

RICE FARMERS' PERCEPTION ON FEATURES OF BRRI dhan87

M Nuruzzaman¹, MA Islam^{1*}, F Yeasmin² and B Deb¹

Department of Agricultural Extension Education, Sylhet Agricultural University, Sylhet, Bangladesh
Department of Agricultural Extension & Rural Development, Bangabandhu Sheikh Mujibur Rahman Agricultural University,
Gazipur, Bangladesh

(Available online at www.jsau.sau.ac.bd)

Abstract

The focus of the study was to assess farmers' perception regarding different characteristics of a T. Aman rice variety BRRI dhan87 and to explore the relationships between the farmers selected characteristics and the perception. The study was conducted in three unions of Dowara bazar upazila under Sunamganj district. Data were collected from the farmers utilizing a pre-tested interview schedule from 01 October to 20 November 2020. Perception was estimated based on the responses of the farmers to 31 statements constructed on different characteristics of BRRI dhan87 in a four point scale of measurement. Findings revealed that the majority of farmers (42%) had moderate perception followed by 36% low and 22% high perception about the characteristics of BRRI dhan87. Out of 31 characteristics, the top five perceived were: shorter life span (PI=144), slender and fine grain (PI=143), higher market price (PI=141), rain-fed cultivation (PI=125), and lodging resistant (PI=124). However, among the five broader characteristics of BRRI dhan87, the mean perception index (PI) of complexity had the highest (106.6 scores). The score was elicited by the non-availability of quality seeds at the farmers door steps, input sensitive yield, and supplemental irrigation causes yield variation. The results also revealed that respondents' level of education, area of BRRI dhan87, communication media exposure, organizational participation, knowledge of BRRI dhan87, and experience were highly associated with their perception.

Keywords: BRRI dhan87, farmers' perception, observability, trialability, compatibility, relative advantage, small holder farmer

Introduction

In Bangladesh, rice is the main crop. It provides almost two-thirds of the country's entire calorie supply and roughly half of its overall protein intake. The rice industry produces one-sixth of the nation's income and one-half of the agricultural GDP (BBS, 2018); nearly all the 13 million registered farm families grow rice on an area of 10.5 million ha, which has been largely steady over the previous three decades (BRKB, 2012). In Bangladesh, rice is the main food crop, occupying about 75% of the country's agricultural territory and 28 percent of GDP (Bangladesh, 2009). Total rice production in Bangladesh was about 10.59 million tons in 1971 when the country's population was only about 70.88 million. However, Bangladesh presently generates roughly 34.0 million tons to feed 164 million people. This shows that the growth of rice output was far quicker than the growth of the population. This increase in rice output was made possible in major part by the adoption of contemporary rice varieties on roughly 66% of rice-growing land, which accounts for about 73% of the nation's total rice production (BRRI, 2013). Over a long period of time, Bangladesh has increased its rice output, and at this point, it is largely self-sufficient. The total area used for rice production in 2019-2020 was 11,417,494 ha, and 36.60 million tons of rice was produced. About one million ha of the entire rice producing area were under Aus, 55,59,964 ha were under Aman, and 47,62,130 ha were under Boro (BBS, 2020). But the country's main rice crop is T. Aman. On 55.59 lakh hectares of land, Bangladesh produced 14.2 million MT of Aman paddy in FY 2019-20 (BBS, 2020). Aman's predicted average yield rate for the fiscal year 2019-2020 is 2.55 metric tons per hectare, which is 2.20% more than that of FY (18-19).

The predominant cropping pattern of this country is Rice-Rice and Rice based cropping system. For increasing cropping intensity as well as ensuring food security, there is a way to introduce short duration rice varieties in different rice growing season. For Aman season, Bangladesh Rice Research Institute (BRRI) and Bangladesh Institute of Nuclear Agriculture (BINA) has developed some early maturing HYV varieties. To fulfill the food demand of high population Bangladeshi scientists are trying to develop high yielding variety as well as short duration variety. In addition, BRRI scientists developed BRRI dhan87 by crossing BRRI dhan29 with wild rice. This variety yielded 16 days earlier than BRRI dhan11 & 7 days earlier than BRRI dhan49, and it also produced more rice per acre than previous varieties that were made available in 2016. The main focus of this study was to find out the level of farmers'

*Corresponding author: MA Islam, Department of Agricultural Extension Education, Sylhet Agricultural University, Sylhet-3100, Bangladesh. Email: maislam.aext@sau.ac.bd

perception regarding short duration BRRI dhan87 Aman rice variety as an innovation. As BRRI dhan87 is an innovation, it should meet as far as possible the following characteristics: a) relative advantage b) compatibility c) complexity d) trialability and e) observability. In order to spread the variety among farmers through extension programs, the Department of Agriculture Extension (DAE) and Bangladesh Rice Research Institute (BRRI) have been working together since the variety's 2016 release. The focus of the study was to evaluate and indicate the level of farmers' perception about the characteristics of BRRI dhan87 and find out the factors triggered this perception.

Materials and Methods

The study was conducted in purposively selected three unions namely Duhalia, Pandergaon and Mannargaon union of Dowarabazar upazila of Sunamganj district. A current list of all BRRI dhan87 growers was collected from the UAO office. The population of the study was made up of the 250 farmers of the selected three unions. Following simple random selection method, 20% of respondents were chosen (Kerlinger, 1993) as sample. In this way the sample size became 50. Data were collected from the sample farmers rather population from 10 October to 25 November 2020, data were gathered from the 50 selected farmers.

Measurement of farmers' perception of the characteristics of BRRI dhan87

BRRI dhan87, a newly released T. Aman rice variety is considered as an innovation in the field of agriculture must have five characteristics: relative advantage, compatibility, complexity, trialability and observability as indicated by Rogers and Shoemaker (1971). A total of 31 statements were constructed on different characteristics of BRRI dhan87 and grouped them under the five broader features of an innovation for measuring the perception of the farmers of BRRI dhan87 (Table 1).

Table 1. Item wise characteristics of BRRI dhan87 rice

Characteristics	Number of items
1. Relative advantage	11
2. Compatibility	7
3. Complexity	3
4. Trialability	1
5. Observability	9
Total	31

It facilitated item understanding about BRRI dhan87 and encouraged the farmers to provide fair judgment about various characteristics of BRRI dhan87. The extent of perception of a farmer regarding each item was calculated by using a four-point Likert scale containing strongly agree, moderately agree, somewhat agree, and don't agree. To quantify the extent of agreement or disagreement weights 3, 2, 1, and 0 were assigned for strongly agree, moderately agree, somewhat agree, and don't agree to each of the items reflecting the characteristics of BRRI dhan87 rice. Weights for 31 items were summated together to arrive perception score of a respondent. As a result, the respondents' perception scores might vary from 0 to 93, with 93 denoting the maximum level of perception of the attributes of BRRI dhan87 rice and 0 denoting no perception.

A respondent's communication media exposure was calculated based on the type of interaction they had with 11 different information sources, using 4 individuals, 4 groups, and 3 mass contact media. Five alternative responses were scored based on logical frequencies, and the scores were: 4 for regularly, 3 often, 2 occasionally, 1 rarely and 0 for not at all. Therefore, the respondents' score for extension media contact can vary from 0 to 44, with 0 denoting no extension contact and 44 denoting intense extension media interaction.

On the other hand, organizational participation was evaluated based on the types of organizations in which he or she participated. The ratings of the participation were: 3 for executive committee officer, 2 for executive member, 1 ordinary member, 0 for no participation. Thus, the score of a respondent for organizational participation may vary from 0 to 24, where 0 denoting no participation and 24 denoting extremely high organizational participation.

A respondent's knowledge of the BRRI dhan87 cultivation was assessed by answering 17 questions on various aspects of rice production. Every correct question received a score of 2, while a person might receive a score of 0 for a wrong or no response to any given question. For answers that were partially accurate, partial scores were given. As a result, the respondents' knowledge of rice cultivation might range from 0 to 34, with 0 denoting a lack of knowledge and 34 denoting a high level of knowledge.

Results and Discussion

Perception of the farmers regarding the characteristics of BRR1 dhan87

Perception was measured on 31 items constructed on different characteristics like relative advantage, compatibility, complexity, trialability and observability of BRR1 dhan87. There were 11 items under relative advantage, 7 compatibility, 3 complexity, 1 trialability, and 9 observability. The average scores of these five broad characteristics revealed that complexity ranked top (106.6 scores), and it was followed by observability (97.55 scores), trialability (88.0 scores), compatibility (83.14) and relative advantage (83.09 scores). This means that all the five characteristics of BRR1 dhan87 rice were adequately perceived by the respondent farmers (Table 2). The score was triggered by non-availability of quality seeds of this variety at farmers' door steps, input sensitive yield, and declining of yield without supplemental irrigation. The physical factors grouped under the characteristic complexity are always considered as impasse by the all members of marginal and smallholder farmers for which they cannot harvest the potential yield of a technology. However, out of 31 characteristics, the top five perceived were- shorter life span (PI=144), slender and fine grain (PI=143), higher market price (PI=141), rain-fed cultivation (PI=125), and lodging resistant (PI=124). All these indicate that the variety quickly will be diffused among the medium and large farmers as perception is the precursor of adoption.

Table 2. Extent of perception of the farmers with perception index and rank order of the characteristics of BRR1 dhan87.

Characteristics of BRR1 dhan87 rice	Extent of Perception				PI	Rank Order
	Don't Agree (0)	Somewhat Agree (1)	Moderately Agree (2)	Strongly Agree (3)		
Relative Advantage						
1. This variety is very suitable for the flooded area due to its early maturing traits than the other varieties	15	9	18	8	69	26 th
2. One can be financially benefitted cultivating this variety due to its comparatively higher yield than the conventional variety	8	10	17	15	89	17 th
3. Shorter duration of this variety can contribute increasing cropping intensity	22	19	8	1	38	29 th
4. It takes less time than the other varieties due to its early production	3	28	9	10	76	24 th
5. It requires less fertilizer than the conventional varieties	0	8	32	10	102	8 th
6. Higher market price (fine grain)	0	0	9	41	141	3 rd
7. It is very delicious to eat	1	11	25	13	98	12 th
8. Production Cost is comparatively lower	8	18	18	6	72	25 th
9. It helps to fill the desired of Farmers and Consumers for being slender and fine grain	18	14	13	5	55	28 th
10. It is easily Marketable	4	14	26	18	84	20 th
11. It is easily exportable	12	9	6	23	90	16 th
Average					83.09	
Compatibility						
12. It can be cultivated rainfed condition	0	5	15	30	125	4 th
13. Agricultural practices are identical to conventional variety	4	9	29	8	91	15 th
14. Cultivation of this Rice is similar to other high yielding variety like Rupa Aman Rice	6	16	21	7	79	23 th
15. It gives good Production in Aman Season planting timely and lately	36	9	3	3	24	31 th
16. Desired Production can be achieved by following recommended instructions in case of cultivation	6	10	16	18	96	14 th
17. The demands of cultivating this rice variety is high	13	4	23	10	80	22 th

having its high production, delicious and nutritious value						
18. Natural rain dependent rice variety is required owing to dearth of Irrigation facilities. BRRIdhan87 is very effective in this state	11	7	16	16	87	19 th
Average					83.14	
Complexity						
19. Seed is not available according to its demand	0	9	11	30	121	6 th
20. Desired production cannot be achieved without following recommended dose of materials	0	16	20	14	98	11 th
21. Production is less except Supplementary irrigation	1	13	20	16	101	9 th
Average					106.6	
Trialability						
22. The decision to cultivate a large amount of land can be made on the basis obtained by cultivating a small amount of land	12	8	10	20	88	18 th
Average					88	
Observability:						
23. The average height of an adult plant is higher than that of other species	7	3	24	16	99	10 th
24. Lodging resistant	0	7	12	31	124	5 th
25. The leaves are light green; the dig leaves are erect and the BRRIdhan87 rice is longer and wider than BRRIdhan49	5	34	8	3	59	27 th
26. As the stems and leaves are green at the time of ripening, photosynthesis continues and resulting in early ripening of rice	29	17	3	0	23	31 th
27. In this rice, disease and pest infestation is less than conventional varieties	13	19	20	8	83	21 th
28. Slender and fine grain	0	0	7	43	143	2 nd
29. Shorter life span of BRRIdhan87 (127 days)	0	0	6	44	144	1 st
30. Early yields can be easily observed	0	11	23	16	105	7 th
31. Higher yields can be easily observed	0	15	22	13	98	13 th
Average					97.55	

Categorization of farmers on perception

The perception scores of BRRIdhan87 of farmers ranged from 33 to 85 with the mean of 55.64 and standard deviation 15.03 (Table 3). Data indicate that 42% of the farmers had moderate perception followed by 22% high, and 36% low perception. As favorable perception is the indicator of a positive decision, moderate to highly favorable perception of 64% farmers towards BRRIdhan87 revealed the fact that the variety is well adjusted/adapted with the local culture, values, and norms as well as their existing farming practices. So, there is a likelihood that BRRIdhan87 will be widely adopted by the majority of the farmers. Similar findings were reported by Roy (2009) that 76% of the farmers had moderate to high favorable perception about IPM as an effective method for sustainable crop production. Islam et al., (2022) reported that most of the farmers (about 63 percent) had moderate perception regarding BRRIdhan52 cultivation.

Table 3. Distribution of the farmers based on their perception of BRRIdhan87

Category	Number	Percent	Mean	Standard deviation
Low perception (up to 50.33)	18	36	55.64	15.03
Moderate perception (50.34 to 67.66)	21	42		
High perception (above 67.66)	11	22		
Total	50	100		

Source: Estimation by the author based on a field survey, 2020

Profile of the BRRIdhan87 farmers

A total of 10 socio-economics characteristics of the farmers of BRRIdhan87 were selected to find out their relationship with perception on BRRIdhan87. These characteristics were age, level of education, family size, farm size, land area under BRRIdhan87, annual family income, communication media exposure, organizational participation, knowledge of BRRIdhan87, and rice farming experience. The category, mean and standard deviation of these variables of the respondents are given below:

Table 4. Salient features of the selected characteristics of BRRIdhan87 farmers

Characteristics (units)	Range		Farmers		Mean	Standard deviation
	Possible	Observed	Categories	Percent		
Age (year)	Unknown	26-70	Young (up to 35)	28	45.04	11.72
			Middle age (36-55)	54		
			Old age (above 55)	18		
Level of education (Score, 1 for 1 year of schooling)	Unknown	0-12	Illiterate (0)	14	3.19	3.63
			Primary (1-5)	54		
			Secondary (6-10)	26		
			Higher secondary (above 10)	6		
Family size (number of persons)	Unknown	3-9	Small family (Up to 3)	22	6.28	2.51
			Medium family (4-5)	38		
			Large family (above 6)	40		
Farm size (ha)	Unknown	0.23-3.00	Marginal (0.21-0.50)	10	1.17	0.64
			Small (0.51-1.00)	34		
			Medium (1.01-2.00)	44		
			Large (2.1 & above)	12		
Land area under BRRIdhan87 (ha)	Unknown	0.03-1.33	Small area (up to .46)	32	0.43	0.36
			Medium area (.47-.897)	44		
			Large area (above .897)	24		
Annual family income ('000'taka)	Unknown	25-150	Low income (up to 66.67)	48	72.24	28.59
			Medium income (66.68-108.33)	38		
			High income (above 108.33)	14		
Communication media exposure (score)	0-44	2-34	Low contact (up to 12.67)	64	13.24	7.12
			Medium contact (12.68-23.33)	24		
			High contact (above 23.33)	12		
Organizational participation (score)	0-24	0-15	Low participation (up to 5)	56	5.50	4.12
			Medium participation (6 to 10)	26		
			High participation (above 10)	18		
Knowledge on BRRIdhan87 cultivation (score)	0-34	9-32	Low Knowledge (up to 16.67)	30	21.46	6.37
			Medium Knowledge (16.68 to 25.66)	32		
			High Knowledge (above 25.66)	38		
Experience (year)	Unknown	1-3	Low experience (up to 1)	36	1.80	0.69
			Medium experience (above 1 to 2)	48		
			High experience (Above 2)	16		

Source: Estimation by the author based on a field survey, 2020

The findings indicate that a large proportion (54 percent) of the farmers were middle-aged compared to 28 percent young and 18 percent old aged. More than half (54 percent) of the farmers had primary education. Overwhelming majority (40 percent) of farmers belongs to large family. The average farm size was 1.17 hectare which is a little bit higher than the national average farm size, which is equivalent to 0.80 hectare (BBS, 2007). Major portion (76 percent) of the farmers had small to medium BRRIdhan87 land areas. This might be due to fact that agricultural land areas are being decreased day by day through land division and fragmentation from generation to generation (Deb et al., 2021).

The results also revealed that about half (48 percent) of BRR I dhan87 farmers had low annual income. A large portion (64 percent) of farmers had low communication media exposure and more than half (about 56 percent) of the farmers had low organizational participation. Similar findings were reported by Islam et al., (2022). The majority (about 62 percent) of the farmers had low to medium knowledge on BRR I dhan87 cultivation. Results reveal that about half (48 percent) of the farmers had medium experience in BRR I dhan87 cultivation.

The relationship between the selected characteristics of BRR I dhan87 farmers and their perception

Relationship between the selected characteristics of the farmers and their perception of BRR I dhan87 was explored through Pearson's Product Moment Correlation coefficient (r). The 'r' value between farmers' perception and education level was 0.878 (Table 5). This means with increase of education level perception level of the farmers regarding BRR I dhan87 significantly increased. Education improves one's mental and psychological capacity to comprehend, choose, and accept novel concepts and behaviors. Additionally, it enhances farmers' capacity for observation and judgment. Furthermore, farmers who have a higher level of education are probably more socially active and exposed to a wider range of information sources. Islam (2005) reported a significant correlation between farmers' perceptions of the advantages of crop diversity and their degree of education.

Table 5 also showed that there is a strong relationship between land area of BRR I dhan87 and farmers perception. Actually, those farmers have vast land area they have high opportunity to practice any new innovation. Consequently, farmers can achieve experience which might help the farmers to extend their perceptions. Communication media exposure enables an individual to gain more information and broaden his outlooks. High communication media exposure brings farmers being enlightened and consequently having broader outlooks and progressive attitudes. Relationship in this regard indicates communication media exposure enabled individuals to come more in contact with different kinds of communication media such as interpersonal, group and mass. The results also revealed that when the extension contact was high, the farmers were acquainted with more information which helped them to build up a favorable perception towards BRR I dhan87. Ullah (2011) discovered a favorable significant link between extension media interaction and farmers' perceptions

Table 5. Correlation co-efficient between the selected characteristics of the respondents and their perception of BRR I dhan87

Dependent Variable	Independent Variables	Correlation co-efficient "r" values with 48 df	Tabulated Values of "r"	
			At 0.05 level	At 0.01 level
Farmers Perception on BRR I dhan87	1. Age	-0.120 ^{NS}	0.273	0.354
	2. Level of education	0.878**		
	3. Family size	-0.090 ^{NS}		
	4. Farm size	0.143 ^{NS}		
	5. Land Area under BRR I dhan87	0.802**		
	6. Annual family income	0.091 ^{NS}		
	7. Communication media exposure	0.879**		
	8. Organizational participation	0.974**		
	9. Knowledge on BRR I dhan87 cultivation	0.939**		
	10. Experience	0.926**		

Source: Author's calculation, 2021

Pal (2009), Alam (2008) and Sarker et al., (2009) found same results in their respective research. Results also revealed that organizational participation has a positive influence on farmer's perception. Afroze (2015) conducted a study and discovered a favorable and substantial association between organizational engagement and farmers' perceptions of the production of HYV Aman rice. Increased organizational involvement fosters an outgoing mindset and establishes coordination skills. Participation in an organization enables a person to identify solutions to both personal and societal problems.

The results showed a significant relationship between farmers' perception and their knowledge. According to Mohiuddin (1993) perception depends on learning and by this knowledge is acquired which helps to increase the perception towards new innovation. Farming experience and farmers perception was positively significant. Farming experience increased the mental ability and developed multiple skills of farmers. Nhemachena and Rashid (2008) conducted a study about farmers' adoption to climate change and found that the possibility of adopting superior crop management practices grows with farming experience since experienced farmers have a wealth of expertise and information in that field.

Conclusion

The level of education, knowledge, and experience of the farmers were highly correlated with the perception about the beneficial characteristics of BRRi dhan87 especially, its shorter life span, slender grain with sticky nature are appreciated by all quarters. So, Government Organizations (GO) and Non-Government Organizations (NGO) should come forward to communicate these innovative features of BRRi dhan87 to the farmers through devising their extension programs. Training of the farmers, demonstration, field day, farmers' field school etc. in this regard can play a vital role as it was evident that level of education had significant influence on development of perception of BRRi dhan87. Although it is not possible to upgrade the education level of the farmers, their knowledge and experience can be improved through massive extension activities about BRRi dhan87. Since favorable perception triggers adoption of any crop technology; the programs mentioned above will create situation for wider adoption of BRRi dhan87. Based on the findings, the following suggestions could be salutary for slow but surely improvement for future research.

References

- Afroze, 2015. Farmers' satisfaction towards cultivation of selected HYV aman rice (ms thesis) Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka.
- Alam, M.N. 2008. Farmers' Perception of Soil Quality Degradation Due to Less Use of Organic Materials (MS thesis), Department of Agricultural Extension Education, Bangladesh Agricultural University, Bangladesh.
- BBS. 2020. Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS. 2018. Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS. 2007. Statistical Yearbook of Bangladesh. Bangladesh Bureau of Statistics. Statistics Division, Ministry of Planning, Government of Peoples Republic of Bangladesh.
- BRKB (Bangladesh Rice Knowledge Bank). 2012. Rice in Bangladesh. Implemented by: Bangladesh Rice Research Institute (BRRi) and supported by NATP-SPGR-BARC Project Bangladesh. www.knowledgebank-brrri.org/riceinban.php.
- BRRi (Bangladesh Rice Research Institute). 2013. Adhunik Dhaner Chash (In Bangla), Bangladesh Rice Research Institute, Joydebpur, Gazipur. p. 11-12
- Bangladesh, 2009: A Country Study: Rice". Library of Congress, Washington, D.C. September 1988. Retrieved March 21, 2009.
- Deb, B., Islam, M.A., Kamruzzaman, M. 2021: Farmers' Knowledge about Modern Pineapple (Ananas comosus) Production at the Hilly Area of Sreemangal Upazila under Moulvibazar District. J. Sylhet Agril. Univ. 8(1): 1-6, ISSN: 2308-1597.
- Islam, M.A., Poly, R.P., Deb, B. 2022: Farmers' Perceived Submergence Tolerance Features of BRRi dhan52. J. Sylhet Agril. Univ. 9(1): 57-63, ISSN: 2308-1597.
- Islam, M.N. 2005. Farmers' Perception of Benefits of Practicing Crop Diversification (MS thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Bangladesh.
- Kerlinger, T. 1993. Foundations of Behavioural Research :Educational and Psychological Inquiry, new York : Holt, Richart and Winston, Inc.
- Mohiuddin, M. 1993. Shilpa Monobiggan (3rd edn.), Dhaka: Needs Publication.
- Nhemachena, C. and M.H. Rashid. 2008. Micro-Level Analysis of Farmers' Adaptation to Climate Change in Southern Africa. IFPRI <https://www.researchgate.net/publication/23529883>
- Pal, K.B. 2009. The Perception of Organic Farmers Regarding Introduction of ICT in Organic Farming (unpublished master's thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Bangladesh.
- Rogers, E.M. and F.F. Shoemaker, 1971. Communication of Innovation :A Cross-Cultural Approach.2nd Edition,The Free Press,New York.

- Roy, B.S. 2009. Farmers' Perception of the Effect of IPM for Sustainable Crop Production (MS thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Bangladesh.
- Sarkar, R.K., Panda. D., Reddy, J.N., Patnaik, S.S.C., Mackill, D.J. and A.M. Ismail. 2009. Performance of submergence tolerant rice genotypes carrying the Sub1 QTL under stressed and non-stressed natural field conditions. *Indian Journal of Agricultural Sciences*, 79(11): 876-883
- Ullah, S.M.A. 2011. Farmers' Perception of One House One Farm Approach (MSthesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Bangladesh.