------------|
| Age | 5.62 | 0.229 |
| Marital status | 1.03 | 0.597 |
| Education level | 17.89 | 0.022 |
| Fish farm size | 3.81 | 0.702 |
| Objective of farming | 1.04 | 0.903 |
| Experience in shrimp farming | 2.92 | 0.571 |
| Economic status | 16.86 | 0.032 |
| Availability of extension communication media | 52.72 | 0.000 |

Table 7. Distribution of respondents based on extension communication media preference

| Media | Frequency | Percent | Rank |
|-------------------------------------|------------------|----------------|-------------|
| Mass media | | | |
| Radio | 2 | 2.77 | 5 |
| Television | 49 | 68.05 | 1 |
| News paper | 3 | 4.16 | 4 |
| Agricultural magazine | 1 | 1.38 | 6 |
| Poster/leaflet | 3 | 4.16 | 4 |
| Interpersonal media | | | |
| Government extension officer/worker | 6 | 8.33 | 2 |
| NGO extension officer/worker | 5 | 6.94 | 3 |
| Progressive farmers | 2 | 2.77 | 5 |
| Relatives/ Neighbors | 1 | 1.38 | 6 |
| Total | 72 | 100 | |

4.5 Extension Communication Media Preference of Shrimp Farmers

The results summarized in Table 7 show that ideologically farmers prefer trustworthy communication media. Their first choice is television followed by government extension agent, NGO extension agent, Newspaper and leaflets. However, relatives and/or neighbors, agricultural magazines, radio, relatives and/friends are at the bottom of farmers preference list. Echoing our findings, [40] in his study in Maharashtra, India also found

government officials and newspaper as the most favored media. Similarly, [41] in their study on rural women's preferences of extension media in Faisalabad, Pakistan identified extension agents and electronic media as two substantially preferred media to the respondent women.

4.6 Discussion

Shrimp farming, although experiencing a declining trend in terms of production and export, is still full of potential for substantial contribution to Bangladesh economy. Unfortunately, this sector remains extraordinarily underutilized due to lack of proper application of scientific knowledge, well structured innovative marketing system, and up-to-date government policy. Along with many other problems, lack of use of enriched and trustworthy extension communication media is also a key problem.

Except few print media, most of the other selected media are fairly available to the shrimp farmers. Unfortunately, poor and less trustworthy media like friends and relatives, progressive farmers, etc. occupied the top positions of farmer's media use list. Excluding television and newspaper other extensively used media like friends and/or relatives, progressive farmers, etc. are not capable of providing latest scientific information in many cases. Print media, although expensive and slow to reach its potential audience, should be used repeatedly and be shared more than once. Among all the selected media, television is the most widely used media by shrimp farmers. However, high use of television does not guarantee of receiving sufficient information in shrimp farming. In Bangladesh, farmers use television predominantly for recreational purpose. A recent study [42] confirmed the fact that although ample numbers of television channels are available in Bangladesh but their broadcasting of agricultural information is remarkably limited. Nonetheless, agricultural programs in most of the cases scheduled with crop related issues as the

majority of farmers in our country are crop farmers. Unfortunately, fisheries and livestock related programs are not so frequent compared to crop related programs.

Findings related to the farmer's preference of media showed that prudent shrimp farmers prefer effective, trustworthy, and up-to-date communication media. Here, one of the important chasms in the farmer's use of the media is their use of media do not coherent with their preference. Probably, farmer use media based on their availability rather than preference. Actually, higher use of media solely can't guarantee effective dispatch of quality information. Therefore, it is necessary to ensure availability of effective, credible, and up-to-date communication media to the farmers in their nearby territory.

Mere availability of information communication media is not enough unless the farmer's preferred message is disseminated. Shrimp farming is a very sophisticated but economically potential technology. Eventually, high investment and information is the cornerstone for its successful operation. Nonetheless, as operated in a competing environment, shrimp farming requires accurate and timely information. Viral disease, an epidemic threat of shrimp, can completely ruin a shrimp farm in a very short period of time. As a result, farmers urgently need viral disease management related information. Due to the negative impact of the global warming, salinity of coastal area is increasing day by day. So, managing salinity is crucial, as growth and survival of larvae are very sensitive to salinity. Correspondingly, information on credit access is also crucial, as shrimp farming requires high initial investment. At the same time, market related information is also vital for harvesting better profit.

5. CONCLUSION

Shrimp is one of the most important foreign currency earning sectors of Bangladesh. Unfortunately, this sector is still extremely unaddressed. Various problems have created confusion about the future survival and success of shrimp sector in Bangladesh. Although not all, proper usage and availability of credible and rich information communication media can solve many problems of shrimp farming. The findings of this study revealed that shrimp farmers usage of media is satisfactory. Unfortunately, a remarkable proportion of their used media is less

credible and has poor capacity in supplying up-to-date information. It is also clear that farmers' usage of information communication media does not represent their preference. Production, market, and credit related information requires special consideration in planning and designing strategies of information dissemination for the shrimp farmers.

ACKNOWLEDGEMENTS

This research deeply acknowledges 5th batch (Session: 2011-12) fisheries undergraduate students of Patuakhali Science and Technology University, Dumki, Patuakhali, Bangladesh for their cordial assistance in data collection.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Rietta. Injustice in Bangladesh's shrimp farming industries; 2014. Available:<http://puccifoods.com/pucciseafod-new/blog/hidden-human-cost-part-1-abuse-injustice-bangladesh-shrimp-farming-industry/>
2. Bari MH. Shrimp industry: Problems and prospects. The Financial Express. 2013; 20:157. Available:<http://print.thefinancialexpress-bd.com/old/index.php?ref=MjBfMTBfMjNfMTNfMV8yN18xODc2MjA=>
3. Paul B, Vogl CR. Impacts of shrimp farming in Bangladesh. Ocean and Coastal Management. 2014;54(3):201-2011. DOI: 10.1016/j.ocemar.2010.12.001
4. Jacobs G, Asokan N. Vision 2020: knowledge for development. Presentation to the Planning Commission, Govt. of India, August 8; 2000. Available:http://www.icpd.org/development_strategies/Knowledge%20for%20Development.htm
5. Babu SC, Glendenning CJ, Asenso-Okyere K, Govindarajan SK. Farmers' information needs and search behaviors: Case study in Tamil Nadu India. Discussion paper. International Food Policy Research Institute, Washington, D. C.; 2011.
6. Israel GD, Wilson KM. Sources and channels of information used by educational program clients. J. Appl. Comm. 2006;90(4):55-78.

7. Diekmann FC, Loibl, Battle MC. The economics of agricultural information: Factors affecting commercial farmers' information strategies in Ohio. *Review of Agricultural Economics*. 2009;31(4):853-872.
8. Kaaya J. Role of information technology in agriculture. Preceedings of FoA conference. 1999;4.
9. Liveney C. Defining the mass media. Sociology Central; 2011. Available:www.sociology.org.uk/media_defined.pdf
10. Christoplos I. Poverty, pluralism and extension practice. Gatekeeper series no. 64. International Institute of Environment and Development: London; 1996.
11. Van den Ban AW, Hawkins Stuart H. Agricultural Extension; 1999. Blackwell Science.
12. Dollisso AD, Martin RA. Perceptions regarding adult learners'motivation to participate in educational programs. *Journal of Agricultural Education*. 1999; 40(4):38-46.
13. Kotile DG, Martin RA. Sustainable agricultural practices for weed management: Implications to agricultural extension education. *Journal of Sustainable Agriculture*. 2000;16(2):31-51.
14. Lasley P, Padgett S, Hanson M. Telecommunication technology and its implications for producers and extension services. *Technology in Society*. 2001;23: 109-120.
15. Licht MAR, Martin RA. Communication channel preference crown and soybean producers. *Journal of Agricultural Extension*. 2007;45(6). Available:www.joe.org/joe/2007december/r_b2.php
16. Radhakrishna R, Nelson L, Franklin R, Kessler G. Information sources and extension delivery methods used by private longleaf pine landowners. *Journal of Extension [On-line]*. 2003;41:4. Available:<http://www.joe.org/joe/2003august/rb3.shtml>
17. Richardson JG, Mustian RD. Delivery methods preferred by targeted extension clientele for receiving specific information. *Journal of Applied Communications*. 1994;78(1):22-32.
18. Rollins T. Using the innovation adoption diffusion model to target educational programming. *Journal of Agricultural Education*. 1993;34:46-54.
19. Nupur JM. Problems and prospects of shrimp farming in Bangladesh. AIUB Bus Econ Working Paper Series, No. 2010-05; 2010. Available:<http://orp.aiub.edu/WorkingPaper/WorkingPaper.aspx?year=2010>
20. Nuruzzaman M. Dynamics and diversity of shrimp farming in Bangladesh: Technical aspects. In: Rahman A, Quddus AHG, Pokrant Bob, Liaquat Ali M, editors. Shrimp farming and industry: Sustainability, trade and livelihoods, Bangladesh Centre for Advanced Studies (BCAS) and University Press Ltd.; 2006.
21. Uddin MB, Sultana T, Rahman MM. Shrimp export marketing of Bangladesh. *Bangladesh Res. Pub. J.* 2013;8(2):146-151. Available:<http://www.bdresearchpublication.com/admin/journal/upload/1308119/1308119.pdf>
22. Ferdous SR, Hossain SD. Prospect and challenge of Bangladesh frozen food: A way to overcome. *Online International Interdisciplinary Research Journal*. 2015; 5(special):7-23.
23. Rahman MM, Hossain MM. Production and export of shrimp of Bangladesh: Problems and prospects. *Progressive Agriculture*, 2009;20(1-2):163-171. DOI:<http://dx.doi.org/10.3329/pa.v20i1-2.16868>
24. GOAL. Shrimp production review. Global Agricultural Alliance, New Hampshire, USA; 2013. Available: <https://qaalliance.org>
25. Anonymous. The shrimp sector is at the verge of destruction; among the 58 processing industries in Khulna 34 are closed. *The Daily Naya Diganta*, July 26; 2015. Dhaka.
26. Kothari CR. Research methodology methods and techniques (2nd edition). Wishwa Prakashan: New Delhi. 1990;280-282.
27. Daily Star. Price drop, weak demand has drive Bangladesh shrimp farmers looking to domestic market. *The Daily Star*, June 3; 2015. Dhaka.
28. BBS. District statistics 2011: Bagerhat. Bangladesh Bureau of Statistics (BBS), Statistics and Informatics Division (SID), Ministry of Planning, Government of the People's Republic of Bangladesh; 2013.
29. Shier R. The chi-square test for two way table. Mathematics Learning Support Center.

- Available:www.lboro.ac.uk/media/.../1.3_C_hisquared.pdf
- 30. Yahaya MK. Gender and communication variables in agricultural information dissemination in two agro-ecological zones of Nigeria. Research Monograph. Ibadan: Corporate Graphics Ltd.; 2002.
 - 31. Tologbonse EB, Mesini O, Tsado JH. Farmers perception of sources of information in relation to adoption of improved technology by farmers in inland valley swamps of middle-belt zone of Nigeria. *J. Agric. Ext.* 2006;9:63-73.
 - 32. Okwu OJ, Daudu S. Extension communication channels' usage and preference by farmers in Benue State, Nigeria. *Journal of Agricultural Extension and Rural Development.* 2011;3(5):88-94.
 - 33. Rashid MMU, Akanda MGR. Fish farmer's access to information communication media: A gender based comparative study in a selected village of Bangladesh. *International Journal of Fisheries and Aquatic Studies.* 2015;2(4):168-173.
 - 34. Saravanan Raj, Raja P, Sheela Tayeng. Information input pattern and information needs assessment among the tribal farmers of Arunachal Pradesh State. *Indian Journal of Extension Education.* 2009;45(January-June):51-54.
 - 35. Mekonnen GT. Role of infrastructure and institutional services in socio-economic development of rural people in Southern Ethiopia. *International Journal of Management and Development Studies.* 2013;2(9):33-41.
 - 36. Uddin ME, Gao Q, Rashid MU. Crop farmers' willingness to pay for agricultural extension service in Bangladesh: Cases of selected villages in two important agro-ecological zones. *The Journal of Agricultural Education and Extension, November'* 2014. DOI: 10.1080/1389224X.2014.971826
 - 37. Pervez AKMK, Gao Q, Uddin ME. Rural women's awareness on indigenous technical knowledge: Case of northern Bangladesh. *The Anthropologist.* 2015; 21(3):415-426.
 - 38. Boz I, Ozctalbas O. Determining information sources used by crop producers: A case study of Gazian province in Turkey. *Afr. J. Agric Res.,* 2010;5(10):980-987.
 - 39. Jahan MN. Farmers' awareness of the use of Indigenous Technical Knowledge (ITK) for sustainable agricultural development. Master Thesis. University of Rajshahi; 2014.
 - 40. Bachhav NB. Information needs of the rural farmers: A study from Maharashtra, India: A survey. *Library Philosophy and Practice (e-journal).* Paper 866; 2012. Available:http://digitalcommons.unl.edu/lib_philprac/866
 - 41. Sadaf S, Javed A, Luqman M. Preferences of rural women for agricultural information sources: A case study of district Faisalabad-Pakistan. *Journal of Agriculture and Social Sciences.* 2006;2(3):145-149.
 - 42. Alam Mohammed Khalid, Haque Md. Armanul. Contribution of television channels in disseminating agricultural information for the agricultural development of Bangladesh: A case study. *Library Philosophy and Practice (e-journal).* Paper 1048.; 2014. Available:http://digitalcommons.unl.edu/lib_philprac/1048

© 2016 Mamun-Ur-Rashid et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://sciedomain.org/review-history/13993>