Information management behavior of growers in major crop cultivation in Bangladesh

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Abstract

This study was to explore the information management behavior (IMB) of major crop growers. Data were collected using interview schedules from a sample of 90 farmers out of 898 farmers selected by multistage random sampling procedure proportionately from four villages of Kishoregari unions of Palashbari upazila under Gaibandha district in Bangladesh from 20 March to 25 April in 2022. Results revealed that considering three dimensions like low to medium categories of information input, information processing and information output behavior of the farmers were found as 88.9%, 83.3% and 91.1% respectively. Almost two-thirds (66.67%) of the farmers were grouped under the medium category of information management behavior followed by those with low (22.22%) and high (11.11%) categories of IMB. Results indicated that among the nine selected characteristics of the farmers' six characteristics such as education, annual income, training received, social participation, marketing orientation and extension media contact showed positively significant relationships while age, farm size and farming experience of farmers showed no significant relationships with their information management behavior.

So, it is necessary to provide the farmers with useful agricultural information for their betterment and similar types of communication behavior study may be undertaken for extension functionaries, scientists and other farming communities.

Keywords: Sustainable agriculture, Growers, Information management behavior

Introduction

Agricultural information can be perceived as a fundamental element in any agricultural activity and it must be available and accessible to all farmers to bring the desired outcomes[10,15]. It was observed that the role of information in enhancing food security cannot be over-emphasized as it is vital for increasing food production and improving marketing and distribution strategies[17]. It is also an essential aspect in the practice of family farming and the basis for extension delivery[9]. Due to technological advancement, extension plays a great role in agricultural development. Rapid changes in the agricultural scenario of the country are posing multiple challenges to the extension functionaries. Farmers need updated information on new, cost-effective and adaptable crop production, post-harvest and plant protection technology along with market information and weather reports.

However, farmers are not accessible to all these. A big gap exists between the available technologies and their rapid transfer to the farmers. There is a gap between those who use ideas and those who produce them. A good technique of information management will certainly reduce this gap, if not eliminate it. The information management behavior has been conceptualized as a composite measure of information seeking, evaluation, storage, utilization and dissemination behavior of the individual farmer[2].

Rapid changes in the agricultural scenario in Bangladesh are posing multiple challenges to the extension functionaries. Changing context requires changed roles of extension functionaries, which builds massive pressure on the extension system in terms of capacity building of extension functionaries, development of required infrastructure, strategy and mobilization of funds. The present extension system is already under pressure due to the wide ratio between the extension workers and farmers. Considerable time for extension workers is spent on administrative work and travel. Under these circumstances, there is a need for cost-effective and efficient support.

Bangladesh is an agriculture-intensive country with more than 14 million farming households extensively depending on agriculture for their livelihood. Agriculture is the third largest contributor to the gross domestic product (GDP) of Bangladesh (including fisheries and forestry) and employs 37.75 percent of the total labor force of the country. It is a major source of income for 16.5 million farm holdings[5].

Agriculture plays a major role in economic development in Bangladesh. Besides technological advancement, extension plays a great role in agricultural development. There is a need for massive education and extension efforts to

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modernize the outlook of a common farmer to make him innovative, enterprising and willing to adapt readily to changing situations and technologies. A variety of areas of information are needed by farmers if they need to improve their farming scientifically. To adequate their needs, the information intermediaries and extension professionals need to develop strategies to fulfill their needs in a manner for holistic development of the farming system. All tools and technologies have been developed to streamline the right information flow to the agricultural stakeholders. In the field of agriculture, the right information can change the scenario.

The present study was an attempt to provide more information on this subject. This research also examined the relationship between selected personal characteristics of farmers and their information management behavior.

Material and Methods

The investigation was carried out to study the Information Management Behavior of farmers under the collective farming of Palashbari upazila in Gaibandha district. The research design adopted for the present study was ex-post-facto since the phenomenon of Information management behavior (IMB) had already taken place. Ex-post-facto research is a systematic empirical inquiry in which the scientist does not have direct control over the independent variables because either their manifestations have already occurred, or they are not inherently manipulated.

Location of the study: The study was conducted in Palashbari upazila under the Gaibandha district of the northern region of Bangladesh. Palashbari upazila was selected purposively as the study area. This upazila is located between 25°11' and 25°19' north latitudes and between 89°16' and 89°32' east longitudes.

Population and sample of the study: A multistage random sampling procedure was followed in this study. Palashbari upazila consists of nine unions and among them, Kishoregari union was selected randomly as the locale of the study and the union consists of 29 villages. Four villages were selected from the union by using random sampling. The total number of farmers in these selected villages was 898, which constitutes the population of the study. Up-to-date lists of farmers of the four selected villages were prepared with the help of the Upazila Agriculture Office, DAE. Ninety (90) farmers, by taking 10.0 percent of the population were randomly selected as samples of this study and a reserve list was also prepared (Table 1).

Table 1
Distribution of the village, population and sample in Kishoregari union

Union	Villages	Population	Sample	Reserve list
Kishoregari	Chalkbala	324	32	03
	Ganakpara	238	24	02
	Zafore	178	18	02
	Monglishpur	158	16	02
	Total	898	90	09

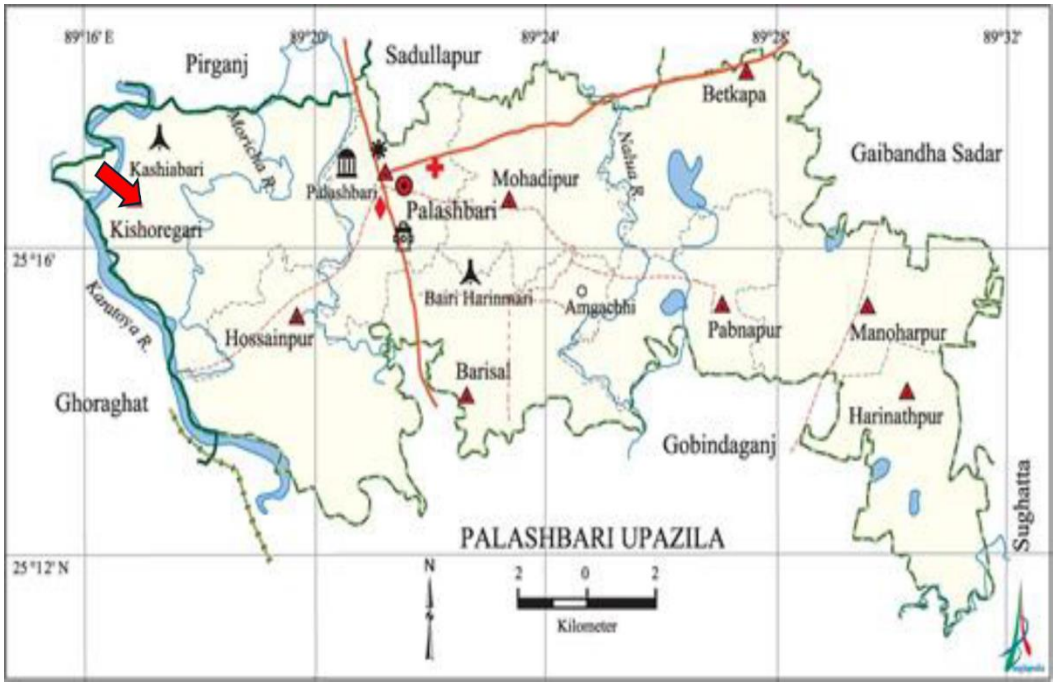

Figure 1: Study location in the map. The arrow indicated the Kishoregari union in Palashbari Upazila of Gaibandha district in Bangladesh

Research Instrument: To collect relevant data, an interview schedule was carefully prepared, keeping the objectives of the study in mind. The interview schedule contained both open and closed forms of questions. The draft interview schedule was pre-tested in actual field situations before using the same for the collection of data. This pre-test facilitated the researcher to identify faulty and ambiguous questions. In total 12 respondents from different parts of the study area were interviewed for the pre-test. Necessary alterations, additions and adjustments were made to the schedule based on the pre-test result. The interview schedule was then printed in its final form for collection of data.

Results and Discussion

The data collected has been presented in the form of tables and interpreted through frequencies and percentages. Based on the age of the farmers, they were classified into three categories namely 'young' (18 to 35 years) middle' (36-50 years) and 'old' (above 50 years) respectively. Table 2 shows that half of the farmers belong to old age (50%) followed by the rest coming under middle age (40%) and young age (10%) categories. A critical observation of the above findings indicated that a greater proportion of the farmers were old aged. Usually, middle-aged farmers are enthusiastic and have more responsibility and efficiency than the younger and older ones. This finding was not in conformity with the findings of Anwar et al[3].

Based on education scores, the farmers were classified into five categories i.e. illiterate (0), can sign name only (0.5), primary education (1-5), secondary education (6-10) and above secondary education (above 10) which is presented in table 2. The results indicated that 44.4% of the farmers had a secondary level of education, 26.7% were above secondary, 16.7 % were primary, 7.8 % were illiterate and only 4.4 % of the farmers could sign their name only. Although the literacy rate was 74.7 % in Bangladesh[6], in the study area, the literacy rate was found 87.8 % which is higher than the national average. Education helps individuals to become rational and conscious and to get useful information to solve their farming problems through different sources of information.

Table 2
Profile characteristics of the farmers (n=90)

Characteristics	Scoring method	Range	Categories	Respondents		Mean	SD
		Observed (Possible)		No.	%		
Age	No. of year	30-70 (Unknown)	Young (18-35)	9	10.0	51.22	9.54
			Middle-aged (36-50)	36	40.0		
			Old (>50)	45	50.0		
Education	Year of Schooling	0-16 (Unknown)	Illiterate (0)	7	7.8	8.38	4.74
			Can sign only (0.5)	4	4.4		
			Primary (1-5)	15	16.7		
			Secondary (6-10)	40	44.4		
			Above secondary (>10)	24	26.7		
Farm size	Hectare	0.33-3.09 (Unknown)	Small (0.21-1.0)	36	40.0	1.15	.52
			Medium (1.01-3.0)	53	58.9		
			Large (>3.0)	01	1.1		
Farming experience	No. of year	12-50 (Unknown)	Two decades (11-20)	19	21.1	28.14	8.02
			Three decades (21-30)	49	54.4		
			Four decades (31-40)	19	21.1		
			Five decades (41-50)	3	3.3		
Annual income	'000' taka	4200-20800 (Unknown)	Low (≤9700)	62	68.89	8451.63	3396.29
			Medium (9701-15266)	23	25.56		
			High (>15266)	5	5.56		
Training received	No. of days	0-30 (Unknown)	No training (0)	55	61.1	0.74	1.0
			Single day (1)	7	7.8		
			Week-long (2-7)	28	31.1		
Social participation	Score	0-6 (0-18)	No participation (0)	12	13.3	2.06	1.40
			Medium (1-2)	42	46.7		
			High (>2)	36	40.0		
Marketing orientation	Score	13-27 (6-30)	Low (≤14)	01	1.1	22.37	4.03
			Medium (14-22)	34	37.8		
			High (>22)	55	61.1		
Scientific orientation	Score	15-26 (6-30)	Low (≤14)	0	0	22.21	3.59
			Medium (14-22)	39	43.3		
			High (>22)	51	56.7		

This was similar to findings of previous studies[7,12,21] and not in agreement with studies of Meenakshi[16] and Santhosh[20]. Based on their farm size scores, the farmers were classified into three categories namely 'small' (0.21-1.0), 'medium' (1.01-3.0) and 'large' (above 3) land holding (Table 2). A majority (58.9%) of the farmers belonged to the medium farm size category, 40.0 % of them belonged to the small farm size category and very few (1.1%) had large farm sizes. This is justified by the fact that most of the farmers were living below the poverty line and thus held very little land. This established the fact that most of the farmers were poor and joined to improve their socio-economic status.

The farming experience of the respondents ranged from 12 to 50 years. The mean farming experience is 28.14 years with a standard deviation of 8.02 years. Based on farming experience score, the respondents were classified into four categories: two decades (11-20), three decades (21-30), four decades (31-40) and five decades (41-50). The distribution of the farmers according to their farming experience is presented in table 2. Findings of table 2 indicated that about half (54.4 %) of the farmers had three decades of farming experience while 21.1 % had jointly two decades and four decades and only 3.3 % of them had five decades of farming experience respectively. It could be concluded that the majority (75.9%) of the farmers had farming experience of more than 20 years. This might be due to farmers being able to understand and communicate agricultural information effectively. This result was in line with the findings of Ahire and Thorat[1] and Ravinder[19].

The annual income of the farmers was found to range from 4200 to 20800 thousand takas with a mean of 8451.63 thousand takas and a standard deviation of 3396.29 thousand takas. Because of annual income, the respondents were divided into three categories namely 'low' (≤ 9700 thousand taka), 'medium' (9701-15266) thousand taka) and 'high' (>15266) thousand taka) income category (Table 2). It was shown that the highest proportion (68.89 %) of the respondents had low income, while 25.56 % medium and only 5.56 % had high annual income.

Thus, the great majority of the respondents (94.45%) belong to the low to medium category. This result was in partial agreement with the findings of other studies[7,21]. The training received scores of the respondents ranged from 0 to 30 days with a mean of 0.74 days and a standard deviation of 1.0 days. The respondents were classified into three categories namely 'no training' (0), 'single-day training' (1) and 'weak-long" (2-7) (Table 2).

An examination of the results in table 2 depicted that about three-fifths (61.1 %) of the respondents had no training received while 31.1 % had week-long training experience and 7.8% had single-day training respectively. The findings of the study indicate that the majority (68.9 %) of the respondents in the study area had not received single-day training. Thus, there is a need for agricultural training for the farmers to improve their knowledge, skills and attitudes towards the adoption of modern cultivation practices.

The social participation scores of the farmers ranged from 0 to 6 against the possible score of 0 to 18, the mean score of 2.06 and the standard deviation of 1.40 and standard deviation of 1.40. Following possible social participation scores, the farmers were divided into three categories namely, no participation (0), medium participation (1-2) and high participation (>2) in table 2. It could be observed from table 2 that more than two-fifths (46.7%) of the farmers had a medium level of social participation while 40.0 % and 13.3 % had high and low participation respectively. More than four-fifths (86.7%) of the farmers had a medium to high level of social participation.

More participation was shown by members who had received higher education and who were from supporting family backgrounds. This result was not in line with the findings of Chithra[8] and Santhosh[20]. The marketing orientation scores of the farmers were found to vary from 13 to 27 against the possible range of 6 to 30 with an average of 22.37 and a standard deviation of 4.03. Based on marketing orientation scores, the respondents were divided into three categories namely 'low' (≤14), medium' (14-22) and 'high' (>22) (Table 2). It can be observed from table 2 that 61.1 % of the farmers had high market orientation followed by medium (37.8 %) and very few (1.1%) low levels of market orientation.

The findings of the study indicated that the majority (98.9 %) of the farmers had medium to high marketing orientation. Khanom[13] found that the highest proportion (70.6 %) of the litchi growers had a medium marketing orientation while 25.5 % of them had a high orientation and only 3.9 % had a low marketing orientation. It was reported that the majority (93.94%) of the farmers had low to medium marketing orientation [18].

The scientific orientation scores of the farmers were found to vary from 15 to 26 against the possible range of 6 to 30 with an average of 22.21 and a standard deviation of 3.59 (Table 2). Since scientific orientation scores, the respondents were divided into three categories namely 'low' (≤14), 'medium' (14-22) and 'high' (>22) (Table 2).

It is evident from table 2 that more than half (56.7%) of the farmers had a high scientific orientation followed by a medium (43.3%) level of scientific orientation and a low scientific orientation nil. The probable reason for having a high scientific orientation might be due to their better education which helped them to develop a better scientific orientation in information management behavior for major crop production.

Information Management Behavior (IMB): In the context of the present study, the IMB was operationally defined as the activities performed by an individual farmer for seeking,

processing and disseminating information about the improved cultivation practices of major crops.

Information input behavior: To measure the information input behavior, a total of 15 communication sources were considered three under personal locality sources, seven under personal cosmopolite sources and five under impersonal cosmopolite sources. However, the nature of contact by the farmers with these communication channels is presented in table 3.

It is evident from table 3 analysis of information input behavior through personal locality sources indicating that most of the farmers (61.11%) had occasional contact with neighbors followed by local leaders (54.44%) and progressive farmers (52.22. It must be noted that 43.33 % of farmers never used local leaders. The reasons might be easy accessibility and credibility attached to these sources. Whereas the local leader was used never, the reason might be the local leader seems to lack sufficient knowledge and skills perceived by the respondents.

Table 3 revealed the preferences of farmers for their information input behavior through personal cosmopolite sources in order of their medium importance as SAAOs (87.78%) followed by agricultural input dealers (78.89%), AEO (65.56%) and so on. Table 3 also clearly shows the preferences of farmers for their information input behavior through impersonal cosmopolite sources in percentage order of their medium importance as TV (86.67%), followed by mobile phones (77.78%), agricultural articles from the newspaper (22.22%) and internet (17.78%). Percentage of agricultural leaflet was nil. Thus, it could be concluded that impersonal cosmopolite sources like television, mobile phones and newspapers were frequently consulted by the farmers. The reason might be because all respondents possessed a mobile phone and TV in their homes and read newspapers regularly showing the highly literate state among the farmers.

Information processing behavior: It is a common phenomenon that in the case of information processing, the farmers could not use the above 15 communication channels and thus the researcher selected only five channels to measure the information processing behavior and the findings are given in table 4. Data contained in table 4 revealed that 47.11 % of the farmers occasionally evaluated their received information from neighbors followed by 34.44 % regularly evaluated by progressive farmers and 44.44 % occasionally with input dealers. On the other hand, 44.44 % of the farmers memorized the received information and 35.60 % of the farmers utilized their received information in major crop cultivation. Thus, it may be concluded that the farmers in the study area had a moderate level of information-processing behavior. The findings may be due to the 40% middle-aged and educational qualification (44.44% secondary level of education) of the farmers.

Information output behavior: To measure the information output behavior, five information dissemination channels were considered and the findings are given in table 5.

Table 3
Distribution of farmers according to their regularity of using the communication sources

S. N.	Information sources	Extent of contact					
		Regularly		Occasionally		Never	
		No.	%	No.	%	No.	%
	Personal local sources						
1.	Neighbor	2	2.22	55	61.11	33	36.67
2.	Progressive farmers	30	33.33	47	52.22	13	14.44
3.	Local leader	2	2.22	49	54.44	39	43.33
	Personal cosmopolite sources						
4.	NGO’s	5	5.56	29	32.22	56	62.22
5.	Demonstrations	1	1.11	20	22.22	69	76.67
6.	Training	4	4.44	38	42.22	48	53.33
7.	Agricultural input dealer	8	8.89	71	78.89	11	12.22
8.	Sub-Assistant Agricultural Officer	4	4.44	79	87.78	7	7.78
9.	Agricultural Extension Officer	2	2.22	59	65.56	29	32.22
10.	Upazila Agricultural Officer	1	1.11	4	4.44	85	94.44
	Impersonal cosmopolite sources						
11.	Television	4	4.44	78	86.67	8	8.89
12.	Mobile phones	5	5.56	70	77.78	15	16.67
13	Internet	15	16.67	16	17.78	59	65.56
14.	Agricultural article from the newspaper	6	6.67	20	22.22	64	71.11
15.	Agricultural leaflet	74	82.22	0	0.00	16	17.78

Table 5 exhibited the information output behavior through information dissemination channels indicating that 52.22% of farmers occasionally discussed with fellow farmers followed by 46.67 % who occasionally discussed with extension workers and 25.56 % regularly discussed with fellow farmers. The information output channels input dealers (80%) and participating in demonstrations (76.67%) were never used. The reasons for less participation might be due to shy feelings having no interest in going public and lack of time to go out.

Dimension-wise information management behavior of the farmers: The information management behavior of farmers in major crop cultivation was measured based on three dimensions. The dimension-wise findings are given in table 6. Data contained in table 6 revealed that most of the farmers (68.9%) were grouped under the medium category of information input behavior followed by those with low (20%) and high (11.1%) categories of information input behavior. From the results, it could be concluded that the great majority, 88.9 % of the total sample farmers had low to medium information input behavior. The reasons for most of them falling under the medium category of information input behavior might be due to better education, better economic motivation and better market orientation of the women rice farmers. This result was in line with the previous findings[8,20].

An examination of the results in table 6 depicted that most of the farmers (58.9%) were grouped under the medium category of information processing behavior followed by low (24.4%) and high (16.7%) categories of information processing behavior. However, a great majority of the farmers (83.3%) had low to medium information processing behavior. The trend might be because most farmers mainly used frequently efficient methods like discussion with neighbors and Input dealers for evaluating the information. They stored the information by preserving the information material and memorizing it. They utilized the information by using the information for various cultivation practices. The reasons could contribute to better education, greater scientific orientation and better market orientation.

The data in table 6 also revealed that most of the farmers (73.3%) were grouped under the medium category of information output behavior followed by those with low (17.8%) and high (8.9%) categories of information output behavior. However, the overwhelming majority (91.1%) of the total sample had low to medium information output behavior. The trend might be because most farmers mainly used frequent information dissemination channels like discussing with neighbors and input dealers and participating in training programs. The reasons for medium information output behavior might be better education of the farmers.

Overall information management behavior: The observed scores of information management behavior of the farmers ranged from 11 to 31 against the possible range of 0 to 55 with an average of 4.49 and standard deviation of 20.24. Based on mean plus minus standard deviation, the farmers were divided into three categories such as 'low' (≤16), medium' (17-25) and 'high' (>25) (Table 7).

Table 4
Distribution of farmers according to their information processing nature

S.N.	Information channels	Nature of processing					
		Regularly		Occasionally		Never	
		No.	%	No.	%	No.	%
	Information evaluation						
1.	Neighbor	35	38.89	37	47.11	18	20.00
2.	Progressive farmers	31	34.44	32	25.56	27	30.00
3.	Input dealers	35	38.89	40	44.44	15	16.67
	Information storage						
4.	Memorizing	40	44.44	31	34.44	19	21.11
	Information utilization						
5.	Application in case of fertilizers and pesticides	27	30.00	32	35.60	31	34.40

Table 5
Preferences of farmers for their utilization of information output channels

S.N.	Information output channels	Regularity of contact					
		Regularly		Occasionally		Never	
		No.	%	No.	%	No.	%
1.	Discussions with fellow farmers	23	25.56	47	52.22	20	22.22
2.	Discussions with extension workers	15	16.67	42	46.67	13	14.44
3.	Discussions with input dealers	0	0.00	18	20.00	72	80.00
4.	Participating in demonstrations	2	2.22	19	21.11	69	76.67
5.	Participating in farmer's training program	0	0.00	15	16.67	15	16.67

Table 6
Distribution of farmers according to their information management behavior

Dimensions of IMB	Scoring method	Range Observed (Possible)	Categories	Respondents No.	Respondents %	Mean	SD
Information input behavior	Score	4-16 (0-30)	Low (≤8)	18	20.0	10.86	2.73
			Medium (9-14)	62	68.9		
			High (>14)	10	11.1		
Information processing behavior	Score	3-12 (0-15)	Low (≤5)	22	24.4	6.71	1.70
			Medium (5-8)	53	58.9		
			High (>8)	15	16.7		
Information dissemination behavior	Score	1-6 (0-10)	Low (≤1)	16	17.8	2.68	1.29
			Medium (2-4)	66	73.3		
			High (>4)	8	8.9		

Table 7
Distribution of farmers according to their overall information management behavior

Range Observed (Possible)	Categories	Respondents No.	Respondents %	Mean	SD
11-31 (0-55)	Low (≤16)	20	22.22	20.24	4.49
	Medium (17-25)	60	66.67		
	High (>25)	10	11.11		

Results of table 7 indicated that almost two-thirds of the farmers (66.67%) were grouped under the medium category of information management behavior followed by those with low (22.22%) and high (11.11%) categories of information management behavior. The reasons for most of them falling under medium information management behavior might be due to better education, more training received and better scientific and market orientation.

Conclusion

This study was in line with other studies[2,4,19]. A small piece of study has been conducted and cannot provide all the information for the proper understanding of the farmers towards the adoption of improved ginger production technology. This study investigated the relationships of nine characteristics of the farmers with their information management behavior as a focus issue. Therefore, it is recommended that further study be conducted with other characteristics of the farmers and focus issues.

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