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ASSESSING FARMERS' AWARENESS, TECHNOLOGY ADOPTION, BARRIERS, AND EFFECTIVE MEDIA SOURCES IN AGRICULTURAL JOURNALISM FOR TECHNOLOGY TRANSFER

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Abstract

Radio, television and newspapers are some of the most effective media of journalism to accelerate farming population on appropriate track of their agricultural works. The ex-post facto explanatory study was conducted at Dumuria upazila of Khulna district to analyze the role of journalism and to identify the most effective mass media with their hindering factors which block the role of journalism for disseminating agricultural innovations as well as the level of awareness and adoption of these innovations. The study results point out that the majority of the farmers (74.55%) had the highest awareness regarding TV about the reliability and significance of different media sources of news, followed by newspaper (46.67%) and radio (41.81%). Television (70.30%) is also determined to have the highest adoption rate for learning about new agricultural technologies among the respondents, with newspaper (18.48%) and radio (14.85%) coming in second and third position. "Economic condition to afford TV", "illiteracy of the farmer" and "Bad signal and internet problem" were found to be the most significant hindering factors of television, newspapers and radio, respectively, to block the role of agricultural journalism. Television (74.14%) was determined to be the most effective mass media outlet for agricultural journalism, with radio (28.77%) and newspapers (22.74%) coming in as the respondents' second and third-place selections. Television was found to be the most effective medium for disseminating agricultural innovations among farmers in Dumuria upazila, despite economic, literacy, and technical barriers affecting its accessibility.

Keywords: Agricultural journalism, Mass media, Technology transfer

Introduction

The importance of agricultural journalism to the growth of the agriculture industry has recently gained increased attention, especially from researchers, academics, and decision-makers in developing nations. The primary goal of print media today is to have an impact on the media habits and attitudes of the learners (Yaseen et al. 2019; Agbamu, 2006). The mobilization of people through various types of agricultural journalism is recognized as the most significant source for the transmission of agricultural innovation which is essential to the accomplishment of agricultural development. Although the workforce in agricultural extension is multi-dimensional, the agricultural journalism emphasizes the key problems that farm families is facing today along with their information demands (Byler et al., 2013; Irwin & Poots, 2015).

Newspaper, radio and television are some of the greatest inventions of science which revolutionized communications among all sectors of human lives including agriculture (Das et al., 2021). In the field of agricultural information dissemination, radio and television are useful intermediates for farmers to make their appropriate decisions and learn how to effectively utilize them in their farming systems and practices. For this reason, Das (2016) wants to call newspapers, radio and television the most important media for diffusing technical, systematic and scientific information to the farmer society.

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Numerous research projects have examined the use of newspapers, radio and television in the distribution of agricultural information to help farmers make the best farming decisions. Hussain, (2005) exposed that utilizing mass media such as newspapers, radio, television, documentary films, and print media helps increase the production of agriculture in Pakistan. Age et al. (2012) revealed how farmers become aware of and knowledgeable about the usage of technology in cultivating agricultural produce thanks to different aspects of agricultural journalism. Nazari & Hasbullah (2005) think that because of the poor levels of education among farmers in India, Pakistan, Bangladesh, and Sri Lanka; newspapers, radio and especially television are some of the most efficient mediums for informing people about the usage of various techniques and pesticides quickly. The study of Okwu et al. (2007) found that the majority of farmers preferred to listen to agriculture programs on radio that provided knowledge on agronomy, plant production, and animals. Ani & Baba (2009) suggested that radio and newspapers may help farmers in isolated locations to communicate and could improve their knowledge and abilities to advance in agriculture.

Bangladesh's agriculture has tremendously benefited from favorable agroclimatic conditions, where a variety of crops and other agricultural products are successfully grown. By introducing farm technologies, information and communication technologies have shown to be an important indication for improving agricultural production. Nowadays, agricultural journalism has started playing a contributory role in this regard. Bangladeshi farmers require site-specific modern knowledge of agricultural productivity and protection methods, agro-climatological advice services, market information, and other things. The farmers use a variety of sources to find the information they need. However, the rural community's insufficient access to timely information has caused issues with both the manufacturing and selling of their products. These production, processing, and marketing-related issues may have been more effectively resolved if farmers had timely information from a dependable source at the local level (Das et al., 2016).

To employ modern ICTs, and communication systems for faster development in agriculture, first of all, it is required to understand the present status and prospect of agricultural journalism in technology diffusion. Grasping the present circumstances will help to evaluate where to put the systems of agricultural journalism and ways to harness the full potential of the systems. This study will draw a glimpse into the present situation of agricultural journalism in the southern area of Bangladesh.

Given the facts, this study was conducted to find out the present status and prospect of journalism in agricultural technology diffusion. The specific objectives of the study were,

i. To determine the level of farmers' awareness about the reliability and significance of different media sources of news.
ii. To ascertain the adoption rate of new agriculture technologies disseminated through mass media.
iii. To find out the hindering factors that are blocking the information of news in the diffusion of farming technologies.
iv. To identify the most effective mass media as a source of information used for disseminating agricultural technologies.

Methodology

An ex-post facto explanatory research design was used for the study. The study sought to find out the role of journalism and to identify the most effective mass media with the hindering factors that block the role of journalism for disseminating agricultural innovations as well as the level of awareness and adoption of these innovations.

The study was conducted at different Unions of Dumuria upazila (Figure 1) under Khulna district. Farmers in Dumuria upazila were engaged in crop cultivation (both grain crops and vegetables) and fish culture, especially more active in vegetable agriculture which is the distinctive characteristic of the research region.

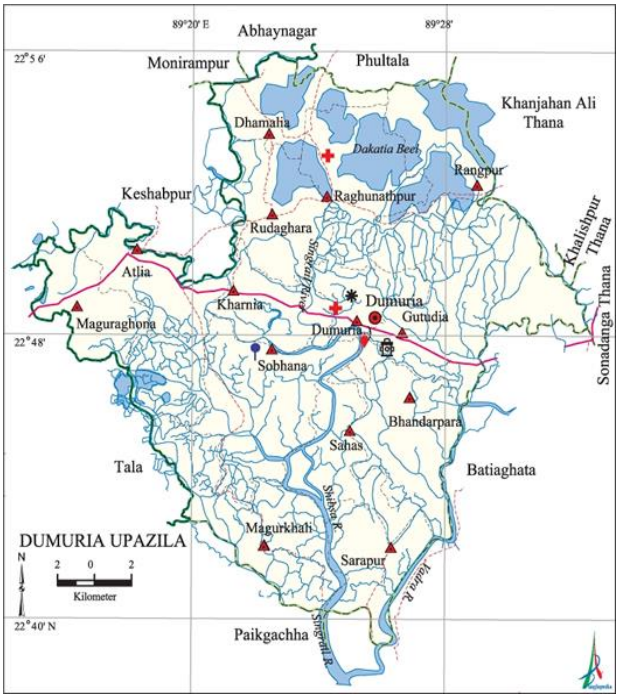

Figure 1. Dumuria upazila of Khulna district (22.8083°N and 89.4250°E)

The population of the research was deemed to consist of all farmers working in the Dumuria upazila study area's crop output. Because of the limitation of resources, manpower, time and budget, 110 of them (both male and female) were purposively chosen to make up the study's sample. The unbiasedness during the sampling was strictly maintained.

An interview schedule was formulated to gather valid and reliable information from the respondents. The interview schedule was designed according to the goals of the research.

After establishing the final interview schedule, the data was appropriately gathered and validated. The researcher personally conducted face-to-face interviews utilizing an interview plan to gather information. Data was collected from the respondents during March to April 2023.

Table 1. Selected characteristics of respondents

Socioeconomic characteristics		Focus Issues	
i.	Age	i.	Awareness
ii.	Educational qualification	ii.	Adoption rate
iii.	Family size	iii.	Hindering factors
iv.	Farming experience	iv.	Most effective media source
v.	Farm size		o Status of journalism instrument owned
vi.	Family income		o Status of journalism instrument watched
vii.	Training received		o Preferred TV channels
viii.	Cosmopolitanism		o Preferred programs
ix.	Extension media contact		o Types of information received

All of the collected data in the interview schedule was edited after the data had been collected. For analysis and discussion, all of the dependent and independent variables were grouped and set up in straightforward tables. When necessary, appropriate scoring was used to convert local units into standard units and qualitative data into quantitative ones. A microcomputer running OriginPro 2021, MS Excel 365, and SPSS 26.0 programs were used for data analysis. Descriptive data were interpreted using basic statistics including frequency counts, percentages, ranges, means, and standard deviations. The respondents' level of awareness, hindering factors, and adoption rate were all

measured using a five-point Likert scale. Throughout the analysis, Spearman rank correlation was used to investigate the relationships between the relevant variables. At least a five percent (0.05) level of significance was used as a basis for rejecting a null hypothesis.

Measurement of Focus Issues

Awareness Level of the Respondents

The awareness score of the respondents was determined by using the after formula derived from the article of Mim & Islam (2022),

AS= N1×3+N2×2+N3×1+N4×0

Where,

AS= Awareness score

N1= Number of respondents who had very high awareness

N2= Number of respondents who had high awareness

N3= Number of respondents who had average awareness

N4= Number of respondents who had no awareness

The possible range of awareness score was 0 to 330.

After the determination of AS, the awareness index was determined by the following formula

$$\text{Awareness Index (\%)} = \frac{\text{observed practice score}}{\text{possible highest practice score}} \times 100$$

Adoption Rate of Agricultural Technology

The method derived from Alam et al. (2019) where the scores were 3, 2, 1 and 0, respectively, and were calculated by carefully rating the answer to the asked question which represents the level of adoption as very high, high, moderately high and not at all (Table 2).

Table 2. Categories of respondents according to their adoption level

Categories	Score
As of before	0
Moderately High	1-5
High	6-10
Very High	11-15

Hindering Factors Score

The severity of a problem was determined based on problem severity index (HFI). The HFI was determined by using the after modified formula derived from the article of Mim & Islam (2022),

HFS= N1×5+N2×4+N3×3+N4×2+N5×1

Where,

HFS= Hindering factor score

N1= Number of strongly disagreed respondents

N2= Number of disagreed respondents

N3= Number of undecided respondents

N4= Number of agreed respondents

N5= Number of strongly agreed respondents

The possible range of problem severity score (PSS) was 0 to 550.

After the determination of HFS, the hindering factor index of the problem was determined by following the formula

$$\text{(\%) Hindering factor index of the problem} = \frac{\text{observed problem score}}{\text{possible highest problem score}} \times 100$$

Most Effective Mass Media Source of Information Used for Disseminating Agricultural Technologies

To determine the most effective mass media source, the average percentage of index score of several specific categories (awareness, owning journalism instruments, using journalism instruments, adoption rate, accessing programs on different media and types of information the respondent gets, hindering factors) was counted.

Status of owning journalism instruments: For each category (TV, Radio or FM and Newspaper), positive and negative questions were asked to the respondents and then the frequency of the positive and negative answers were counted and converted into percentages.

Status of using instruments of journalism: The scores were 3, 2, 1 and 0, respectively, and were determined by carefully rating the answer to the asked question which represents the status of using journalism instruments as regularly, occasionally, rarely and not at all (Table 3).

Table 3. Score of the statement regarding using journalism instruments

Categories	Score
Not at all	0
Rarely	1
Occasionally	2
Regularly	3

Status of accessing programs on different mediums of journalism: For each category (TV, Radio or FM and Newspaper), the scores were 3, 2, 1 and 0, respectively, and were determined by carefully rating the answer to the asked question which represents the status of accessing programs on different mediums of journalism as regularly, occasionally, rarely and not at all (Table 4).

Table 4. Categories of respondents according to accessing programs

Categories	Score
Not at all	0
Rarely	1
Occasionally	2
Regularly	3

Preferred medium and agricultural programs of agricultural journalism: Positive and negative questions were posed to respondents for each category (TV, Radio or FM, and Newspaper), and the frequency of the positive and negative responses was tallied and converted into a percentage.

Types of agricultural information the respondents get through agricultural journalism: For each category (TV, Radio or FM, Newspaper, and Other), respondents were asked 15 positive and negative questions, and the frequency of the positive and negative responses was counted and interpreted into a percentage. Based on the problem's (percent) severity, a problem's rank was established. The issue with the highest (percent) severity holds the top spot, followed by the issue with the second-highest (percent) severity, and so on.

Results and Discussion

Distribution of respondents according to their awareness about the reliability and significance of different media sources of journalism

Data presented in Table 5 showed that 58.2% of the respondents had high awareness about the reliability and significance of TV followed by 32.7% and 9.1% categorized as "very high" and "average", respectively. In the case of radio, 54.5% of respondents had average awareness about the reliability and significance of radio followed by 27.3% (High), 12.7% (not at all), and 5.5% (Very High) respondents, respectively. Whereas 45.5% of respondents had high awareness about the reliability and significance of newspapers followed by 25.5, 15.5, and 14.5 respondents titled "average", "very high" and "not at all", respectively. The awareness score ranged from 2 to 13 with a mean of 8.87 and a standard deviation of 2.56 in the case of TV followed by 0 to 12 with a mean of 4.00 and a standard deviation of 3.36 for radio and 0 to 13 with a mean of 4.82 and a standard deviation 4.16 for newspaper, respectively.

Table 5. Distribution of respondents according to their awareness

Parameters	Categories	Score	N = 110		$(\bar{x} \pm \sigma)$	Range	
			F.	%		Min.	Max.
TV	Not at all	0	0	0	8.87±2.56	2	13
	Average	1-5	10	9.1			
	High	6-10	64	58.2			
	Very High	11-15	36	32.7			
Radio and FM	Not at all	0	14	12.7	4.00±3.36	0	12
	Average	1-5	60	54.5			
	High	6-10	30	27.3			
	Very High	11-15	6	5.5			
Newspaper	Not at all	0	16	14.5	4.82±4.16	0	13
	Average	1-5	50	25.5			
	High	6-10	28	45.5			
	Very High	11-15	16	15.5			

Data shown in Figure no. 2 depicts the Index percentage of awareness level among the respondents where the respondents show the highest level of awareness in the case of TV (74.55%) followed by newspaper (46.67%) and the lowest level of awareness in case of radio (41.81), respectively.

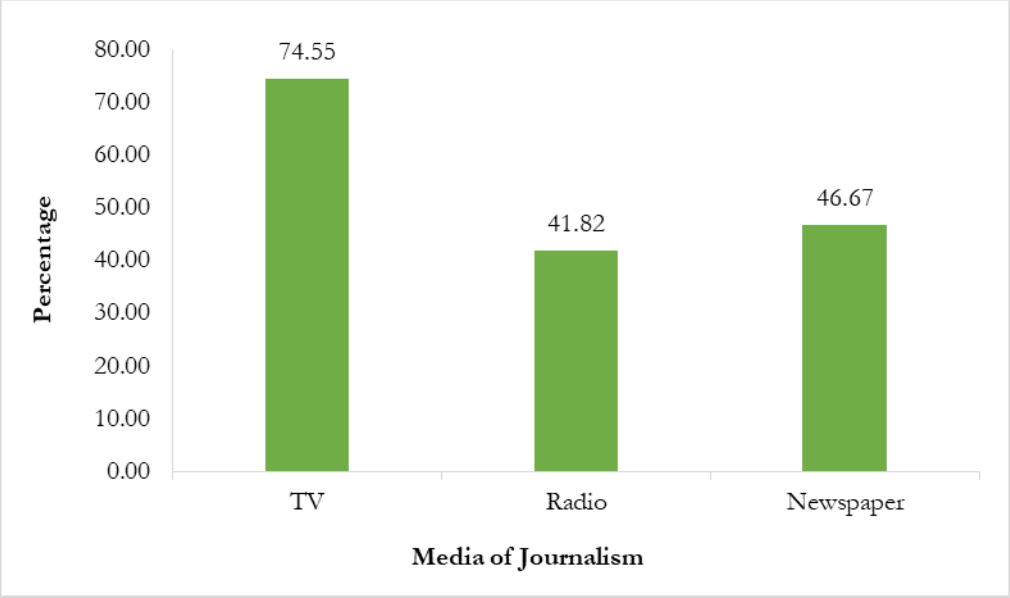

Figure 2. Respondent awareness about the reliability and significance of the medium of journalism

Table no. 5 and Figure no. 2 confirm that the respondents were highly aware of the television which means TV is the most widespread medium working for the dissemination of the newly agricultural technology among the farmers. Newspaper and radio were found to be the second and third that the respondents were aware of as a medium of journalism. With the progress of technology, TV provides a complete visual of the information that the respondents consume which radio and television don't. Osondu & Ibezim (2015) also found comparatively the same result regarding the awareness of the respondents that farmers are more aware of radio than TV and newspapers in Nigeria as well as in the case of using and accessing. The difference is caused by the economic and geographical factors which determine the effectiveness of a medium of journalism in a country (Aggarwal & Gupta, 2001).

Adoption rate of technology through different medium of journalism

Table no. 6 details the adoption rate of agricultural technology that farmers learn through various medium of journalism.

Table 6. Adoption rate of technology through different medium of journalism

	Frequency			Percentage		
	TV	Radio	Newspaper	TV	Radio	Newspaper
As of before	1	71	71	0.9	64.5	64.5
Moderately High	22	30	19	20	27.3	17.3
High	51	8	18	46.4	7.3	16.4
Very High	36	1	2	32.7	0.9	1.8

In the case of TV, 46.4% of the respondents (n = 51) had a high adoption rate of the new agricultural technology followed by 32.7%, 20% and 0.9% categorized as "very high", "moderately high", "as of before", respectively. Regarding radio, 64.5% of the respondents had zero adoption rate followed by 27.3% (moderately high), 7.3% (high) and 0.9% (very high) respondents, respectively. In the matter of newspapers, most of the respondents (64.5%) had zero adoption rate, whereas 17.3% respondents had the moderately high adoption rate of the new agricultural technologies followed by 16.4% (high) and 1.8% (very high) respondents, respectively.

Data shown in Figure no. 3 depicts the frequency index percentage of the adoption rate of new agricultural technologies among the respondents where 70.30% of respondents adopt new agricultural technologies through television followed by newspaper reading (18.48%) and listening to radio (14.85%), respectively.

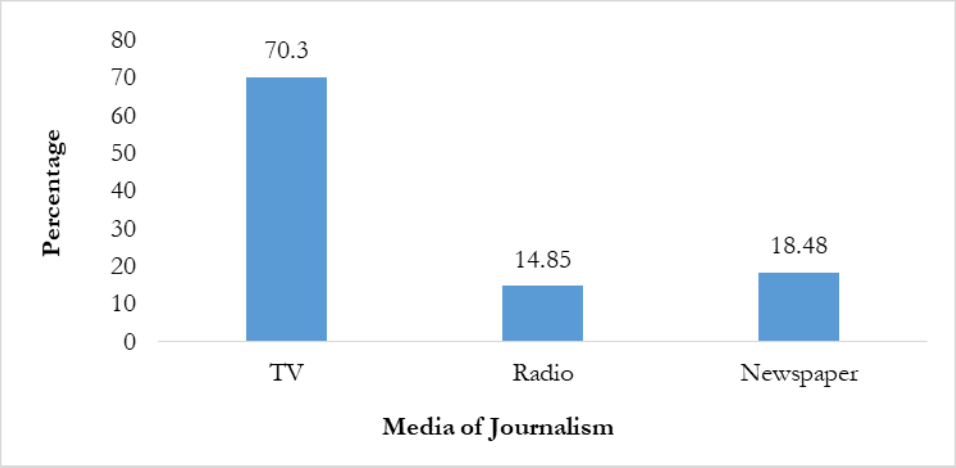

Figure 3. Adoption rate index of technology through various mediums of journalism

If anyone is motivated by something to do anything, he/she tries to accomplish the task as of his/her strength. The respondents in this study were found to be motivated more by the programs of television than radio or newspaper programs. The adoption rate was found to be higher among the young male respondents rather than among old male and female respondents according to Table no. 6 and Figure no. 3. In the study of Alam & Haque (2014) and Amadi & Raji (2020), the adoption rate was found more in case of television followed by newspaper and radio as a medium of journalism.

Hindering factors that are blocking the role of journalism in agricultural technology diffusion

Data presented in Table 7 depicts that, regarding television, among the respondents "economic condition to afford TV (74.91%)" was found to be the most significant hindering factor, and "social and religious restriction (46.73%)" was found to be the least significant factor. In the case of radio or FM, "bad signal and internet problem" ranked first with 60.73% of respondents as the most significant hindering factor. On the other hand, "economic condition to afford radio or FM (35.45%)" was found to be the least ranked factor to hinder the role of journalism in

agricultural technology diffusion. In the matter of newspapers, "Illiteracy of the respondent (96.73%) was found to be the most substantial cause to hinder the role of journalism whereas "limited access at village level (59.82%) was found to be the least important reason to deter the role of journalism in newly agricultural technology diffusion.

Table 7. Hindering factors which are blocking the role journalism

Serial	Medium	Statement	Score	Index (%)	Ranking
1.	TV	Economic condition to afford TV	412	74.91	1st
		Lack of operational knowledge	299	54.36	4th
		Electricity Problem	352	64.00	2nd
		Bad signal and Internet Problem	337	61.27	3rd
		Social and religious restriction	257	46.73	5th
2.	Radio and FM	Economic conditions to afford FM radio	195	35.45	5th
		Lack of operational knowledge	198	36.00	4th
		Electricity Problem	312	56.73	2nd
		Bad signal and Internet Problem	334	60.73	1st
		Social and religious restriction	199	36.18	3rd
3.	Newspaper	Illiteracy of the respondent	532	96.73	1st
		Limited reading culture	489	88.91	2nd
		Limited information on agriculture	402	73.09	4th
		Limited access at the village level	329	59.82	5th
		Economic conditions to afford a newspaper	485	88.18	3rd

Among the farmers surveyed, radio, television, and newspapers were to be significant sources of agricultural information. However several hindering factors are lagging behind the full potential of television, radio and newspapers as a medium of agricultural journalism. Television was the most preferred medium of the farmers but the economic condition to afford TV was found to be the significant cause to block the role as a medium of journalism. Electricity problems and bad signals were found to be one of the prominent causes of it. Farmers in the studied area did not frequently read newspapers. The main cause was found to be the illiteracy of the farmers in the studied area followed by limited newspaper reading culture. The increasing influence of social media (Facebook, YouTube) continuously lowers the demand for newspapers among the respondents. Moreover, expenses for the newspapers and limited information were another crucial cause for the limited opportunity as a medium of agricultural journalism. Radio was found to be the least important source of information for the young farmers but the second most important for the old farmers who were illiterate. But, due to the advancement of technology, conventional radio is getting replaced with a smartphone in which radio or FM is included. So, a bad signal for the radio was the most significant hindering factor which is blocking the role of agricultural journalism. Kumar et al. (2020) found similar results in their study which supports the claim of this study.

Most effective mass media source used by the respondents for disseminating agricultural technologies

Status of owning journalism instrument

Table 8 shows that among 110 respondents, 10% of respondents had no televisions, whereas 90% had televisions. Furthermore, 64.5% of respondents had possession of a radio, whereas 35.5 did not. In the case of newspapers, 90% of respondents did not have access to newspapers, whereas 10% of respondents did.

Table 8. Population percentage having instruments of journalism

	Frequency			Percentage		
	TV	Radio	Newspaper	TV	Radio	Newspaper
Yes	99	71	11	90	64.5	10
No	11	39	99	10	35.5	90

According to Das et al. (2021), the majority of the farmers (about 60%) in Bangladesh have television sets in their houses and use TV as the main source of information which matches the findings of this study. This percentage of the farmers having television sets differs on mainly three factors bases regional, economical and religious factors (Aggarwal & Gupta 2001).

Status of using journalism instrument

Of the 110 respondents, 46% usually watch TV occasionally, 53% regularly and 2% rarely. In the case of radio, 59.1% of respondents do not listen to the radio at all, whereas 20% of respondents listen to the radio rarely followed by 19.1% occasionally and 1.8% regularly. In the case of newspapers, 57.3% of respondents do not read newspapers at all, whereas 22.7% of respondents read the newspaper occasionally followed by 11.8% rarely and 8.2% regularly, respectively. This percentage shows that farmers are more likely to watch TV regularly than they are TV owners (Table 9).

Table 9. Frequency distribution of accessing journalism instruments

	Frequency			Percentage (%)		
	TV	Radio	Newspaper	TV	Radio	Newspaper
Not at all	0	65	63	0	59.1	57.3
Rarely	2	22	13	2	20	11.8
Occasionally	50	21	25	46	19.1	22.7
Regularly	58	2	9	53	1.8	8.2

Table no. 9 and Figure no. 4 validate that the respondents use TV most of the time followed by newspaper and radio, to update themselves with updated information, especially for new agricultural information and technologies. Das et al. (2021) and Irfan et al. (2006) also found that between television and radio, television is the most used medium of journalism which supports the claim of this study. Yaseen et al. (2019) and Osondu & Ibezim (2015) also found the same result in their study in terms of newspapers it is the least chosen medium of journalism by the farmers. Most of the farmers are illiterate in Bangladesh which is the main reason for newspapers to be the least chosen medium of agricultural journalism. However, in geographical, economic, and educational contexts, the effectiveness of journalism medium can be different (Aggarwal & Gupta, 2001).

Data shown in Figure no. 4 depicts the frequency index percentage of using journalism instruments among the respondents where 83.64% of respondents watch TV for news and entertainment purposes followed by newspaper read by 27.27% of respondents and radio listen by 21.21% of respondents.

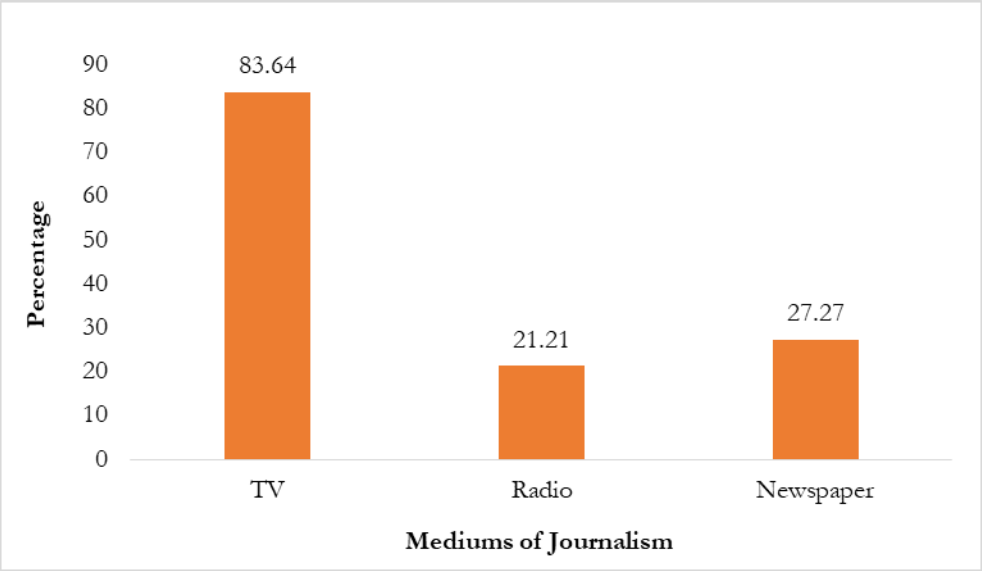

Figure 4. Frequency distribution of accessing journalism instruments

Accessing various programs on different media of journalism

Table 10. Status of accessing different programs on various mediums of journalism

Serial	Platform		Score	Index (%)	Ranking
1.	TV	News	266	80.61	1
		Agri-news	191	57.88	3
		Sports	180	54.55	5
		Entertainment	238	72.12	2
		Agricultural Programs	181	54.85	4
2.	Radio or FM	News	82	24.85	1
		Agri-news	41	12.42	4
		Sports	68	20.61	2
		Entertainment	56	16.97	3
		Agricultural Programs	26	7.88	5
3.	Newspapers	News	106	32.12	1
		Agri-news	68	20.61	2
		Sports	57	17.27	3
		Entertainment	35	10.61	5
		Agricultural Programs	38	11.52	4

Table 10 depicts that regarding TV, 80.61% of respondents listen to the news most of the time, whereas about 72% of respondents watch entertainment followed by agri-news (57.88%), agricultural programs (54.85%) and sports (54.55%). It has been demonstrated that farmers pay greater attention to news broadcasts than to agricultural programs. In the case of radio, the respondents listen to the news (24.85%) most of the time and agricultural programs (7.88%) least of the time. In the matter of newspapers, 32.12% of respondents read news most of the time and entertainment (10.61%) least of the time.

Most of the farmers are generally illiterate or little educated in our country. As a result, the prefer television for information and entertainment over newspapers and radio. With the advancement of technology, conventional radio becomes obsolete in Bangladesh. In present days radio comes with a package in smartphone. But the inability of operating smartphones is one of the main causes of losing interest in radio listening in the older farmer in Bangladesh. Most of the respondents in this study prefer TV over radio and newspapers most of the time for news, entertainment, agricultural programs as well as sports because TV offers a visual input of the adhering situation to the respondents. The study of Das et al. (2021) also supports the claims of the findings of this study.

Status of most preferred channel on TV for agricultural programs

Figure 5 demonstrates the preferred television channel for agricultural programming. The majority of respondents, about 88%, watch a Dipto TV program focusing on agricultural information, followed by BTV (77.3%), Channel I (74.5%), Bangla Vision (53.6%), ATN (50%), My TV (44%) and Ekattor TV (31.8%).

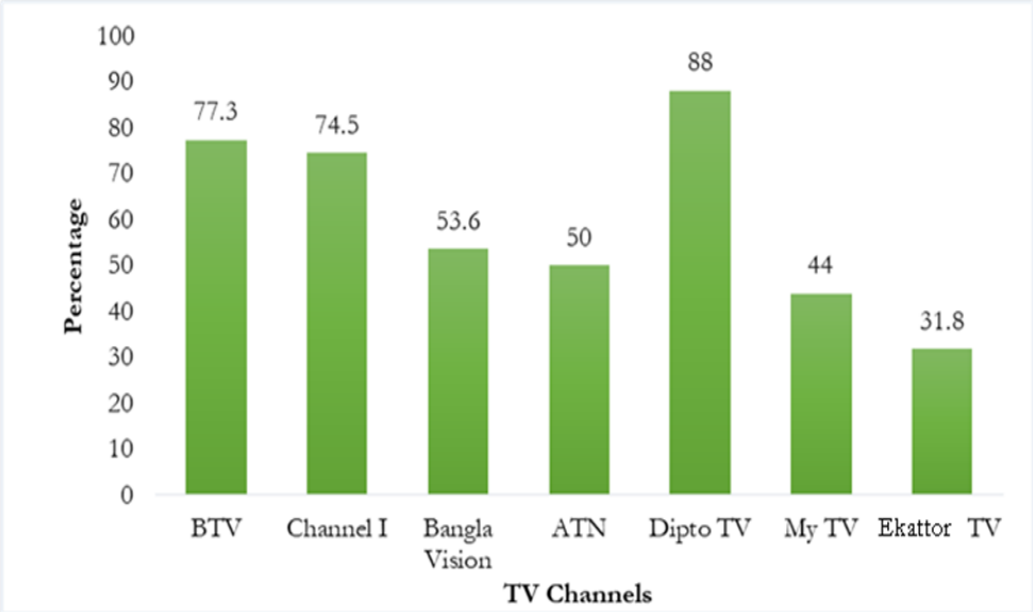

Figure 5. Most preferred channel on TV for agricultural programs

Preferred TV channels differ in a country location-wise because of server and technical satellite issues (Jana, 2014). As a result, the respondents of this study area had a different test for TV channels. BTV is the oldest TV channel of Bangladesh (Alam & Haque 2014). But the respondents in this area are most familiar with "Dipto TV" followed by BTV and Channel I in respect of agricultural programs. In the study of Alam & Haque (2014), BTV and Channel I was found to be the most viewed TV channel in Bangladesh.

Most preferred agricultural programs on TV by the respondents

Figure no. 6 discloses information on the preferred agricultural program on several TV channels. The results show that Dipto Krishi, a Dipto TV broadcast, is preferred by 79.10% respondents, while Krishi Dibanishi and Mati O Manush, a BTV program, is picked by 78.20% and 68.2% of respondents, respectively. The least number of respondents (9.10%) said they like to watch Banglar Krishi on BTV.

In this study, mostly preferred agricultural programs in television by the respondents of the study area was found to be "Dipto Krishi" from Dipto TV followed by "Krishi Dibanishi" from BTV and Channel I, "Mati o Manush" form BTV. "Krishi Songbad" from Channel I was found to be the most watched agricultural news program in Television. All of the findings found in this study is more or less similar to the study of Alam & Haque (2014) despite of regional differences.

Preferred radio medium of the respondents for agricultural programs

According to Figure 7, there were 110 farmers who listened to radio and FM. And out of them, about 10% tune in to Bangladesh Betar and 90% don't, while 64.50% listen to FM and 35.50% don't.

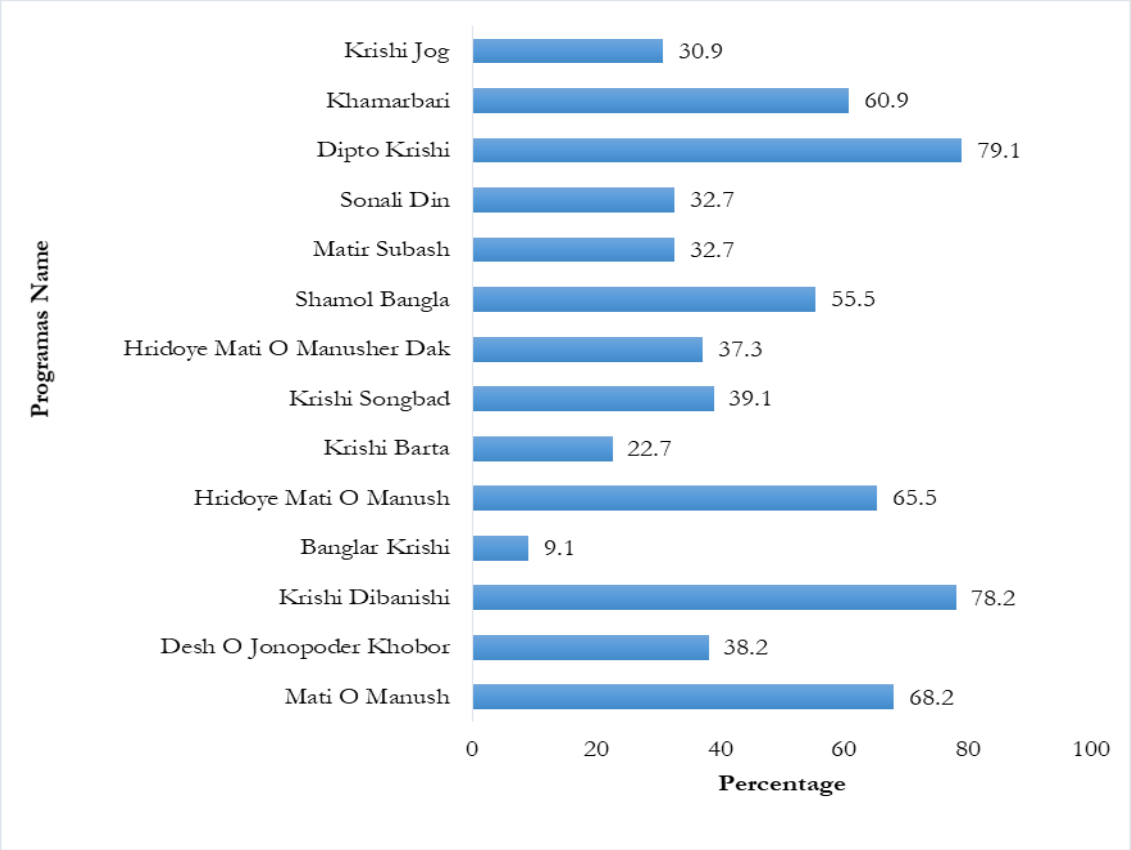

Figure 6. Most preferred agricultural programs on TV

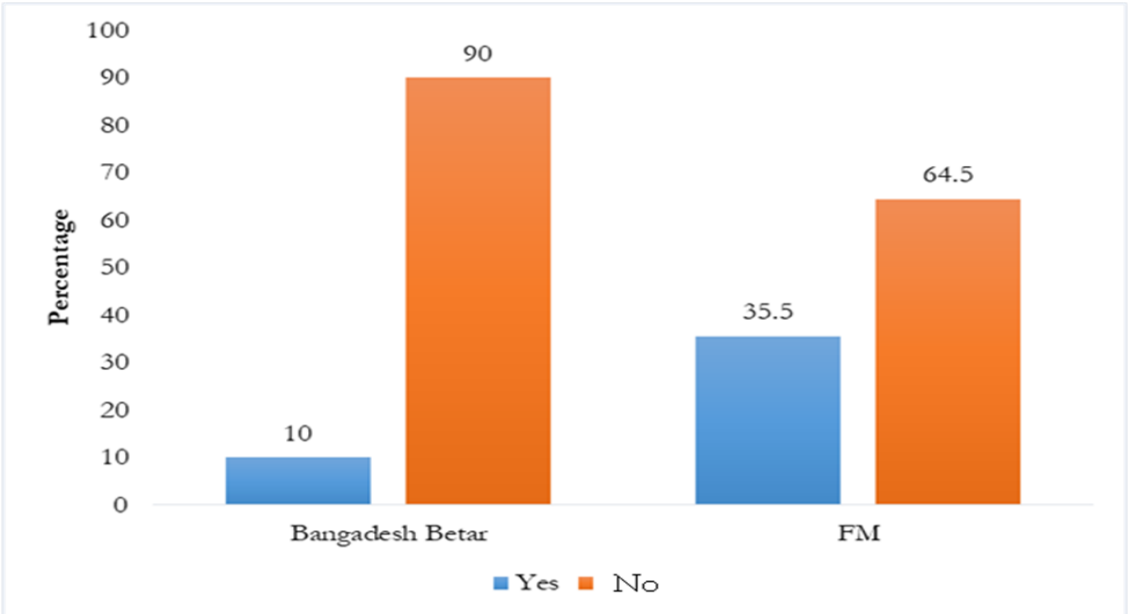

Figure 7. Preferred radio medium of the respondents

The study of Das et al. (2021) revealed that most of the young respondents listen to FM rather than Bangladesh Betar. In this study, the same findings are found where almost 3.5 times of the respondents listen to FM rather than listening to Bangladesh. Most of the respondents listening to FM were found to be young in age whereas older people in the case of Bangladesh Betar.

Preferred newspaper of the respondents as a medium of journalism

Figure no. 8 shows information on the most preferred newspaper the respondents read. The results revealed that Bangladesh Protidin is preferred by 79.10% of respondents, and the least number of respondents (12.70%) said they like to read Janakantha. Prothom Alo (32.70%) was found to be the second choice of the interviewed respondents followed by Ittefaq (20.90%) and Jugantor (20.00%), respectively.

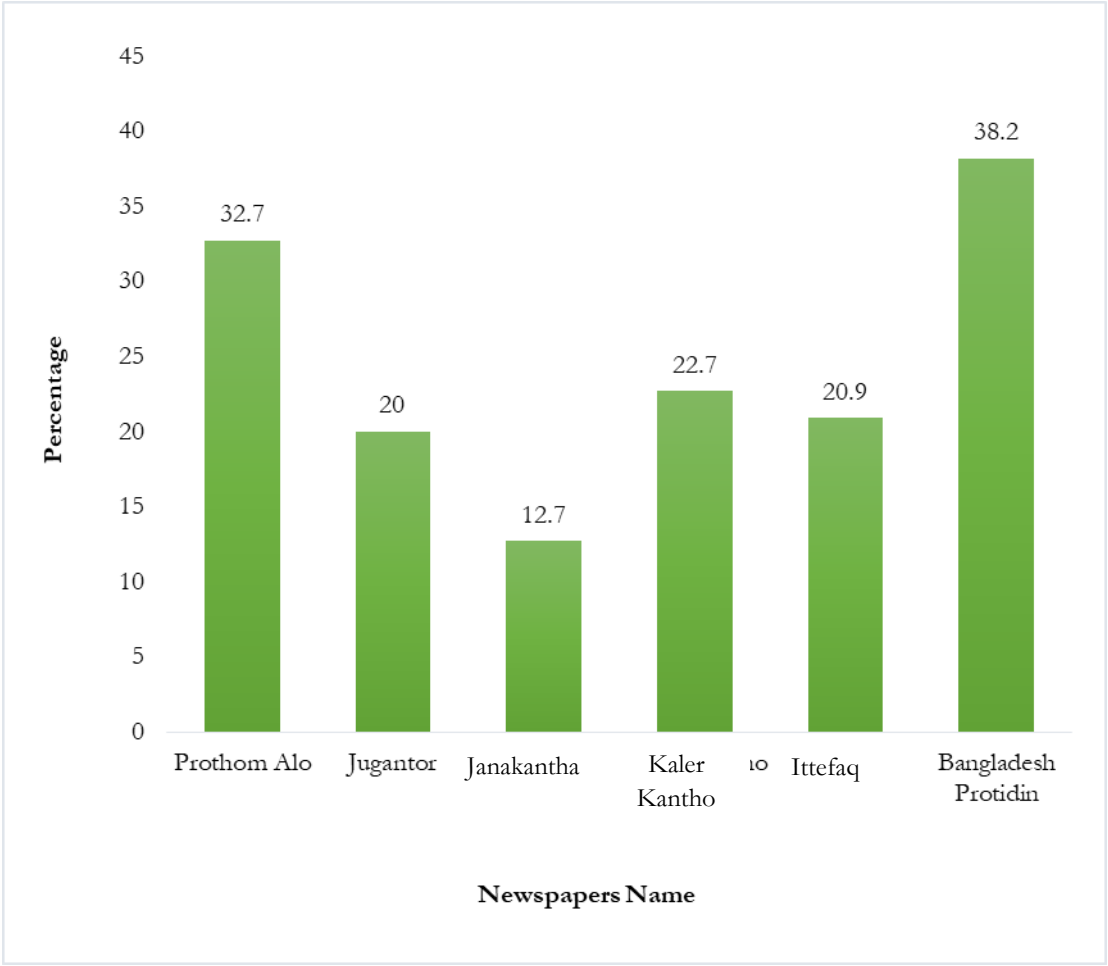

Figure 8. Preferred newspaper of the respondents

Less than one-third of respondents in this study were found to be fond of newspapers who are literate. Among them, a newspaper named "Bangladesh Protidin" was most popular to the respondents followed by "Prothom Alo" and "Kaler Kantho". The least priced newspaper was found to be most demanding to the respondents who actively choose newspapers as a medium of journalism.

Types of agricultural information the farmers get by agricultural journalism

According to Figure 9, the highest percentage of respondents receive accurate information about high-quality seeds and germination from TV (80.9%) and other sources (Extension officers, peer groups, NGOs, and Personal

experience) (100%). The respondents receive the highest percentage of information about fertilizer applications from other sources (Extension officers, peer groups, NGOs and Personal experience), followed by TV (40%), newspaper (6.4%) and radio or FM (5.5%). 100% of information about pests and diseases of crops the respondents get from other sources (Extension officers, peer groups, NGOs and Personal experience), followed by TV (91.8%), radio or FM (25.5%) and newspapers (22.7%).

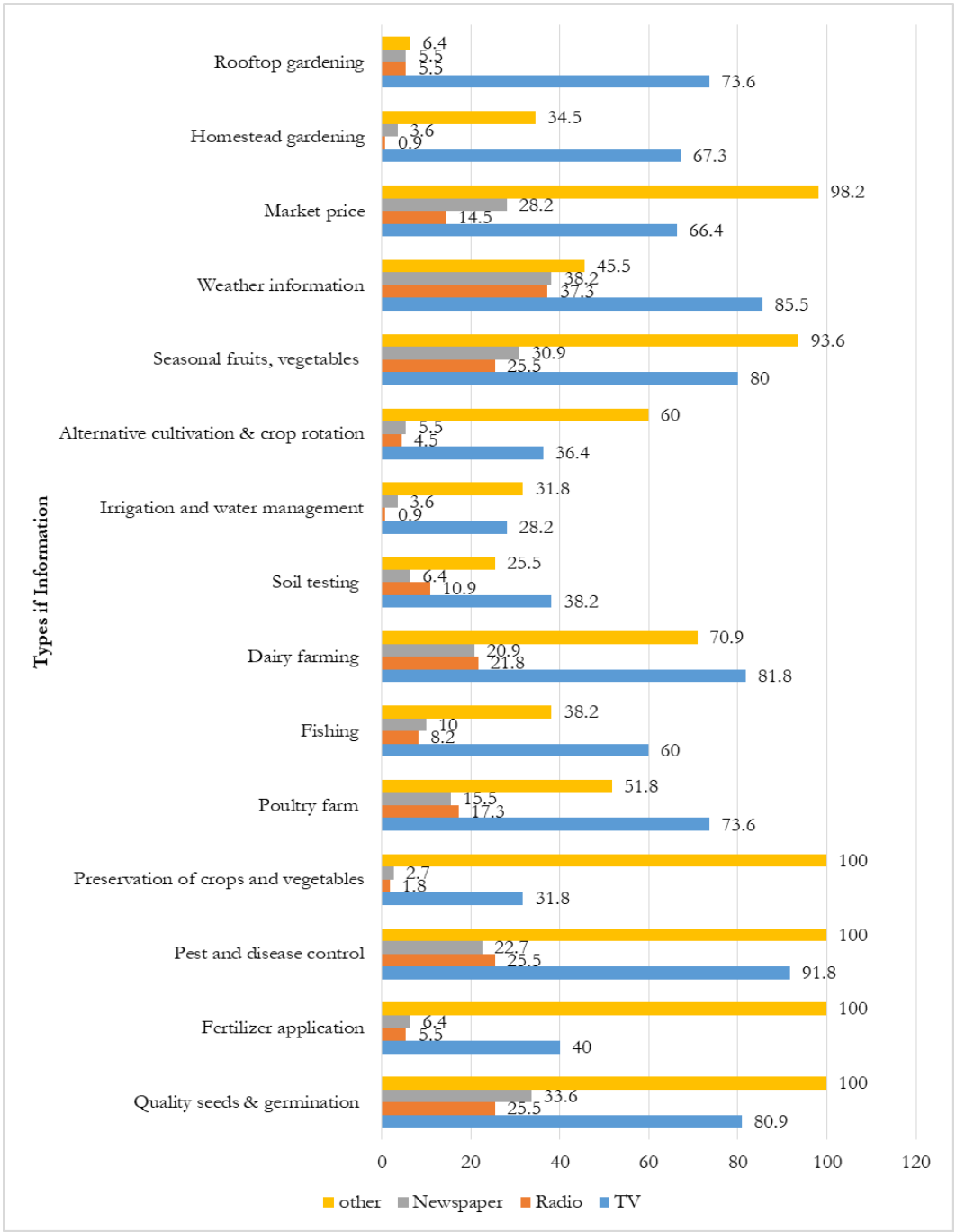

Figure 9. Agricultural information the respondents get through medium of journalism

From the TV, respondents get the most significant amount of information about poultry farming, fish farming and dairy farming 73.6%, 60.0% and 81.8% respectively, followed by other sources (51.8%, 38.2% and 70.8% respectively), radio or FM (17.3%, 8.2% and 21.8% respectively) and the least is a newspaper (15.5%, 10% and 20.9% respectively). The respondent receives the highest amount of information about seasonal fruit and vegetable cultivation from other sources (93.6), followed by TV (80%), Newspapers (30.9%) and radio or FM (25.5%). The respondents get most of the information about homestead gardening and rooftop gardening from TV (67.3% and 73.6% respectively), followed by other sources (Extension officers, peer groups, NGOs and Personal experience). The respondents get most of the weather-related information from TV (85.5%), followed by other sources (45.5%), newspapers (38.2%) and least of the information from radio (37.3%); while the majority of the market price-related information from other sources (98.2%), followed by TV (66.4%), newspapers (28.2%) and radio or FM (14.5%), respectively.

The respondents in this study mostly get information about pests and diseases of the crops, quality seeds, weather conditions and current market price of the crops from television followed by other sources (Extension officers, peer groups, NGOs and Personal experience), newspapers and radio. Types of information farmers get from various sources of journalism actually depend on several factors such as regional, population, economic and educational factors of a country (Aggarwal & Gupta 2001; Jana, 2014). In developed countries, most of the farmers are highly educated and their preferred mediums are radio, social media and the Internet. But countries like Bangladesh where most of the farmers are uneducated and financially poor, need to adopt more visual input in the dissemination of agricultural information to educate and train farmers properly. In this study, most of the respondents were illiterate or financially poor. As a result, the respondents get the least amount of information through newspapers as a medium of journalism and the highest quantities of information through TV and radio or FM as a medium of journalism in all aspects of agricultural information. In this study, the respondents get most of the information about weather and market price from television and other sources (Extension officers, peer groups, NGOs and Personal experience) whereas the least amount of information from radio or FM and newspapers which supports the finding of (Alam & Haqu 2014; Kumar et al., 2020; Rahman et al., 2020).

Most effective mass media source used by the respondents

The role of mass media and finding out the most effective media source could contribute to the present status and to speculate the future prospects. Data shown in Figure no. 10 depicts the most effective mass media sources used by the respondents for disseminating newly agricultural technologies where 74.14% picked television to learn about current news, entertainment, sports, agricultural news, agricultural programs, weather information and market price followed by radio or FM (28.77%) and newspaper (22.74%), respectively. But the most and first collective choice of the respondents (farmers) was found to be TV for learning about new agricultural technologies. TV was found to be liked 2.57 times more than radio and 3.26 times more than newspapers.

From this study, Television was found to be the most effective mass media source as a medium of agricultural journalism, while radio and newspapers were second and third choice of the respondents (farmers), respectively. Television has a visual input which affects the neurons of the respondent more than radio and newspapers. Moreover, television eliminates the weakness of radio and newspapers as a whole, which attracts the respondents significantly over radio and television. The illiterate respondents get relief from reading newspapers by preferring TV which is another cause to prefer television as a medium of journalism. And with technological developments, radio or FM is now-a-days integrated with smartphones which is more expensive than owning a TV. So, for all of these reasons, the respondents of this study choose TV as the best medium of agricultural journalism to learn about new agricultural advancement. In the study of Memon et al. (2014); Rahman et al. (2020); Irfan et al. (2006), they found the similar types of results from their surveyed respondents which confirms the claims of this study.

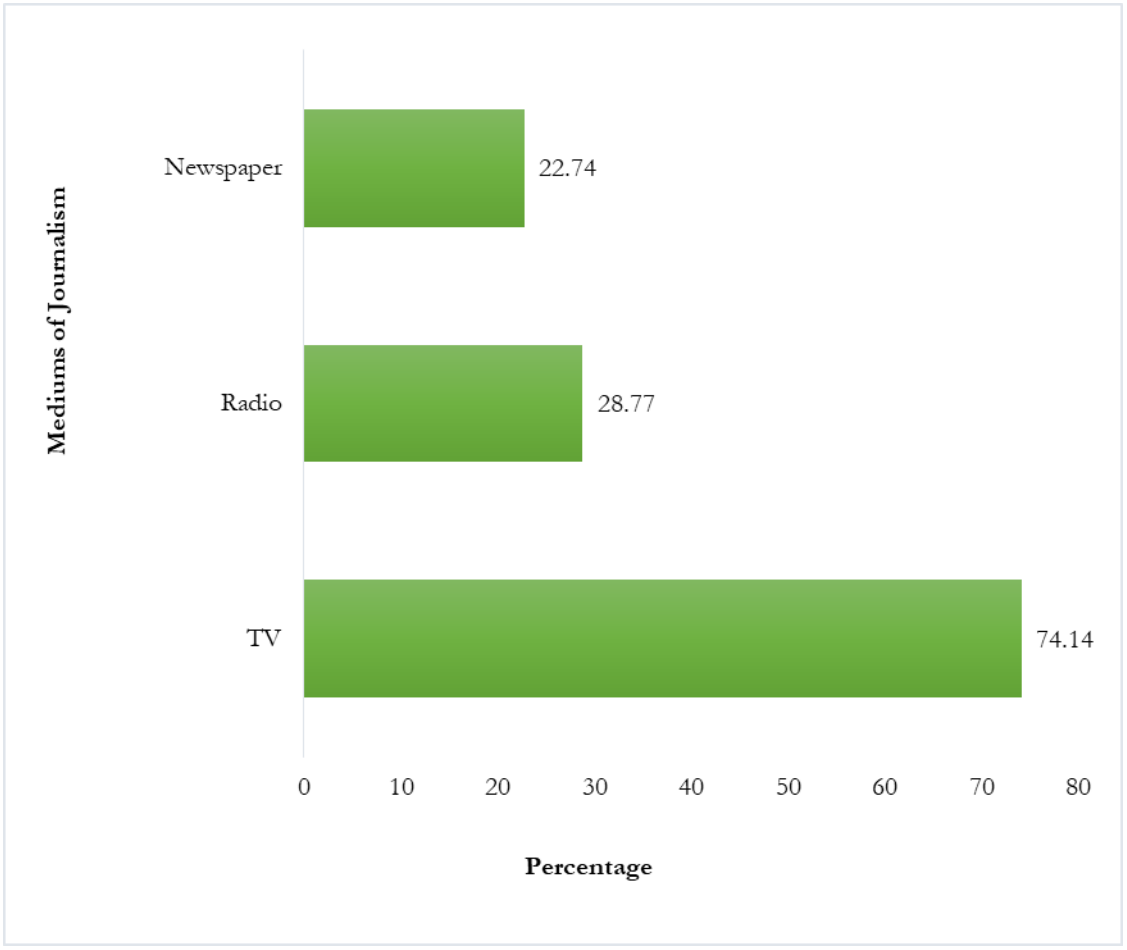

Figure 10. Effectiveness mass media source used for spreading agricultural technologies

Distribution of respondents on the basis of their personal characteristics

The chosen parameters comprise age, educational qualification, family size, cultivation experience, farm size, monthly family income (BDT), training received, cosmopolitanism status and extension media contact of an individual. The basis of chosen parameters distribution of the respondents is presented in Table no. 11.

The majority of respondents were middle-aged farmers (51.8%). The highest proportion of the respondents had a secondary level of education (34.5%). Half of the respondents had a small-sized family (up to four). The majority of the respondents had small-sized agricultural land (0.21 to 1.00 ha). The majority of the respondents had medium-level experience (16-30 years) in farming. The highest portion of the respondents (39.1%) had low monthly income for livelihood. The majority of respondents (54.5%) had very low (1-2) training exposure. The majority of respondents (51.8%) had a low level of cosmopolitanism. The majority of respondents (70.9%) had occasional extension media contact.

Table 11. Distribution of respondents based on their personal characteristics

Characteristics	Categories	Score	N=110		$(\bar{x} \pm \sigma)$	Range	
			F.	%		Min.	Max.
Age (years)	Young	≤35	18	16.4	48.32±12.26	24	73
	Middle-aged	36-55	57	51.8			
	Old	>55	35	31.8			
Educational status (schooling years)	Illiterate	0	22	20	5.00±4.50	0	16
	Can sign only	0.5	21	19.1			
	Primary	1-5	17	15.5			
	Secondary	6-10	38	34.5			
	Higher Secondary	11-12	9	8.2			
	Undergrad	13-16	3	2.7			
	Postgraduate	>16	0	0			
Family size (number of family members)	Small	≤4	55	50	5.17±2.18	2	18
	Medium	5-6	45	40.9			
	Large	>6	10	9.1			
Farming experience (years)	Low	≤10	12	10.9	28.12±12.43	5	55
	Medium	11-20	24	21.8			
	High	>20	74	67.3			
Farm size (ha)	Landless	≤0.02	0	0	0.60±0.49	0.06	3.74
	Marginal	0.02-0.2	17	15.5			
	Small	0.21-1.0	79	71.8			
	Medium	1-3	13	11.8			
	Large	>3	1	0.9			
Income (BDT year^{-1}) ('000' BDT)	Low	<180	45	40.9	211609.10±140195.02	6000	800000
	Medium	180-300	43	39.1			
	High	>300	22	20			
Training received	Yes	-	60	54.5	-	-	-
	No	-	50	45.5			
Intensity of receiving training (number)	No	0	50	46.1	4.05±17.78	0	4
	Low	≤2	46	41.2			
	High	>2	14	12.9			
Cosmopolitanism (score)	Low	≤5	57	51.8	5.72±2.68	2	13
	Medium	6-10	44	40			
	High	>10	9	8.2			
Extension media contact (score)	No	0	0	0	30.00±6.67	16	47
	Rare	1-17	4	3.6			
	Occasional	18-34	78	70.9			
	Often	35-51	28	25.5			
	Regular	52-68	0	0			

Conclusions

The majority of the surveyed respondents in this study were highly aware of television, which means TV is the most widespread medium working for the dissemination of the newly agricultural technology among the farmers. Newspaper and radio were found to be the second and third that the respondents were aware of as a medium of journalism.

The highest possible adoption rate of new agricultural technology among the respondents is found through TV as a medium of journalism whereas newspaper and radio or FM are found to be second and third.

Television was the most preferred medium of the farmers but the economic condition to afford TV was found to be the significant cause to block the role as a medium of journalism. The main cause was found to be the illiteracy of the farmers in the studied area which hinders the efforts of journalism followed by a limited newspaper reading culture. Bad signals from the radio were the most significant hindering factors that blocked the role of agricultural journalism.

Television was found to be the most effective mass media source as a medium of agricultural journalism, while radio and newspapers were the second and third choice of the respondents (farmers).

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