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An Article on
**Exploring Variation in Farming and Non-Farming Communities'
Perception on Urban Amenities in Rural Areas of Bangladesh**

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Exploring Variation in Farming and Non-Farming Communities' Perception on Urban Amenities in Rural Areas of Bangladesh

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Abstract

Before initiating any rural development program to fulfill rural people's need and expectation, it is essential to comprehend farming and non-farming communities' perception on urban amenities in rural areas. This study aimed to determine the socio-economic factors that influence farmers and non-farmers' perceived need for urban amenities in rural Bangladesh. In addition, this study explores how farming and non-farming communities' perception vary for different urban amenities in rural Bangladesh. Data were collected through a questionnaire from random sample of 452 respondents in rural areas of Dhaka, Mymensingh, Rajshahi and Chittagong divisions of Bangladesh. Descriptive statistics, inferential statistics and an ordered logistic-regression model were used to analyze the data. Farmers and non-farmers' perception on urban amenities in rural areas have been studied based on quality and accessibility of urban amenities, their need for improvement, the extent to which urban amenities support people's livelihood and their adaptation level. The results shows that socio-economic characteristics, which include gender, age, education level, monthly income, family type have significant influence on farmers and non-farmers' perceived need for urban amenities in rural areas. Both farmers and non-farmers perceived that provision of urban amenities in rural areas is important. However, these two communities' perception significantly varies for education, growth center and local market, economic service, community space, information and communication technology and internet provision. The results provide practical guidelines for improving urban amenities in rural Bangladesh to support farming and non-farming communities.

1. Introduction

About seventy-five percent of the population lives in rural areas of Bangladesh; 63.11% are farm and 36.89% are non-farm households in rural Bangladesh (Bangladesh Bureau of Statistics (BBS), 2018). However,

development is concentrated mostly in urban areas of Bangladesh and lack of amenities and employment opportunities in rural areas influence people to migrate to urban centers (Das et al., 2021). In contrast to rural areas,

which are still constrained by limited, insufficient amenities, urban areas are often equated with appropriate amenities or fundamental infrastructure (Hlavsa, 2010). Rural communities are severely underdeveloped in terms of basic amenities and public services required for growth (Salvia & Quaranta, 2017). Though majority of the people are involved in farming activities in rural areas of Bangladesh, rural non-farm sector is increasing due to rapid urbanization (Sen et al., 2021). The expansion of rural non-farm sectors highlights the need for adequate infrastructural amenities such as energy, water supply, transport, education and training facilities (Velmurugan & Alex, 2022). Due to lack of sufficient facilities, farmers are unable to optimize agricultural production. In the absence of necessary amenities, it becomes difficult for the rural households to contribute in nation's economic progress.

Several scholars have remarked the importance of providing amenities in rural areas. Providing access to basic amenities is essential for achieving economic development objectives and creating equitable opportunity for all stakeholders to engage in a country's economy (Brenneman, 2014). Improving accessibility to infrastructure has been widely accepted as one of the major ways of promoting sound human settlements, good health and appropriate and decent living conditions (Ibem, 2013). Inadequacy of urban amenities in rural areas is the dominant issue that affect the quality of life of rural communities. It undermines efforts to improve rural communities' economic development, which generally rely on agricultural resources. The need to develop urban amenities for rural areas should be viewed as part of a larger

development strategy that includes economic growth, increased health services, increased access to education, and community development. The provision of adequate and high-quality infrastructure can help to maintain a balance in the quality of life between rural and urban areas (Bulus & Adefila, 2014)

Urban amenities in rural areas has been theorized in diverse ways. Rural amenities have been classified into three types, namely: physical infrastructure, such as transport network, water supply, irrigation facility, electricity, warehouses and processing facilities; social infrastructure, which include healthcare facilities, educational institutions, community space, fire and security services and institutional infrastructure, such as cooperatives, community-based organizations, financial institutions and agricultural research facilities (Raniga & Simpson, 2002). Provision of urban amenities in rural parts of the country is an integrating rural development approach that encompasses rural society development (agricultural, educational, health, electricity, and water supply) and cooperatives at the same time (Egbetokun, 2009).

Several intervention programs had been taken by the policy makers or multidimensional institutions for rural development in Bangladesh (Khan, 1985). A strong understanding of the dynamics of rural development is necessary for successful implementation of development programs. Insufficient indicators and lack of proper information have become a constraint in rural development planning (Barrios, 2008). Household perceptions may serve as a principal indicator and source of information of potential rural development outcome (Barrios, 2008). Therefore, it is necessary to understand how farm and non-farm

households in rural areas perceive the importance of urban amenities in their everyday life. Several empirical studies have been conducted to understand farmers' perception on provided services in rural areas (Aydogdu et al., 2018; Ebewore, 2021; Elias et al., 2016; Kassem et al., 2021) Only a few researches have been focused on rural household's perception on urban amenities in rural areas (Oyesola, 2007). A similar research was done in Delta State of Nigeria to assess the perceptions of farmers on the state of infrastructure, which denotes that provision of amenities in rural areas is significant for attaining integrated development and positively influence farmers (Ebewore, 2021). Key limitation of this research is the exclusion of non-farmers to assess their perception on the condition of existing amenities in rural areas. Another research in Nigeria was performed to assess rural dwellers perception on effect of infrastructural facilities on livelihood activities. A study was conducted on existing and required amenities in rural Bangladesh which identified the gap in provision of amenities in rural areas (Hossain et al., 2014). However, this study did not examine how perception on urban amenities vary in farming and non-farming communities of rural Bangladesh.

The underlying focus of this study is to explore farming and non-farming communities' perception on urban amenities in rural areas of Bangladesh in order to uphold the existing condition and development potentials of urban amenities in rural areas of Bangladesh. The research objectives are to identify socio economic factors influencing farmers and non-farmers' perception on urban amenities in rural areas of Bangladesh and to explore variation in farmers and non-farmers' perception on urban amenities in rural areas of Bangladesh.

In terms of socioeconomic characteristics, we examine how gender, age, education, monthly income, and family size affect farmers' and non-farmers' perceptions of the importance of urban amenities. We have also studied how people's perception on urban amenities varies in farming and non-farming communities. There has been an attempt to identify the gap in providing urban amenities in rural Bangladesh for farm and non-farm households. This study may contribute in appropriate intervention of policy makers, government or non-government organization to provide basic amenities and infrastructural facilities in rural areas.

2. Materials and Method

2.1 Study Area

The farm and non-farm households in this study belong to the ten villages selected from four divisions namely Chittagong, Dhaka, Mymensingh and Rajshahi.

Table 1 shows the study area selected for this research purpose. Among the selected villages, three villages particularly from Dhaka divisions have urbanization effect due to proximity to urban center. On contrary, the rest of the villages remain distant from urban center and stay behind the influence of urban centers. The villages namely Gohailbari, Talma, Char Ghagra, Chamita, Pachondor have proximity to highway. Muradnagar village in Chittagong division is located near Khirai river. In Dhaka division, Talma and Gohailbari villages are located near Dhaleshwari river. Khukshia and Char Ghagra villages in Mymensingh division are located near river Sutia. Rural people in the study area depend primarily on the local economy for living. Agriculture is the most important source of income. While nonfarm activities have increased in the study region in recent years, agriculture remains the greatest sector of the rural workforce.

Table 1: General information of selected ten villages for study purpose

Division	Village	Population	Area (sq. km.)
Chittagong	Muradnagar	6000	.58
Dhaka	Beuta Muslim Para	1542	0.35
Dhaka	Gohailbari	3200	1
Dhaka	Talma	3305	2.2
Mymensingh	Khukshia	4726	4.025
Mymensingh	Char Ghagra	12000	6
Mymensingh	Sailampur	2158	1.8
Mymensingh	Summok Bailor	2300	1.7
Rajshahi	Chamtia	1288	1.2
Rajshahi	Pachondor	3500	2.5

2.2 Sampling and Data Collection

Ten villages were randomly selected for the study because these villages represent four major divisions of Bangladesh. A random sampling method was applied to select 452 respondents from the ten villages. Random sampling method has been applied in several research to collect data (Ao et al., 2017; Aydogdu et al., 2018; Elias et al., 2016; Kassem et al., 2021; Yazdanpanah & Feyzabad, 2017). Among 452 respondents, 182 were farmers and the rest 270 respondents were non-farmers. Data collection was conducted through questionnaire survey from each village. Data were collected through direct interviews by the authors. In addition, 22 focused group discussions (FGD) and 24 key informant interviews (KII) were conducted to understand the overall scenario of the study area. Checklists were prepared to collect the total number and additional information of existing amenities in the study area.

2.3 Instrument

A questionnaire was developed to collect the data. Questionnaire helps to collect massive amount of data precisely for a researcher in a short amount of period (Jones et al., 2013). It could address a number of issues which was particularly required by a researcher for statistical test to determine what other people think (Kasem et al., 2021). A co-ordination schema was developed before generating the questionnaire to define the order of variables in accordance with the objectives. For data collection of this study purpose, the variables were distributed in three sections of the questionnaire. The first section was consisted of socio-economic characteristics of rural people which included their gender, age, education level, monthly income and family type. The second section of the questionnaire was developed to understand how rural people perceive the existing condition of urban amenities in rural areas. The variables included in the second section are quality, accessibility, perceived need and need for improvement of urban amenities in rural areas. The third section was prepared to understand how existing urban amenities

support their livelihood and their adaption level. The urban amenities included in the questionnaire were selected from the ongoing rural development project in Bangladesh namely “My Village, My Town” (Rural Development and Co-operative Division, n.d.). Each FGD was held with a group of six to eight people randomly selected among the respondents. Focused group discussion is a good way to collect data from same background and experiences to discuss a specific topic and interest (Mishra

et al., 2016). In each village, one separate focused group discussion was conducted with women in order to understand their vulnerability context in rural areas. It was emphasized because rural women were fairly backward citizen in terms of education, social rights (Khan et al., 2006). In each village, two key informant interviews (KII), were also conducted to know the existing condition of urban amenities and rural development projects from the local authorities and experienced rural people.

Table 2: Sample of major questions asked during FGDs and KII

FGD	KII
I. Occupation of majority of population and their satisfaction	I. Projects and programs taken by government to improve the living status of the villagers
II. Vulnerability due to natural and manmade hazards	
III. Perception on urban amenities and existing problems	
IV. Involvement of government of NGOs in facilitating these amenities	II. Any system to involve rural people into decision making process
V. Expectation of Community involvement in government projects	

2.4 Data Analysis

Descriptive and inferential statistics were used to interpret the data using R programming software. Descriptive statistics include frequency, percentage, mean while, inferential statistics include Kruskal Wallis H test.

Data analysis by descriptive statistics used scale ranking derived from 5 point Likert-type scale of 5= “Very important”, 4= “Important”, 3= “Neutral”, 2= “Unimportant”, 1= “Very unimportant” to measure the farmers’ and non-farmers’ perception regarding the urban amenities. A 3.00 “cut-off” point was used. Mean scores above 3.00 implied the perception as

important and mean scores below 3.00 implied the opposite, “Unimportant”.

Kruskal Wallis H test, a non-parametric test usually used to ranked data, specifically when the data are in ordinal level and have extreme deviation from the normal distribution. (MacFarland et al.,2016). This test was employed to find the significant relationship between socio economic characteristics, perception of farmers/non-farmers and urban amenities.

An ordered logit model was built to find the perception of respondents’ (Greene et al., 2009) with the urban amenities and divided into 5 categories: “Very important”, “Important”, “Neutral”, “Unimportant”, “Very unimportant”. Such a model was exact

when the dependent variable had more than two values in ordered categories (Kassem et al.,2021). The independent variables included ordinal 5-point scale data which was further labeled. The model was based on these equations:

$$\ln \left(\frac{p(y \leq k)}{1-p(y \leq k)} \right) = \text{logit} [p(y \leq k)] = Y = a_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + \dots + a_n X_n \dots (1)$$

k=levels of the ordinal outcome variables ($k \geq 1$ & $k \geq 5$) and y=ordinal outcome variable

a_0 =intercept

$X_1, X_2, X_3, \dots, X_n$ = Value of independent variables.

$p(y \leq k)$ tells the probability of occurrence and $1 - p(y \leq k)$ represents the probability of non-occurrence in an event. The ratio of these two represents occurrence ratio and the logarithmic transformation of this ratio creates this ordered logit model (Ao et al.,2017)

$$P(y \leq k) = \frac{e^Y}{1 + e^Y} \dots \dots (2)$$

Where P= probability value of perception,

The probability of obtaining an outcome is presented as follows:

$P_1 = \text{Pr}(y=1)$; $P_2 = \text{Pr}(y=1)$; $P_3 = \text{Pr}(y=1)$; $P_4 = \text{Pr}(y=1)$; $P_5 = \text{Pr}(y=1)$; for outcomes respectively.

Table 3: Definition of the independent variables in farmers' and non-farmers' perception model

Variables	Description	Measurement
Quality	Quality of the urban amenities	1=very unsatisfied, 2= unsatisfied, 3= Neutral, 4= satisfied, 5= very satisfied
Accessibility	Accessibility of the urban amenities	1=very less, 2=less, 3=moderate, 4=high, 5=very high
Need improvement	How much improvement requires for any urban amenities	1= not at all concern 2= slightly concern 3=moderately concern 4= very concern 5= extremely concern
Adaptation	Adaptation level with the urban amenities	1=very less, 2=less, 3=moderate, 4=high, 5=very high
Support to livelihood	How much urban amenities are supporting to livelihood	1= highly unsupportive, 2= unsupportive, 3= moderate, 4=supportive, 5= highly supportive

3. Results and discussion

3.1 Farmers and Non-Farmer's Socioeconomic Attributes

Table 4). Among farmers, (89.01%) were male. On the contrary, the percentage of males and females in non-farming communities are 54.07% and 45.93% respectively. Most respondents' age was

Almost 40% of respondents were farmers and 60% of respondents were non-farmers (

between 30 to 50 years. Farmers had no formal education and the illiteracy rate was 41.21%. On contrary, people in non-farming had 35.18% literacy rate and only a small portion of the respondents had higher

secondary or university degrees. Income level of the majority of farmers (41.76%) and non-farmers (40%) monthly were 10001-20000 BDT. 22.53% of farmers earn less

than 10000 BDT. Both farmers' and non-farmers' family types were nuclear and joint. In addition, a small portion of the respondents had extended family.

Table 4: Socio-economic characteristics of respondents

	Farmer (n=182)		Non-Farmer (n=270)	
	Frequency	Percentage	Frequency	Percentage
Gender				
Male	162	89.01	146	54.07
Female	20	10.99	124	45.93
Age				
Less than 30 years	8	4.4	55	20.37
30-50 years	108	59.34	157	58.15
More than 50 years	66	36.26	58	21.48
Education Level				
No Education	75	41.21	54	20
Elementary	58	31.87	72	26.67
Secondary School	41	22.53	95	35.18
Higher Secondary School	3	1.65	24	8.89
University	5	2.75	25	9.26
Income Level				
Less than 10000 BDT	41	22.53	41	15.19
10001-20000 BDT	76	41.76	108	40
20001-30000 BDT	27	14.84	47	17.41
30001-40000 BDT	15	8.24	32	11.85
More than 40000 BDT	22	12.64	42	15.56
Family Type				
Nuclear	115	63.19	158	58.52
Joint	60	32.97	104	38.52
Extended	7	3.85	8	2.96

3.2 Farmers' and Non-Farmers' Perceived Need for Urban Amenities

Table 5 and Table 6 show farmers and non-farmers' perceived need for urban amenities in rural area respectively. Overall, perceived need for urban amenities were important for both farmers (mean, 3.90; standard deviation, 0.86) and non-farmers (mean, 3.95; standard deviation, 0.88). This result implies that provision of urban amenities in rural areas is essential for both farming and non-farming communities.

3.3 Socio-economic Factors Influencing Farmers and Non-Farmers' Perception on Urban Amenities in Rural Areas of Bangladesh

A Krushkal-Wallis H test was run to examine if there exists any significant relationship between perceived need for urban amenities in rural areas vary with respect to farmers and non-farmers' socio-economic characteristics. The selected socio-economic characteristics are gender, age group, education level, monthly income and family type for the test.

Table 5: Distribution of farmers according to their perceived need for urban amenities.

	Very Unimportant		Unimportant		Neutral		Important		Very Important		Mean	SD
	F	%	F	%	F	%	F	%	F	%		
Quality Education	1	0.55	14	7.69	27	14.84	65	35.71	75	41.21	4.09	0.95
Modern Healthcare Facilities and Community Clinic	0	0.00	0	0.00	16	8.79	54	29.67	112	61.54	4.53	0.65
Food Supply and Nutrition	0	0.00	11	6.04	49	26.92	82	45.05	40	21.98	3.83	0.84
Housing, Shelter and Disaster Management	6	3.30	23	12.64	82	45.05	43	23.63	28	15.38	3.35	0.99
Water Supply and Drainage	0	0.00	4	2.20	22	12.09	82	45.05	74	40.66	4.24	0.75
Solid Waste and Sewerage Management	1	0.55	0	0.00	36	19.78	87	47.80	58	31.87	4.10	0.75
Electricity and Energy Supply	0	0.00	12	6.59	35	19.23	73	40.11	62	34.07	4.02	0.89
Growth Center and Local Market	1	0.55	14	7.69	37	20.33	64	35.16	65	35.71	3.98	0.96
Economic Service	3	1.65	14	7.69	53	29.12	69	37.91	43	23.63	3.74	0.96
Modern Agriculture	4	2.20	1	0.55	38	20.88	67	36.81	72	39.56	4.11	0.90
Transportation Network and Transport Mode	4	2.20	15	8.24	22	12.09	42	23.08	96	52.75	4.18	1.08
Community Space	0	0.00	13	7.14	97	53.30	60	32.97	12	6.59	3.39	0.72
Community Organization	0	0.00	3	1.65	61	33.52	81	44.51	37	20.33	3.84	0.76
Youth and Sports Upliftment	3	1.65	8	4.40	76	41.76	69	37.91	25	13.74	3.58	0.84
ICT and Internet Provision	4	2.20	11	6.04	70	38.46	72	39.56	25	13.74	3.57	0.88
Amenities for Women	1	0.55	3	1.65	67	36.81	72	39.56	38	20.88	3.79	0.81
Overall Perceived Need											3.90	0.86

Table 6: Distribution of non-farmers according to their perceived need for urban amenities.

	Very Unimportant		Unimportant		Neutral		Important		Very Important		Mean	SD
	F	%	F	%	F	%	F	%	F	%		
Quality Education	0	0.00	5	1.85	42	15.56	95	35.19	128	47.41	4.28	0.79
Modern Healthcare Facilities and Community Clinic	0	0.00	0	0.00	17	6.30	101	37.41	152	56.30	4.50	0.61
Food Supply and Nutrition	0	0.00	11	4.07	72	26.67	112	41.48	74	27.41	3.93	0.84
Housing, Shelter and Disaster Management	6	2.22	34	12.59	117	43.33	67	24.81	43	15.93	3.40	0.98
Water Supply and Drainage	1	0.37	4	1.48	40	14.81	122	45.19	100	37.04	4.15	0.84
Solid Waste and Sewerage Management	2	0.74	1	0.37	53	19.63	124	45.93	86	31.85	4.05	0.88
Electricity and Energy Supply	2	0.74	5	1.85	49	18.15	123	45.56	90	33.33	4.09	0.81
Growth Center and Local Market	1	0.37	2	0.74	61	22.59	112	41.48	94	34.81	4.10	0.79
Economic Service	5	1.85	11	4.07	74	27.41	128	47.41	52	19.26	3.78	0.87
Modern Agriculture	16	5.93	4	1.48	57	21.11	111	41.11	80	29.63	3.88	1.05
Transportation Network and Transport Mode	1	0.37	2	0.74	35	12.96	106	39.26	126	46.67	4.31	0.75
Community Space	2	0.74	19	7.04	99	36.67	106	39.26	42	15.56	3.62	0.86
Community Organization	5	1.85	8	2.96	106	39.26	113	41.85	35	12.96	3.60	0.85
Youth and Sports Upliftment	1	0.37	12	4.44	107	39.63	96	35.56	52	19.26	3.69	0.86
ICT and Internet Provision	2	0.74	10	3.70	71	26.30	141	52.22	46	17.04	3.81	0.78
Amenities for Women	2	0.74	2	0.74	75	27.78	105	38.89	84	31.11	4.00	0.83
Overall Perceived Need											3.95	0.84

The results are shown in Table 1, which demonstrates that farmers and non-farmers' perceived need for urban amenities varies with socio-economic characteristics, for p -value <0.05 , at 95% level of confidence. Farmers' perceived need for education is influenced significantly by education level. Majority of the farmers among the respondents had no formal education and those who have primary or secondary education give more importance on education. Among farmers and non-farmers, those who have higher income level expect to have better quality education for their children. (Hossain et al., 2010).

Perceived need for healthcare facilities is significantly influenced by farmers' education level and non-farmers' family type. Educated farmers are more concerned about the provision of healthcare facilities. Non-farmers living in joint or extended family may give more importance on healthcare facilities as there could be more children or old people in the family who are prone to diseases (Ashfaq et al., 2020). Perceived need for housing and disaster management significantly varies with farmers and non-farmers' monthly income. People having lower income level usually reside in low quality of houses and give more emphasis on better quality of housing and shelter. Perceived need for solid waste management is significantly affected by monthly income and family type, for both farmers and non-farmers. In a joint or extended family type, amount of produced waste is higher for which proper waste management is required.

For farmers, perceived need for growth center and economic service differ significantly with their education level. Educated farmers are adopt more modern farm inputs and utilize their skills to increase

agricultural production (Asadullah & Rahman, 2009) Growth centers and local markets are crucial place for selling agricultural products and important source of various seeds (Lipper et al., 2010). For non-farmers, perceived need for growth center vary significantly with their gender and income level. Among female respondents, majority of them are involved in non-farming activities, which include livestock farming, handy craft works or some work in markets. They sell dairy products, handy crafts on markets for which they may give more importance on growth center and local market.

Farmers' perceived need for modern agriculture and transport network differ significantly with their age. Farmers who are young or middle aged tend to use tractor, power tiller, and rice mill for their agricultural works. Because old farmers are not much familiar with modern method of agricultural production and usually do agricultural works following primitive way. Improved transportation network is important to transport agricultural products to growth center and rural markets.

For both farmers and non-farmers, perceived need for women's amenities differs significantly according to gender. This results implies that women belonging in both farming and non-farming communities perceive their need in a distinguish way compared to men. In focused group discussions, female respondents said that healthcare facilities were less accessible to women and there were no emergency service for pregnant women. Though women's participation in rural economic activities has increased, in some cases women have less access to training programs, insurance or widow's allowance, get loan with high interest.

Table 7: Result of Kruskal Wallis Test 1

	Farmer					Non farmer				
	Gender	Age	Education Level	Monthly Income	Family type	Gender	Age	Education Level	Monthly Income	Family type
	P value	P value	P value	P value	P value	P value	P value	P value	P value	P value
Amenities										
Quality Education	0.6154	0.0204*	0.0309*	0.0178*	0.6419	0.5923	0.399*	0.04802	0.0096*	0.3124
Modern Healthcare Facilities and Community Clinic	0.2781	0.3443	0.0016*	0.2161	0.8892	0.153	0.4046*	0.3942	0.1287	0.03*
Food Supply and Nutrition	0.1896	0.0182*	0.8087	0.6283	0.08313	0.119	0.6376	0.1387	0.0691	0.2577
Housing, Shelter and Disaster Management	0.9565	0.5432	0.2525	0.0111*	0.09937	0.3843	0.5076	0.3199	0.0048*	0.0627
Water Supply and Drainage	0.4713	0.3836	0.0006	0.2891	0.2095	0.9399	0.02341*	0.834	0.1801	0.7362
Solid Waste and Sewerage Management	0.9363	0.7437	0.2443	0.0391*	0.0141*	0.2332	0.0907	0.3001	0.0005*	0.0029*
Electricity and Energy Supply	0.1623	0.1704	0.0129*	0.4316	0.5373	0.5641	0.2	0.1427	0.001*	0.8681
Growth Center and Local Market	0.8236	0.2452	0.0012*	0.3192	0.3757	0.4983*	0.9355	0.0559	0.047*	0.9896
Economic Service	0.7494	0.4638	0.0012*	0.6191	0.0405*	0.0882	0.1356	0.7509	0.0558	0.9503
Modern Agriculture	0.2746	0.0382*	0.2785	0.2966	0.1223	0.8703	0.0638	0.4313	0.2271	0.7257
Transportation Network and Transport Mode	0.4823	0.0273*	0.2698	0.0889	0.5568	0.5264	0.4683	0.1432	0.1928	0.8899
Community Space	0.1152	0.7417	0.0417*	0.2675	0.6804	0.1436	0.1971	0.2157	0.2528	0.1085
Community Organization	0.4377	0.5769	0.2852	0.2591	0.0194*	0.8091	0.1841	0.3971	0.2337	0.4698
Youth and Sports Upliftment	0.4213	0.7112	0.0986	0.6947	0.5017	0.7767	0.4391	0.0012*	0.0148*	0.5075*
ICT and Internet Provision	0.5983	0.6886	0.283	0.7425	0.5059	0.4352	0.6546	0.0615	0.2522	0.891
Amenities for Women	0.0461*	0.0259*	0.0021*	0.8567	0.3595	0.0007*	0.3227	0.4151	0.1297	0.4672

3.4 Variation in Farmers and Non-farmers' Perception on Urban Amenities in Rural Areas of Bangladesh

Table 8 depicts that among all the amenities, education, growth center and local market, economic service, community space, ICT and internet provision have significant relationship with occupation for p-value

Table 8: Result of Krushkal-Wallis Test 2

Occupation	Amenities	Chi-Square	P-value
Farmer and non-farmer	Education	10.844	0.027*
	Modern Healthcare Facilities and Community clinic	2.634	0.268
	Food Supply and Nutrition	1.815	0.611
	Housing, Shelter and Disaster Management	0.689	0.950
	Water Supply and Drainage	2.251	0.689
	Solid Waste and Sewerage management	0.874	0.920
	Electricity and Energy Supply	8.508	0.074
	Growth Center and Local Market	15.443	0.003*
	Economic Service	15.888	0.003*
	Modern Agriculture	8.040	0.090
	Transportation Network and Transportation Mode	29.487	6.225
	Community Space	13.502	0.009*
	Community Organization	7.577	0.674
	Youth Sports and Upliftment	5.590	0.231
	ICT and Internet Provision	12.657	0.013*
	Amenities for Women	9.083	0.059

“Kruskal-Wallis H test” was implied to determine whether significant relationship exists between occupation and perceived need for urban amenities in rural areas. The result shown in

<0.05 at 95% confidence interval. This result indicates that farming and non-farming communities' perceived need varies significantly for these amenities.

3.5 Ordered Logistic Regression Model

An ordered logit model was developed to explore the variation in perception of farmers and non-farmers for the identified five significant urban amenities in rural areas. The result is showed on Table 9. For each significant urban amenity, the model has identified significant independent variables. The model has given one significant scale for each independent variables. Based on the coefficient values of the significant scales for

independent variables, probability values have been calculated for each scale of dependent variable (5= “Very important”, 4= “Important”, 3= “Neutral”, 2= “Unimportant”, 1= “Very unimportant”).

The highest probability value for farmers' perception on education is $P(Y) = 0.6583$ for “Unimportant” and for non-farmers it is $P(Y) = 0.52$ for “Important”. This result implies that non- farmers give more importance on education than farmers. Majority of the non-

Table 9: Probability values of farmers and non-farmers' perception on urban amenities

Amenities	Independent Variable	Farmer					Non-farmer				
		P(Y) 1	P(Y)2	P(Y) 3	P(Y) 4	P(Y) 5	P(Y) 1	P(Y) 2	P(Y) 3	P(Y) 4	P(Y) 5
Education	Quality: Very satisfied Improvement: Not at all concern Accessibility: Moderate	0.144	0.6583*	0.155	0.0385	0.004	0.05	0.000687	0.0009	0.52*	0.42
Growth Center	Quality: Very unsatisfied Accessibility: Very less Improvement: Extremely concern Support: Supportive Adaptation: Very high	0.0003	0.0045	0.09	0.1	0.88*	0.0048	0.06	0.36	0.41*	0.22
Economic Service	Accessibility: Very high Improvement: Extremely concern Adaptation: Less	0.0116	0.0749	0.389	0.4*	0.1245	0.0013	0.00348	0.046	0.39	0.559*
Community Space	Quality: Unsatisfied Improvement: Extremely concern Support: Moderate	0.000004	0.00411	0.11	0.53*	0.36	0.000223	0.00254	0.0391	0.338	0.623*
ICT and Internet Provision	Quality: Satisfied Improvement: Extremely concern Support: Highly supportive Adaptation: Less	0.009785	0.036	0.4	0.478*	0.086	0.000322	0.00185	0.0361	0.45	0.5126*

farmers had primary or secondary level education among respondents. On contrary, majority of the farmers among respondents had no formal education. As a result, they perceive that education is less important. A common perception of rural people is that household investment in their children's education in farming communities is discouraged by a lack of a return to education in farm work (Asadullah & Rahman, 2009). Bangladesh is not agriculture-oriented and hence makes little contribution to improving farm productivity and efficiency (Coelli et al., 2002; Deb, 1995; Rahman, 2004; Wadud & White, 2000). There is considerable consensus in literatures that education has a substantial impact on the adoption of modern agriculture (Asfaw & Admassie, 2004; Knight et al., 2003).

For perception on growth center and local market of farmers, the highest probability value for farmers is $P(Y) = 0.88$ for "Very Important" and for non-farmers it is $P(Y) = 0.41$ for "Important". This result indicates that growth center is important for both farmers and non-farmers. However, the probability values imply that farmers give more importance on growth center. Because farmers in rural areas depend on growth center to trade their agricultural products. Growth centers also creates employment opportunities for rural population. (Barua et al., 2015) A functional growth center has a significant impact on the economic opportunities of rural households because farmers with limited market access tend to sell a smaller portion of their output and earn a lower economic return (Minot & Vargas Hill, 2007). For non-farmers, growth centers are important for employment in diversified activities. The highest probability value for perception on economic service of the farmers is $P(Y) = 0.4$ for "Important" and for non-farmers it is $P(Y) = 0.56$ for "Very Important". This result indicates that perception on economic service is important for both farmers and non-farmers. Farmers need loan for seed, fertilizers for their agricultural production. As non-farmers are involved in diversified activities, they need

loan from organization for their business or employment activities. The importance of e-commerce service is gradually increasing in rural areas.

Farmers' perception on community space is defined by the highest probability value $P(Y) = 0.53$ for "Important" and for non-farmers it is $P(Y) = 0.623$ for "Very Important". This result indicates that perception on community space is important for both farmers and non-farmers. Social interactions occur when community space is properly defined in establishing spatial productivity, production, and multiphase inheritance for the sustainability of agricultural activities (Syarifudin & Ishak, 2020).

The highest probability value $P(Y) = 0.48$ for "Important" indicates farmers' perception on ICT and internet provision and for non-farmers it is $P(Y) = 0.51$ for "Very Important". Farmers can use ICT applications and services to obtain information on input and output prices, weather, fertilizer prices and sources, pests, crop diseases, and cultivation methods. Farmers have not yet incorporated telecentre services but they find ICT and internet provision to be beneficial in resolving their issues (Dey et al., 2008). Moreover, ICT and internet provision is more important for non-farmers because of their higher education level and adaptive nature with internet provision. (Warren, 2004)

3.6 Recommendation for Developing Urban Amenities in Rural Areas in Bangladesh

3.6.1 Quality Education

Farmers in the rural areas are least concern about the importance of education. Open seminar and guardian awareness program for children's education would be a strategic step ensuring quality education. In our study, rural people responses' on quality education

is not satisfactory. There is lacking of both number and quality of teachers. Hence, it needs to facilitate proper educational training to the teachers. In the educational institutions, teacher-student ratio should be reduced. Besides academics, provision of technical and agricultural oriented education is required. Overall, to increase the quality of education, libraries, ICT labs, co- curricular activities can be facilitated.

Students have to go distant areas to avail secondary or higher secondary level of education as there exists no high or college in their villages. Infrastructural development of transport network and secondary or higher secondary school will eradicate their less accessibility problem and foster the education quality.

3.6.2 Growth Center and Local Market

Agricultural and non-agricultural production is assumed to be beneficial from proximity to growth center and local markets(Tacoli,1998). However, this degree of taking advantages depend on access (in physical and social terms) access to markets. Infrastructural development and regular maintenance of growth center and local market is very crucial. In flood prone areas, growth centers should be elevated. In growth centers, there should be provision of storage, product-processing facilities. In our study area, most growth centers are located at 2 or 3 kilometers distant from village. Proper road connectivity and maintenance of road condition is required to provide good accessibility to growth centers.

3.6.3 Economic Service

NGOs provide micro credit, short loan to the rural people. Rural people have stated that interest on loan is high. There is less access to micro credit for marginalized farmers. Micro credits should be made accessible to

all with a lower interest. Provision of seed bank is also important for farmers. In the study area, farmers have mentioned that they could not get loan for seeds and fertilizers from government because the process of getting loan from government is complicated and slow. To address this issue, easy loan giving process should be introduced for rural people. Establishing banking agents, ATM booth to facilitate loan and money transfer could be a good initiative for developing economic service.

3.6.4 Community Space

In our study area, it is found that there is lack of community space in almost every village. Provision of playgrounds, community club, and community center is essential for a guidance to youth, ensuring social security. A place where drugs addiction will be discouraged and trained people to create human asset. Mosques, sports grounds, marketplaces, community meeting rooms, corporate group rooms, and farmer organizations make up the community space in the form of social infrastructure. As a result, the plan document must include the operation of community space and adaptable based on IT connections.

3.6.5 ICT and Internet Provision

To increase internet access in rural areas, it is crucial to invest in the necessary infrastructure such as broadband networks and towers that can provide reliable internet connections. In addition, efforts should be made to reduce the cost of internet services and provide subsidies to low-income families to make the service more accessible and affordable. Furthermore, it is essential to provide computer and technological training to rural youth to enable them to use the internet effectively and explore employment opportunities in the digital economy. With the right training and skills, rural youth can

leverage the internet to create new businesses, work remotely, and access education opportunities. The internet can also be used to provide essential services such as healthcare and education to rural communities. For example, telemedicine services can be used to connect rural patients with medical professionals in urban areas, while online education programs can help bridge the education gap between rural and urban areas.

In rural areas, providing urban amenities should not be assumed to be beneficial in all circumstances. Sometimes it can create vulnerability and social inequality of those groups who have least assets (Tacoli, 1998). Policy implications could be articulated by chain analysis. Chain analysis includes Identifying actors (production, processing, exchange) involved of all stages and evaluating income distribution and profit (Ribot, 1998). Balanced rural development will be possible ensuring the equal distribution of benefits among rural people. Facilitating the urban amenities should not bring any urbanization in rural areas (Tacoli, 1998).

There has been some limitations while conducting this study. This study relied on a random sample collected from specific villages in only four divisions of Bangladesh. Thus, the results and implications may not represent the whole scenario in Bangladesh's rural regions. In several situations, rural people were unable to provide accurate information about existing infrastructure and amenities and the findings may not represent their actual perception.

4. Conclusion

This paper performed a comprehensive analysis on urban amenities in rural Bangladesh from the perspective of farmers and non-farmers. Respondents indicated

their perceived need for urban amenities in terms of quality, accessibility, need for improvement, support to livelihood and adaptation level. We explored the socio-economic factors that influence farmers and non-farmers' perceived need for urban amenities in rural areas of Bangladesh. Predominantly, education level of farmers have a significant influence on their perceived need for education, healthcare facilities, electricity and energy supply, growth center and local market, economic service, community space and amenities for women. On contrary, non-farmers' monthly income significantly influence their perceived need for education, housing, shelter and disaster management, solid waste and sewerage management, electricity and energy supply, growth center and local market, youth and sports upliftment. Gender, age, family type have slight influence on their perceived need for urban amenities. We employed ordered logistic regression model to examine the variation in farming and non-farming communities' perception on urban amenities. The results of ordered logistic regression model showed that farming communities give less importance on education but more importance on growth center and local market. On the other hand, non-farming communities give more importance on education, economic services, and internet provision. We conclude that different communities' perception for urban amenities in rural areas varies prominently. Consequently, the government must proceed from the existing circumstance in rural areas and take into account both farmers and non-farmers real needs and expectations. It will aid to promote rural economic growth, enhance living standards and enable urban amenities to meet farmers and non-farmers actual need. This paper establishes the groundwork for future study on urban

amenities in rural areas, farming and non-farming communities perceived needs, as well as it provides policymakers with a theoretical underpinning. The research methodologies used in this work are applicable to explore the existing condition of urban amenities in rural areas of other countries and assess farmers and non-farmers perceived need. Yet necessary adjustment is required as development of urban amenities in rural areas varies from region to region and people need changes accordingly. Future research should emphasis on strategies and approaches to provide necessary urban

amenities in rural areas. Such research can contribute to meet the need of farmers and non-farmers and increase their productivity and living standards.

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Amenities	Quality					Accessibility					Need improvement					Support to livelihood					Adaptation				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Economic service (Farmer)	0.09663	0.92338	0.23129	0.77242	1.22844	0.34314	1.22889	1.30813	1.29215	2.89899	0.41890	0.264228	0.74772	1.41915	2.8018	0	-0.28524	-0.82532	-0.99666	-0.19014	0	0.15411	2.03477	1.5796	0
Economic service (Non-farmer)	0.1278	0.08615	-0.42600	0.30923	0.14811	2.75257	1.58015	1.96749	2.29914	4.98584	-1.97199	-1.31489	-1.05164	0.31297	0.44624	0	-0.83166	-1.36114	-1.32062	-0.74007	0	-2.1803	-2.2406	-2.2406	-1.4469

Amenities	Quality					Accessibility					Need improvement					Support to livelihood					Adaptation				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Community space (Farmer)	0.56346	1.44769	0.63900	0.98439	1.40197	0.78856	-0.06740	0.333503	0.50063	1.00721	-0.86219	-0.90589	-0.08460	0.65125	2.21315	0	0.05792	1.73648	1.77001	0	0	-0.34949	-1.04765	-2.00986	0
Community Space (Non-farmer)	1.26354	-0.29036	-0.95175	-0.70089	-1.04055	0.91723	0.51816	0.232448	0.598829	0.463192	1.048185	0.61361	1.69421	2.549133	4.456388	0	2.193665	2.71410	2.309226	0.73035	0	-0.81919	0.17229	0.37942	0

Amenities	Quality					Accessibility					Need improvement					Support to livelihood					Adaptation				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Growth center (Farmer)	12.4012	-0.1184	0.30997	1.13443	1.17738	3.76372	-1.7572	-1.81114	-1.75845	-0.75521	-0.75521	-0.94346	-0.18115	0.72402	2.56186	0	-0.33999	-1.1643	-1.63234	0	0	0.985127	2.47033	1.90016	19.8941
Growth center (Non-farmer)	1.26354	-0.29036	-0.1316	-0.4237	-0.1316	-0.4237	-0.63370	-1.19899	1.51322	3.30801	4.30428	0.98439	1.40197	0.78856	0.61361	0	-1.28096	-1.11447	-1.28328	1.27589	0	0.333503	0.50063	1.00721	-0.86219

Amenities	Quality					Accessibility					Need improvement					Support to livelihood					Adaptation				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ICT (Farmer)	2.77410	3.14879	3.01388	3.47974	4.90763	0.35556	0.14085	0.14643	-0.1328	-0.6323	0.19868	-0.12918	0.38878	2.10031	3.02689	0	-0.63370	-1.19899	-1.28096	-3.10408	0	-1.93621	-1.31338	-1.61223	0
ICT (Non-farmer)	1.47928	1.27589	0.52209	1.35441	2.06445	-0.1316	-0.4237	-0.39976	-0.46414	-2.12638	1.04760	1.83290	1.51322	3.30801	4.30428	0	-1.19860	-0.65683	-0.7151	-0.45409	0	-1.47810	-0.84524	-1.4678	0.27874

Amenities	Quality					Accessibility					Need improvement					Support to livelihood					Adaptation				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Education (Farmer)	0	-0.11048	-1.11447	-1.28328	-0.63523	-0.63523	-2.73405	-2.64167	-1.55340	0	-4.90717	-3.56967	-3.05905	-2.93319	0	0	0.76284	0.90174	0.00986	-0.2099	0	-0.75278	0.634114	0.476001	0
Education (Non-farmer)	0	-1.24382	-1.05475	-1.79743	-0.78907	2.00103	1.05568	1.07843	1.62614	2.72515	-0.57926	0.57261	0.13674	0.54047	2.429964	0	-10.7011	-10.7805	-11.5751	-10.4931	0	0.06409	0.04578	0.05375	1.56470

Scale	Quality	Accessibility	Need improvement	Support to livelihood	Adaptation
1	Very Unsatisfied	Very Less	Not at All Concern	Highly Unsupportive	Very Less
2	Unsatisfied	Less	Slightly Concern	Unsupportive	Less
3	Neutral	Moderate	Moderately Concern	Moderate	Moderate
4	Satisfied	High	Very Concern	Supportive	High
5	Very Satisfied	Very High	Extremely Concern	Very Supportive	Very High