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NEXUS BETWEEN CORPORATE INCOME TAX AND ECONOMIC GROWTH IN BANGLADESH

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Abstract

This study assembles a dataset on the corporate income tax (CIT) rate during 2001-2020 in Bangladesh and tries to capture the influence of CIT on the country's economic growth. It takes into account the impact of the CIT rate on per capita GDP, government spending, foreign direct investment (FDI), and inflation. In the last two decades, with the increasing trend of CIT revenue, it is observed that CIT revenue contributes almost 32 percent in total tax revenue. This study incorporates empirical analysis to capture the association between CIT and economic growth. Firstly, the associated tests identified the stationarity of variables which are significant properties of time series analysis. In the second step, one cointegrating vector has been observed in the variables. Finally, this study tries to figure out the causal relationship among variables by applying appropriate methods and tests. The test results endorse that CIT rate granger causes to GDP per capita. Accordingly, for a rise in CIT revenue, there is a positive change in GDP per capita.

Keyword: Tax structure, Corporate income tax, GDP per capita, Economic growth, Bangladesh

Introduction

The connection of corporate income tax (CIT) with economic growth is a long-debate. The discussion exhibits contentions from researchers, policymakers and stakeholders with different point of view. In Bangladesh, this is a concerning phenomenon, especially during budget discussion in every year. Like many other countries, Bangladesh has a long history of adaptation of taxation system. In this section of the paper, we try to report the laws and regulation which has shaped the taxation system of the country. Bangladesh inherited the British-India tax system. The British-Indian Income Tax Act 1922 remained operational in Bangladesh even after the independence. The Income Tax Ordinance, 1984 (XXXVI of 1984) became functional in the country since July 01, 1984 (Islam, 2003). The first taxation enquiry commission was established in 1976 headed by the then governor of Bangladesh Bank. The prime objective of the commission was to appraise the rules and regulations of tax structure of a new born country. Bangladesh economy was agrarian and most of the industries of the country were in public sector. A high corporate tax rate amounting around 60 percent (Ahsan, 1995) was evident initially in the country which was later rationalized at 40-50 percent.

The corporate tax structure varies among different types of companies in Bangladesh. The listed companies had to pay twenty-five percent taxes while the non-listed companies had to pay thirty-five percent taxes since FY 2014-2015 with some exceptions. However, a 2.5 percent reduction was made in the tax rate of non-listed companies to ease the tax burden at the crucial time of the COVID-19 pandemic in FY 2020-2021.

The lion share of revenue earnings of Bangladesh comes from tax. The direct tax and indirect tax constitute the fiscal regime of Bangladesh. The National Board of Revenue (NBR) of Bangladesh governs tax-related issues in the country. NBR data states that only about 30 percent of tax revenue was mobilized as direct tax and the rest 70 percent as indirect tax in year 2021 [i]. Personal Tax, Corporate Tax and Sales Tax together consists Direct Tax. The share in revenue mobilization of these taxes was respectively 25 percent, 32.50 percent and 15 percent in 2021 [ii].

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General objective

This study attempts:

- To estimate the association of corporate income tax with economic growth in Bangladesh.

Growth generally depends on accumulation of labor and capital. Changes in tax policy can generate transitory growth effects. Entrepreneurial activity and investment in terms of public expenses produce positive spillovers. Accordingly, this paper attempts to evaluate the influence of corporate income tax on growth and other related economic phenomena such as GDP per capita, government expenditure, inflation and so on.

Specific objectives

Under the umbrella of the general objective, this research intends to focus on two specific objectives.

1. To analyze the trend of CIT rate and revenue earnings of Bangladesh.

The corporate tax structure has undergone through some changes in last several decades. The trend of increased tax rate is specifically observed from the last decade. Hence, an attempt has been made to trace out the trend of revenue collection of corporate income tax in Bangladesh.

2. To appraise the link of corporate income tax with economic growth of Bangladesh.

Social justice, equity and sound policy implementation depends on an economy's tax system and socio-economic condition. Accordingly, this study attempts to explore the link of CIT with economic growth of Bangladesh.

Literature Review

A bunch of research work is available discussing the influence of corporate tax on economic growth in Organization for Economic Co-operation and Development (OECD) countries and South African Development Community (SADC) countries. However, only a few articles have been found from Bangladesh perspective addressing the impact of CIT on economic growth.

Solow (1970; as cited in Lee and Gordon, 2005) stated that total factor productivity would be free of influences from taxes. In contrast, the contemporary arguments advocate that positive externalities play a significant role in clarifying long-run growth. Although the association between personal tax-rate and growth is unclear, however, a significant effect of CIT rates on economic growth is evident. If public infrastructure accelerates compared to other inputs, growth might be higher. This happens when govt. revenue increases (Lee and Gordon, 2005). Literature endorses the direct influence of tax-revenue on economic growth. For example, Islam (2019) identifies a positive correlation between tax revenue and GDP.

Terry et al. (2019) identified a negative connotation between aggregate effective tax rate and future macroeconomic growth. Literature argues that a change in tax rate has comparatively smaller impacts on firms' tax obligations, as both tax rate and tax base are revised simultaneously (Devereux and Sorensen, 2006; Kawano and Slemrod, 2015; and Serrato and Zidar, 2018). Arnold (2008) strongly put his argument against of corporate tax rate in his research. In his analysis it is observed that corporate tax rate severely and negatively affects GDP per capita. His findings suggest shifting part of revenue source away from corporate taxes.

The governments of Canada, United States of America, the Netherlands and United Kingdom have influenced country's economic development through tax revenue. They originate substantial revenue from CIT and other excise duties (Oluba, 2008). A vital share of tax revenue increase in Africa stems from natural resource taxes. This included income from production sharing, royalties and CIT on oil and mining companies (Pfister, 2009).

Corporate tax rate is the most discussed issue during budget session in every year. Accordingly, this study attempts to extract information about influence of corporate tax on economic growth and tries to trace out the effective and efficient corporate tax rate which would boost up economic growth of Bangladesh. This study may visualize the importance of tax rate to the policy makers and stakeholders. As there has been found a very few research papers on corporate tax in Bangladesh, hence readers may find it helpful to figure out the current scenario about this sector.

Myles (2009) found that, the pace of economic growth might be influenced by policy choices related to taxation. Tax burden shrinks the yields from investment and research & development. Less return tends to less accumulation, innovation and hence lower growth. Positive aspects of tax burden include increase in public

expenditure which might boost productivity in terms of infrastructure, education and health care. Taxation makes the room for financing these expenditures and indirectly contributes to growth. Barro (1990) figured out the linkage between government policy and growth and summarizes for boost in growth through additional input in public good financed by taxation. Schumpeter (1942) highlighted the entrepreneurial role in breeding new ideas that promotes productivity.

This research focuses on the association between CIT and economic growth of Bangladesh. It has been found that there is a significant association between these two factors. But we still don't know at which tax rate the taxpayers would response more. That is, the effective and efficient tax rate is yet a debatable question in Bangladesh. Though there is a demand for lower tax rate by the stakeholders, however, there is a need for further research to find out the efficient tax rate in Bangladesh.

Materials and Method

Data

This research has analyzed time-series data of the variables under consideration during 2001-2020. The relevant data source for the study includes Bangladesh Bureau of Statistics (BBS), and World Development Indicators, 2022 (World Bank, 2022). The study is based on empirical analysis. For disclosing the stationarity of the considered variables, two widely recognized tests, namely Augmented Dicky-Fuller (ADF) and Phillips-Perron (PP) tests are executed. Johansen Cointegration test (JCT), Vector Error Correcting Model (VECM) and Granger Causality (GC) tests are also performed to investigate the long-run connection among variables.

Econometric techniques

The first objective of the research is to observe the trend of CIT rate. In this step, the study tries to focus on the stake of CIT in total tax income, GDP and revenue earnings from CIT sector in last 20 years in Bangladesh. There was a continuing change in CIT rate in last two decades. The study uses a time series data of corporate income tax during 2001-2020 for calculating the revenue trend and the analysis results are described by graphical presentation based on Chowdhury and Hossain (2019) and Sarkar (2015). Exemptions, incentives and special regimes often generate obstacles in corporate tax sector. Accordingly, securing an ideal tax system is important to generate revenue, which is essential for hastening growth and enlightening the wellbeing of the citizen.

The second objective of this research is to explore the connotation between CIT rate and long-term growth in Bangladesh. For addressing this objective, the study uses unit root test to test stationarity and cointegration of variables.

List of variables

Table 1 lists the key variables of interest in this study.

Table 1. List of Variables

Variables	Symbol	Unit of measurement	Expected sign	Reference
GDP per capita	GDP	US\$	+	Lee and Gordon (2005)
Corporate income tax revenue	CIT	BDT	+	Serrato and Zidar (2018)
Government expenditure	GE	BDT	+	Barro (1990)
Trade openness	TO	%	+	Lee and Gordon (2005)
Foreign direct investment	FDI	US\$	+	NKoro and Christian (2012)
Inflation	INF	%	+	NKoro and Christian (2012)

Unit root test

To inspect the influence of CIT on economic growth in terms of per capita GDP growth, the study evaluates time-series data by employing ADF test which was developed in 1981 and PP test based on NKoro and Christian (2012), Hosen (2019), Dutta et al. (2017) to detect the stationarity of the discrete variables. The ADF estimation covers the following OLS estimation:

Regression equation with drift: $\Delta y_t = \gamma y_{t-1} + \sum_{i=1}^m \beta_i \Delta y_{t-1} + \epsilon_t \dots \dots \dots (1)$

$$\text{Regression equation without drift: } \Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=1}^m \beta_i \Delta y_{t-1} + \varepsilon_t \dots \dots \dots (2)$$

$$\text{Drift and trend model: } \Delta y_t = \alpha_0 + \alpha_1 t + \gamma y_{t-1} + \sum_{i=1}^m \beta_i \Delta y_{t-1} + \varepsilon_t \dots \dots \dots (3)$$

Where, α_i is a deterministic constant factor, ε_t is a white noise error term, Δy_{t-1} is the 1st difference of y_{t-1} and m is the number of lags in the dependent variable, y_t . Here, α, β, γ are the parameters. The presence/absence of drift (α_0) and trend ($\alpha_1 t$) term is the main difference among the three equations. The Akaike's Information Criteria (AIC) and Bayesian Information Criteria (BIC) determine the optimal number of lagged difference terms to be included (K). It fixes the optimal lag choice such that autocorrelation problem in the residual term might be solved (Akaike, 1970). $AIC = \ln\left(\frac{RSS}{T-K}\right) + \frac{2K}{T-K}$, where K refers to the number of estimated parameters, T refers to sample size and RSS refers to residual sum of square. The null hypothesis H_0 implies that Δy_t has a stochastic trend.

The Phillips and Perron test estimates the regression equation (4) which examines the null hypothesis of no stationarity.

$$y_i = \alpha + \rho y_{i-1} + \varepsilon_i \dots \dots \dots (4)$$

Cointegration test

After stationarity test the study applies cointegration test to estimate long-run relationships between variables. The cointegration test attempts to see whether GDP, FDI, INF, GE and CIT are individually nonstationary but become stationary when they are linearly combined. Johansen (1988) and Johansen and Juselius (1990) proposed the famous vector auto regression (VAR) test to estimate cointegration. This test is administered in this study following Hosen (2019), Dutta et al. (2017) and Islam (2019).

At first, the order of integration is determined. Later, trace statistics (λ_{trace}) and maximum eigen-value (λ_{max}) are used to determine the number of cointegration vectors. The estimated VAR model for tracing statistics:

$$\Delta y_t = r_1 \Delta y_{t-1} + r_2 \Delta y_{t-2} \dots \dots \dots + r_p \Delta y_{t-p+1} \dots \dots \dots (5)$$

On the contrary, the estimated VAR model for the maximum eigenvalue:

$$y_t = r_1 \Delta y_{t-1} + r_2 \Delta y_{t-2} \dots \dots \dots + r_p \Delta y_{t-p+1} \dots \dots \dots (6)$$

Where, y_t refers to the vector of variables connected to the model and p refers to autoregression order. The null hypothesis for JCT is no cointegration vector ($r = 0$), and the corresponding alternate hypothesis signals the existence of one or more cointegration vector ($r > 1$).

VECM and Granger Causality

The Vector Error Correction Mechanism (VECM) usually attempts to identify long-run causality among variables. Such causality might arise from lagged difference and error correction term (Granger, 1988). It is anticipated that both the changes and long-term association among macroeconomic variables might influence economic growth. The significance of error correction term directs the inclination to reinstate equilibrium. Long-term causal link among the variables under consideration in the research is analyzed through estimating the following models.

$$\Delta \text{GDP} = \alpha_1 + \alpha_{\text{GDP}} \varepsilon_{t-1} + \sum_{i=1}^n \alpha_{11} \text{CIT}_{t-i} + \sum_{i=1}^n \alpha_{12} \Delta \text{GVTEX}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{GDP}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{FDI}_{t-i} + \varepsilon_{\text{GDPT}} \dots \dots \dots (7)$$

$$\Delta \text{CIT} = \alpha_2 + \alpha_{\text{CIT}} \varepsilon_{t-1} + \sum_{i=1}^n \alpha_{21} \text{CIT}_{t-i} + \sum_{i=1}^n \alpha_{12} \Delta \text{GVTEX}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{GDP}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{FDI}_{t-i} + \varepsilon_{\text{CITt}} \dots \dots \dots (8)$$

$$\Delta \text{GVTEX} = \alpha_3 + \alpha_{\text{GVTEX}} \varepsilon_{t-1} + \sum_{i=1}^n \alpha_{31} \text{CIT}_{t-i} + \sum_{i=1}^n \alpha_{12} \Delta \text{GVTEX}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{GDP}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{FDI}_{t-i} + \varepsilon_{\text{GVTEX}t} \dots\dots\dots(9)$$

$$\Delta \text{FDI} = \alpha_4 + \alpha_{\text{FDI}} \varepsilon_{t-1} + \sum_{i=1}^n \alpha_{41} \text{CIT}_{t-i} + \sum_{i=1}^n \alpha_{12} \Delta \text{GVTEX}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{GDP}_{t-i} + \sum_{i=1}^n \alpha_{11} \Delta \text{FDI}_{t-i} + \varepsilon_{\text{FDI}t} \dots\dots\dots(10)$$

Where, α_i, α_{ij} stand for the parameters, ε_{t-1} for the one-period lagged error correction term, $\varepsilon_{\text{GDP}t}, \varepsilon_{\text{CIT}t}, \varepsilon_{\text{GVTEX}t}, \varepsilon_{\text{FDI}t}$ are the error terms, GDP = Gross Domestic Product Per Capita, CIT= Corporate Income Tax Revenue, GVTEX = Government Expenditure, FDI = Foreign Direct Investment. The literature states the existence of unidirectional or bidirectional causality, if two variables possess a common trend (Granger, 1988). Estimation of the regression equations (11) and (12) helps us to detect causality.

$$y_t = \sum_{i=0}^n \alpha_i x_{t-i} + \sum_{j=0}^n \beta_j y_{t-j} + u_{1t} \dots\dots\dots(11)$$

$$x_t = \sum_{i=0}^m \alpha_i \lambda_{t-i} + \sum_{j=0}^m \delta_j y_{t-j} + u_{2t} \dots\dots\dots(12)$$

A first variable granger causes the second variable if a regression of the first variable with respect to the lag values of both the variables enhances the prediction of the first variable. Accordingly, we can say that (x_t) granger causes (y_t) if the regression of y_t with respect to x_{t-1} and y_{t-1} significantly enhances the prediction of (y_t). The corresponding H_0 is: x_t does not granger cause y_t and H_1 : x_t granger causes y_t . Such hypotheses are tested in equation (11). Similarly, the H_0 : y_t does not granger cause x_t and H_1 : y_t granger causes x_t , are tested in equation (12).

Results and Discussion

In Bangladesh, there is a considerable increase in total and corporate tax revenue over the last two decades. But the main reason behind this escalation is uncertain. There is an increase in salary in public sector, reforms in administration system and lower marginal tax rates (Sarkar, 2015). This could not be identified that which factor to which extent was helpful in shaping the increasing trend of revenue.

Share of CIT in total tax revenue

The corporate tax revenue is the provider of one-third share of direct tax in Bangladesh. Figure 1 shows the increasing trend of corporate tax revenue during the years 2012-2020. Though it is still questionable, whether this rate or trend is statistically significant or not.

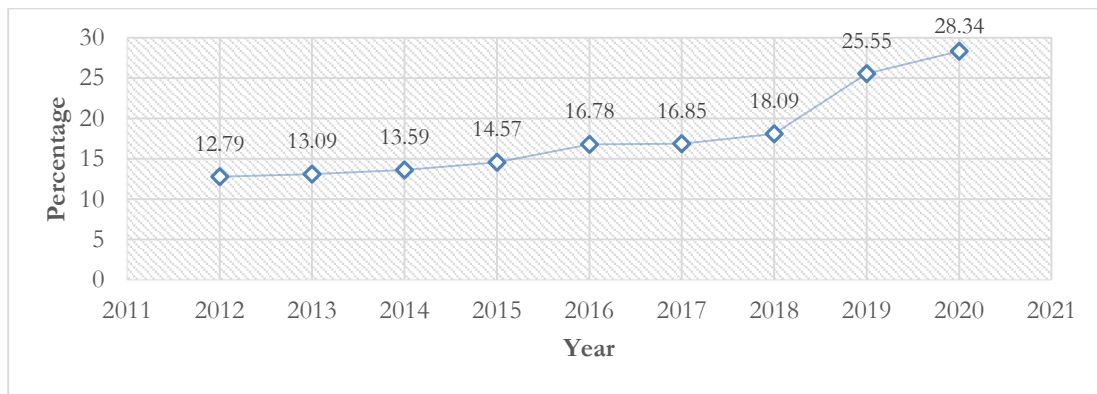


Figure 1. Share of CIT in Total Tax Revenue, *Source: BBS (2010, 2015, 2020, 2022)*

The trend of CIT depicts that since 2012 the share of CIT revenue has been increasing in total tax revenue. In 2020, the share stands at more than 28 percent, though this amount still falls in a low level of tax collection.

Result of unit root test

To diagnosis the stationarity is inevitable for time-series data. This study has used ADF and PP tests to diagnosis the stationarity. Both of these two-unit root tests are widely accepted and used in different researches (Hosen, 2019; Dutta et al., 2017; Islam, 2019).

Augmented Dicky-Fuller (ADF) test

Table 2 presents the results of ADF test. It is depicted that the H0 of 'non-stationary' should not be rejected at the 5 percent level as the ADF test statistic is less than the critical values for each variable. The one sided p values are not significant in level-series (MacKinnon, 1996). Accordingly, it might be argued that all the variables under consideration are not stationary in level-series. Table 2 presents the results for first differences which signal the stationarity of the variables.

Table 2. Unit Root Test Using ADF

Variable	No Drift and No trend	Drift and Trend	Drift and No Trend	Decision
GDP	5.973	2.418	4.508	I (1)
GDP (difference)	2.150***	-3.625*	-2.627*	
CIT rev	4.198	-1.695	2.843	I (1)
CIT rev (difference)	-4.168***	-6.212*	-5.479**	
Gov Exp	0.949	-2.492	-0.514	I (1)
Gov Exp (difference)	-4.255***	-4.609***	-4.686***	
Inflation	-0.015	-3.192	-3.349	I (1)
Inflation (difference)	-5.553***	-6.288***	-5.381***	
Net FDI	-0.209	-1.377	-1.584	I (1)
Net FDI (difference)	-4.598***	-0.288*	-4.655***	
Tax rev	4.075	-1.642	2.739	I (1)
Tax rev (difference)	-4.132*	-6.136*	-5.433***	
Trade open	-0.278	-0.554	-1.230	I (1)
Trade open (difference)	-3.083***	-3.316*	-2.985**	

Notes: The values are expressed in logarithmic form for all the variables.
 *** refers to significance at 1%, ** at 5%, and * at 10% level.

Table 3. Phillips-Perron Test

Variable	No Drift and No trend	Drift and Trend	Drift and No Trend	Decision
GDP	5.709	-0.864	2.566	I (1)
GDP (difference)	-1.491*	-3.625*	-2.557*	
CIT rev	7.907	-1.341	3.828	I (1)
CIT rev (difference)	-4.305 ***	-11.938 ***	-5.568 ***	
Gov Exp	1.207	-2.492	-0.514	I (1)
Gov Exp (difference)	-4.257 ***	-4.609 ***	-4.687 ***	
Inflation	-0.214	-4.268	-3.397	I (1)
Inflation (difference)	-6.209 ***	-7.498 ***	-6.177 ***	
Net FDI	-0.153	-1.377	-1.548	I (1)
Net FDI (difference)	-4.598 ***	-4.999 **	-4.658 ***	
Tax rev	7.092	-1.283	3.288	I (1)
Tax rev (difference)	-4.257 ***	-11.318 ***	-5.506 ***	
Trade open	-0.292	-0.428	-1.367	I (1)
Trade open (difference)	-3.015 ***	-5.410** *	-2.910 **	

Notes: The values of all the variables are presented in logarithmic form.
 *** refers to significance at 1%, ** at 5%, and * at 10% level.

Phillips-Perron (PP) Test

To cross check the result of ADF test, PP test has been administered (Table 3) to check the stationarity of the variables. This PP test is applied to identify the order of integration in time series data. The corresponding H0 is: a time series is integrated of order 1. The result of PP test depicts that, all the variables are stationary in 1st difference and non-stationary in level-form. Like ADF test, the PP test is also done with and without time trend. The results of PP test coincide with that of ADF test. Accordingly, it can be argued that, the variables of this study are first-order integrated, that is, I(1). The second step is to figure out the presence of long-run interdependence among the variables, if any. Cointegration test guides to figure out this interdependence.

Johansen Cointegration Test (JCT)

Cointegration test identifies circumstances where multiple non-stationary time series are integrated that cannot diverge from stability in the long-run. The test tries to identify the sensitivity of variables over a definite period of time. As the considered variables are first-order integrated, it is essential to execute the cointegration test. For this, the authors apply the JCT. The trace statistics and max. eigenvalue are reported in Tables 4 and 5.

Table 4. Trace Value Statistics

H0	H1	Unrestricted Cointegration Rank Test		
		Trace (λ_{trace})	5% Critical Value	Prob.
$r=0$	$r=1$	114**	89	0.00
$r\leq 1$	$r=2$	64	64	0.05
$r\leq 2$	$r=3$	38	43	0.14
$r\leq 3$	$r=4$	19	26	0.27
$r\leq 4$	$r=5$	6	13	0.49

Table 5. Maximum Eigenvalue Statistics

H0	H1	Unrestricted Cointegration Rank Test		
		Maximum Eigenvalue (λ_{max})	5% Critical Value	Prob.
$r=0$	$r=1$	51**	38	0.00
$r\leq 1$	$r=2$	26	32	0.02
$r\leq 2$	$r=3$	19	26	0.23
$r\leq 3$	$r=4$	14	19	0.33
$r\leq 4$	$r=5$	6	13	0.48

Note: r refers to the cointegration vector. ** refers to rejection of H0 at 1% level.

The authors use 95% confidence interval (CI) as the use of 90% CI would widen the probability to accept the H0. Enders (1995) advocated using 99 percent or 95 percent CI. As shown in the Table 4, the value of trace statistics, $\lambda_{trace} (0)2$ is 114 which exceeds the 5% CI. As a result, H0 ($r=0$) should be rejected due to absence of cointegrating vector and accept the H1 having cointegrating vector(s) in the variables. In the second phase, we test the H0: $r\leq 1$ against the H1: $r=2$ of two integrating vectors. Since the trace statistics (64) is smaller than the critical-value at 95 percent CI, the H0 should not be rejected. The result of other trace statistics endorses no more than one cointegrating vector at 95 percent confidence interval.

The eigenvalue demonstrates that the H0 is rejected as the (λ_{max}) value 51 exceeds the critical value (Table 5). The test of H0 indicates that we cannot reject $\lambda_{max} (1)$, $\lambda_{max} (2)$, $\lambda_{max} (3)$ and $\lambda_{max} (4)$ at the same significance level. Accordingly, there exists one (1) co-integrating vector in the model.

Result of Vector Error Correction Model (VECM) and Granger Causality (GC)

A VECM model is used when the time-series are not-stationary in their levels, but stationary in their differences and the variables are cointegrated. In this study, by applying JCT it is found that there is one cointegrating vector in the time-series data. Therefore, the long-run relationship has been found by applying the VECM test.

Table 6. VECM Model Diagnostic

	Δ GDP	Δ CIT Rev	Δ Trd Open	Δ Gov Ex	Δ INF
Adjusted R ²	0.99	0.89	0.68	0.78	0.67
Serial residual correlation test for the model					
H0	H ₀ : No serial correlation;				
H1	H ₁ : Serial correlation				
	LM lag 1	$\chi^2 = 26.33,$	q -value= 0.57		
	LM lag 2	$\chi^2 = 31.52,$	q -value= 0.34		
Normality test					
time-series	H ₀ : residuals are multivariate normal;				
Alternative Hypothesis,	H ₁ : residuals are not multivariate normal				
	Skewness	$\chi^2 = 9.56,$	q -value= 0.08		
	Kurtosis	$\chi^2 = 3.64,$	q -value= 0.60		
	Jarque-Bera	$\chi^2 = 13.21,$	q -value= 0.21		

Table 7. Result of Granger Causality Test

H0: V ₁ does not Granger cause V ₂	H1: V ₁ Granger causes V ₂	F Statistics	Result
CIT, GDP	CIT, GDP	1.142	CIT → GDP
GDP, CIT	GDP, CIT	4.325	
Inflation, GDP	Inflation, GDP	0.293	
GDP, Inflation	GDP, Inflation	1.613	-
Govt. expenditure, GDP	Govt. expenditure, GDP	0.0111	GOV ↔ GDP
GDP, Govt. expenditure	GDP, Govt. expenditure	2.094	
FDI, GDP	FDI, GDP	5.136	FDI → GDP
GDP, FDI	GDP, FDI	1.912	
Tax revenue, GDP	Tax revenue, GDP	1.046	Tax rev → GDP
GDP, Tax revenue	GDP, Tax revenue	4.259	
Trade openness, GDP	Trade openness, GDP	1.957	TRD → GDP
GDP, Trade openness	GDP, Trade openness	0.862	
Inflation, CIT	Inflation, CIT	3.551	INF ↔ CIT
CIT, Inflation	CIT, Inflation	5.123	
Govt. expenditure, CIT	Govt. expenditure, CIT	0.058	
CIT, Govt. expenditure	CIT, Govt. expenditure	2.188	-
FDI, CIT	FDI, CIT	1.827	-
CIT, FDI	CIT, FDI	0.249	
Trade openness, CIT	Trade openness, CIT	1.507	
CIT, Trade openness	CIT, Trade openness	2.638	CIT → TRD

Note: Significant at 5% level, V₁ refers to the first Variable and V₂ refers to the second Variable; separated by comma. GDP = Gross Domestic Product Per Capita, INF = Inflation, GOV = Government Expenditure, Tax rev = Tax Revenue, TRD = Trade Openness, CIT = Corporate Income Tax Revenue, FDI = Foreign Direct Investment

The R² values for variables are 99, 89, 68, 78, 67 percent. In VECM diagnostic test, it is found that the H0 cannot be rejected. The corresponding null hypothesis is: serial residual correlation at lagged order of Lagrange Multiplier (LM) (Table 6). The normality test findings support that the residuals are normally distributed. The VECM result is found stable. The number of lags has been chosen here as three. All the lag points are positioned inside the unit-circle which satisfies the VECM stability condition based on Akaike Information Criterion (AIC) and Schwartz Information Criterion (SIC). In Vector Error Correction Estimates, it is also identified that if there is 1 percent increase in Corporate Income Tax revenue then the GDP Per Capita would increase by 0.03 percent.

Granger causality explores connectedness among variables in a time series. It refers to a probabilistic account of causality to find patterns of correlation. Cause and effect are the pillars behind causality analysis. In this test, $p > 0.05$ signals 'no causality', while $p < 0.05$ signals 'existence of causality'.

Table 7 illustrates that, there is a causal relationship between variables. Specifically, CIT, Net Foreign Direct Investment and Tax revenue granger cause GDP, referring unidirectional relationship among the variables. Government Expenditure and GDP, Trade openness and GDP have a bidirectional relationship. On the contrary, Trade openness and corporate income tax exhibit unidirectional relationship.

All the above steps of unit root test, cointegration test, and Granger causality test are widely accepted and used in the literature (Hosen, 2019; Dutta et al., 2017; Islam, 2019; NKoro and Christian 2012).

Conclusion

This study tries to figure out the trend of corporate tax revenue of Bangladesh in last 20 years. This research also examines the association between CIT and economic growth. To do so, the study selects some growth indicators (for example, GDP per capita, Foreign Direct Investment, Government Expenditure, Inflation, Corporate Income Tax Revenue and Trade Openness). The unit-root test result endorses stationarity of the variables at 1st difference form. The cointegration test identifies a single cointegrating vector in the dataset. Finally, the authors deployed VECM framework to find out the long-run Granger causality.

According to the findings, there is a unidirectional causal relationship approaching from CIT to GDP which indicates that further policy to generate more tax revenue from this corporate sector would enhance the economic growth of Bangladesh. As we have observed in this paper, there is a significant association between corporate income tax and economic growth in Bangladesh, so the appropriate authority should adopt effective policy measure to enhance tax collection from corporate sector.

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Conflict of Interest

The authors declare no conflict of interest.

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THE CHALLENGES OF VILLAGE COURTS TO OPERATIONALIZE AT THE LOCAL LEVEL: A CASE STUDY IN THE SOUTHWEST REGION OF BANGLADESH

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Abstract

The village court and alternative dispute resolution (ADR) promised to resolve civil cases instead of regular court proceedings in rural areas, as it takes less time and is a more cost-saving process. Village courts are a useful pattern of dispute resolution in the local community by avoiding formal judicial mechanisms. This study examines the strengths, weaknesses, opportunities, and threats (SWOT) of village courts in rural Bangladesh. Additionally, it identifies the challenges of village court to operationalization at the local level. To do that, by employing multistage sampling technique, nine unions from rural communities in Bangladesh's southwestern districts of Bagerhat, Khulna, and Sathkhria were selected as study areas. Mixed method approach was adopted, where 141 households were surveyed by using a semi-structured questionnaire for quantitative data, and three focus group discussions (FGD) and key informant interviews (KII) were applied to collect qualitative information. Descriptive statistics and SWOT analysis were carried out to address the research objective. The study result demonstrates that the middle-aged (31-40 year) group, secondary level of education, and lower middle-income (10,001-20,000 BDT/month) people are the main stakeholders in reporting disputes to the village court. The findings from qualitative part show that the main challenges of village court are the lack of manpower, logistic support, infrastructure, and lack of training for village court personnel. Other challenges are the lack of awareness of local people regarding the law relating to village courts and their limited pecuniary jurisdiction (up to 75,000 BDT). However, village courts have several strengths, including fair trials, the existence of rules and regulations, a well-accepted body, easy access to justice, and less paperwork. This study demonstrates that resolving the present problems will increase the efficacy of village courts, allowing them to provide cost-effective, timely, and harassment-free justice to local communities. Therefore, the study recommends that the government should take the necessary action and amend the law relating to village courts to overcome the existing challenges and fully functionalize them for the greater wellbeing of local communities in Bangladesh.

Keywords: Village court, Challenges, Dispute resolution, Local community, Bangladesh

Introduction

Two fundamental rights guaranteed by the constitution of the People's Republic of Bangladesh are access to justice and the protection of laws (article 27 & 30) on the basis of equality (Naznin, 2020). The United Nations Development Programme (UNDP) defines access to justice as the "ability of members of disadvantaged groups to prevent and overcome poverty by seeking and getting remedies via the legal system for complaints in accordance with human rights principles and norms" (UNDP, 2005, p. 4). Additionally, these two rights are strongly linked to democracy and are viewed as fundamental protections for effective management for the people in Bangladesh.

Bangladesh, a developing country in South Asia, was liberated from Pakistan's repressive rule in December 1971 following a war of independence. Certain areas where Bangladesh is still unable to achieve success despite its numerous achievements in the domains of Gross Domestic Product (GDP) growth, per capita income, child and mother care, and many more (Bhuiyan et al., 2019). It is an open secret that the official legal system of Bangladesh is

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under strain as a result of the high caseload and backlog, with over 3,65,059 and 24, 95,944 cases awaiting hearing in the supreme and district courts, respectively (Bhuiyan et al., 2019). On the other side, due to a shortage of judges and supporting court staff, things like providing timely and high-quality services became more difficult (Alam, 2014). Furthermore, due to its metropolitan orientation, the formal judicial system is expensive, time-consuming, and challenging to access, especially for the disadvantaged and poor peasants (Hossain & Zaman, 2016). As a result, the aforementioned aspects of the state-run formal judiciary system currently in place have had a negative impact on the development of a proper and equal justice system (Uddin, 2019), especially for the rural poor who cannot afford the costs of cases and are unclear about how to access justice in the courts (Islam, 2018).

Access to justice is one of the key prerequisites for achieving development in rural Bangladesh. The philosophy of access to justice is mostly based on a formal structure with roles formed in line with the rules, procedures, and arrangements for pertinent institutions, along with frameworks for policies, values and others. Accessing justice is a persistent issue for Bangladesh as 40% of the population (Haque et al., 2022) lives below the poverty level and around 80% (Chowdhury et al., 2022) lives in rural areas. Approximately, two-thirds of conflicts are settled locally, either through informal local justice systems like village courts (VCs) or through informal local settlement mechanisms (e.g., *Shalish*) by the local leaders (Begum et al., 2019).

According to the village court ordinance, 1976, a VC was formed in each Union Parisad (UP). This court was made up of the UP Chairman, two other members from the UP, and two extra members that the Chairman would choose to represent the parties involved (Ahmed and Islam, 2013; Village Court Ordinance, 1976; Village Court Act, 2006). The Village Court Act, 2006 has repealed the Village Court Ordinance, 1976. At present time, although the court lacks the authority to impose a prison term, it is nonetheless able to impose penalties (Islam, 2019). In the majority of other instances, local authorities prioritize social peace and the efficient resolution of local conflicts over following the text of the law. Even in those infrequent instances where conflict resolution takes place. The procedures under the supervision of VCs de facto mirror traditional *Shalish* in terms of group involvement, procedural flexibility and consensus decision-making (Bhuiyan et al., 2019). The informal *Shalish* system is frequently used by the peasants to resolve minor conflicts instead of established institutions. Informal conflict resolution is more accessible and affordable to the poorest people in the community (Saadi et al., 2014).

In rural areas, VCs might be quite beneficial in settling small conflicts and lightening the strain on the formal judicial system. But there are several issues with this local-level government structure. According to Saadi et al. (2014), the VC procedure is less successful because of prejudice, tainted evidence, lack of understanding, and insufficient experience. They also discover that despite the flaws of the VC system, people are only somewhat happy with it. To improve its effectiveness, they propose to create a system free of prejudice. Islam (2019) uses a number of case studies to illustrate how people often see VCs and suggests that, in order to improve their effectiveness, stakeholders should pay particular attention to the court's most disadvantaged and marginalized citizens. Bhuiyan et al. (2019) claim that prejudice, political intervention, corruption, and lack of personnel have all had a detrimental influence on the effective functioning of VCs. To enhance the efficacy of the VC, the authors advise creating a monitoring authority and boosting capacity (Miah et al., 2017). According to research, the overwhelming number of cases, a lack of legal understanding, and inadequate support and assistance are the biggest challenges facing the judicial system.

This research attempts to analyze the patterns in disputes of rural people which are placed in VC for resolution. It demands to know the different patterns in disputes, i.e., the relationships between dispute and age, education, income and distance (from UP) of rural people. Then the specific group regarding age, education and income is selected to report them appropriately for their dispute settlement. It is important to know the reasons that why are rural people choosing VC for dispute resolution. As VC is an important institution to resolve disputes of rural people at local level, it needs to understand the strengths, weaknesses, opportunities, and threats (SWOT) of VC. By identifying the strengths and opportunities of VC, these can support to address the issues of weaknesses and threats properly. In addition, it is essential to detect the major challenges of VC and address these issues correctly to operationalize this institution effectively at local level.

Contemporary literature reveals that VC has its own drawbacks and not fully operationalized as it was expected at the local level (Islam, 2019; Berger, 2020; Khondokar, 2015). VC, by its very nature tends to incorporate three mechanisms of ADR namely negotiation, mediation and arbitration (Ahmed and Islam, 2013) but it needs to

be restructured and people centric to prove its efficacy in resolving disputes at the local level. Therefore, the study is rationale to identify the major challenges of VC by analyzing SWOT of this institution and understanding the patterns in disputes. As a part of bringing equitable justice and strengthening local institutions of sustainable development goals (SDGs), Government of Bangladesh has been offering utmost priority to activating VCs at the grass root level. It needs to make VCs more accessible, affordable, and capable for rural people to ensure their justice (Saadi et al., 2014; Miah et al. 2017).

The present study mainly reveals the patterns in disputes of rural people; the reasons for choosing VC; and assesses the SWOT and challenges of VCs. But there are other platforms of exercising ADR at the local level, namely *Sbhalish* mediated by UP representatives and NGOs. Due to time and resource constraint, we could not go through all these platforms. Moreover, the study only covers Southwestern region of Bangladesh. But there are other regions, which portray peculiar local characteristics and need to be covered. Drawing a reliable conclusion based on a smaller region of Bangladesh may not be a strong basis for generalization. Again, we conducted a small sample size for a questionnaire survey (141 households) due to budget and time constraints. But we led key informant interview (KII) of UP chairman and focus group discussion (FGD) of service recipients of VC to overcome the information gaps of this research.

Most of the existing literature focuses on the issues of prejudice, tainted evidence, performance, and public impressions of the VC. The study identifies some research gaps are mentioned as follows:

- a. The patterns in disputes of rural people are absent,
- b. The reasons for choosing VC for dispute resolution are not exist appropriately,
- c. The SWOT of VC is not present, and
- d. The major challenges of VC at local level are not properly stated in literature.

Therefore, addressing these research gaps the study first attempts to reveal the patterns in disputes of rural people. There are few studies in literature that specifically address the issue with such motivation. Therefore, this paper attempts to identify the major groups regarding age, income, and education level (socio-demographic and socio-economic variables) of disputants at local level. In addition to this, present study efforts to make a strength, weakness, opportunities, and threat analysis of VCs to understand the problem properly in selected rural areas of the southwestern region of Bangladesh. Finally, this research goes to find out the major challenges of VC to minimize the weaknesses and threats of this institution and make it more operationalize at local level. By properly identifying the problems, i.e., patterns in disputes, SWOT and major challenges of VC, the study will recommend some policies to strengthen VC as to delivery services for rural people effectively in dispute resolution. Hence, this study considers four research questions are mentioned as:

- (1) Which are the main patterns in disputes of rural people undertaken for settlement in VC?
- (2) Why are rural people choosing VCs for dispute resolution?
- (3) What are the strengths, weaknesses, opportunities, and threats of VC to resolve disputes? and
- (4) What are the major challenges that the VC faces at the local level in dispute resolution?

Materials and Method

Data Source and Study Area

To fulfill the research objective, we consider both qualitative and quantitative approaches. It is based on primary data gathered through a field study utilizing a semi-structured questionnaire. This study uses a multistage sampling strategy (Table 1) to choose the study area.

At the first stage, we purposively select three districts, e.g., Khulna, Sathkhira and Bagerhat, from the southwestern region of Bangladesh. Further, we randomly select nine unions among the three Upazilas named Kolaroa, Rampal and Dumuria, which comprise almost 25% of the unions in the selected Upazilas. After selecting the Union Parishad, authors collect the list of disputants who report dispute issues in the VC. Considering the list of disputants, the authors used systematic random sampling to select the final respondents and collect 141 responses. We consider every fifth respondent on this list. The survey was conducted by the trained enumerators from 1 May 2022 to 20th June 2022. The survey questionnaire includes both closed-ended and open-ended questions. The questionnaire includes both socio-economic and dispute-related information.

Table 1. Sampling distribution and study area

District	Upazilla	Union	Sample Size
Khulna	Dumuria	Dumuria	27
		Roghunathpur	9
		Rudhaghara	7
Bagerhat	Rampal	Baintola	14
		Bastoli	11
		Rampal	13
Sathkhria	Kolaroa	Chandanpur	16
		Langoljhara	17
		Keralkata	15
Total			141

Variable Description and Analysis Method

In accordance with the objectives of the study, the gathered data was summarized. The data were cleaned, coded, and tabulated to get them ready for analysis. The collected data was then subjected to a two-stage analysis. Following the initial round of fieldwork, the gathered data were analyzed, and the tabulated findings were then compared to the study's objectives. Quantitative data analysis has traditionally employed descriptive statistics, including cross-tabulations and figures, to trace out the first research question in this study. For the second research question, the authors employed qualitative data collection methods, including focus group discussions and key informant interviews. Authors also use a five-point Likert scale, e.g., 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree) and 5 (Strongly Agree) to collect the respondents' perceptions about choosing VCs. SWOT analysis has been performed to visualize the collected information. SWOT analysis is vital for identifying challenges in VCs (Panigrahi & Mohanty, 2012). By assessing, Strengths, Weaknesses, Opportunities, and Threats, gives a thorough knowledge of the court's internal capabilities and external variables. This helps identify areas that require work (weaknesses) and possible development paths (opportunities). Additionally, it assists in anticipating prospective obstacles (Threats) and maximizing already-existing benefits (Strengths). This type of strategic review equips VCs with the authority to address issues successfully, improve effectiveness, and advance fair and accessible justice, while enhancing community trust and well-being (Chakraborty & Chakma, 2020; Dutta & Senapoti, 2011). Three focus group discussions, including those with elected members of UPs, civil society representatives, and disputants, were conducted. In addition, three KII has been conducted with the UP Chairman. As analytical tools, STATA 13.0 and Microsoft Excel have been employed.

To reveal the stakeholders in dispute settlement, the authors employ cross-tabulation between the number of disputes and several socio-economic variables. At the first stage, the number of disputes in one year has been divided into two categories, e.g., (less than 2/year) dispute and (greater or equal 2/year) dispute. Age is measured in years, and for extractive patterns, it is divided into four categories: 20-30; 31-40; 41-50; and 51-60. Besides, income (BDT/month) is distributed among 4 categories: less than 10,000; 10,001-20,000; 20,001-30,000; and 30,001+. Education is measured in years of schooling units and is divided into 5 categories: illiterate, primary, secondary, higher secondary, and graduation. Distance is also divided into two categories: less than or equal to 3 kilometers and greater than 3 kilometers.

Results

Summary statistics: Table 2 summarizes the frequency and percentage distribution of socio-demographic related variables.

This table reports that nearly two-fifths of the respondents to this study belong to the age category 31-40. It depicts that most of the respondents who face the dispute settlement problem are middle-aged people. It is also observed that almost 95% of respondents are married. It signals that married people are mostly facing dispute-related issues.

In addition, the analysis result reports that more than two-fifths of the respondents' secondary education and almost 26% respondents' primary education were completed. Thus, it reveals that the people who face dispute settlement issues and use VCs have some educational knowledge. Noticeably, almost 9% of the respondents have no

formal education. This study also finds that almost four-fifths of the respondents belong to the nuclear family and suffer from dispute problems. It is also depicted that nearly half of the respondents earn 20,001- 30,000 BDT per month. Thus, it is revealed that middle-income people mostly suffer from the dispute problem.

Table 2. Socio-demographic information of the respondents

Variable Name	Frequency	Percent
Age		
20-30	19	13.48
31-40	60	42.55
41-50	35	24.82
51-60	27	19.15
Marital Status		
Married	135	95.74
Unmarried	6	4.26
Education		
Illiterate	13	9.22
Primary	37	26.24
Secondary	63	44.68
Higher Secondary	15	10.64
Honors and Masters	13	9.22
Family Type		
Joint	30	21.28
Nuclear	111	78.72
Income (BDT per month)		
<10,000	48	34.04
10,001-20,000	76	53.90
20,001-30,000	10	7.09
30,001+	7	4.96
Total	141	100.00

Pattern of Dispute Settlement

To reveal the main stakeholders in dispute settlement, authors perform pattern analysis by using cross-tabulation between the number of disputes in one year and socio-demographic variables, following Chowdhury and Haider (2022).

Age and Dispute: Table 3 demonstrates that the tendency to report disputes is higher among the middle-aged group (31-40). It also delineates that the tendency is decreasing with increasing age. The percentage of less than 2 disputes per year is almost 10.64 among the 20-30 age group; it is almost 34% for the 31-40 age group, followed by 17.02% for the 41-50 age group and 13.47% for the 51-60 age group. It also depicted that the percentage of 2 or more disputes per year is almost 2.84 among the 20-30 age group, almost 8.51% for the 31-40 age group, followed by 7.80% for the 41-50 age group, and 5.68% for the 51-60 age group. Thus, it indicates that the middle age group (31-40) is the main stakeholder in the dispute resolution system.

Table 3. Cross-tabulation between age and dispute in one year

(Dispute in one year)	(Age Group)				Total
	20-30	31-40	41-50	51-60	
<2 Dispute	15 (10.64)	48 (34.04)	24 (17.02)	19 (13.47)	106 (75.18)
≥2Dispute	4 (2.84)	12 (8.51)	11 (7.80)	8 (5.68)	35 (24.82)
Total	19 (13.48)	60 (42.55)	35 (24.82)	16 (19.15)	141 (100.0)

Income and Dispute: Table 4 figures out the relationship between income and dispute in one year. The data shows that the tendency toward dispute settlement is higher among lower- and middle-income people (10001-20000). It is sharply decreasing with increasing income. Thus, it can be concluded that increasing income leads to a decrease in the tendency to engage in dispute settlement process.

The percentage of less than 2 disputes per year is almost 24.82 among the less than 10,000 income group; it is almost 42.55% for the 10,001-20,000-income group, followed by 4.26% for the 20001-30000 and 3.55% for the 30,000+ income group. It also depicted that the percentage of 2 or more disputes per year is almost 9.22 among the less than 10000 income group, almost 11.35% for the 10,001-20,000-income group, followed by 2.84% for the 20,001-30,000-income group, and 1.42% for the income group of 30,000 and above.

Table 4. Cross-tabulation between income and dispute in one year

(Dispute in one year)	(Income Distribution)				
	<10,000	10,001-20,000	20,001-30,000	30,001 and above	Total
<2 Dispute	35 (24.82)	60 (42.55)	6 (4.26)	5 (3.55)	106 (75.18)
≥2Dispute	13 (9.22)	16 (11.35)	4 (2.84)	2 (1.42)	35 (24.82)
Total	48 (34.04)	76 (53.90)	10 (7.09)	7 (4.96)	141 (100.0)

Education and Dispute: Table 5 claims the relationship between the education level of the respondents and the dispute in one year. It has been reported that dispute settlement tendencies are higher among respondents who have completed primary and secondary education. Thus, it shows that education plays a significant role in the dispute settlement process.

Table 5. Cross-tabulation between education and dispute in one year

(Dispute in one year)	(Education)					
	Illiterate	Primary	Secondary	Higher Secondary	Honors and Masters	Total
< 2 Dispute	9 (6.38)	26 (18.44)	48 (34.04)	13 (9.22)	10 (7.09)	106 (75.18)
≥ 2Dispute	4 (2.84)	11 (7.80)	15 (10.64)	2 (1.42)	3 (2.13)	35 (24.82)
Total	13 (9.22)	37 (26.24)	63 (44.68)	15 (10.64)	13 (9.22)	141 (100.00)

Distance from UP and Dispute: Figure 1 reports the inverse relationship between home distance from UP and dispute in one year. It has been observed that increasing home distance from UP leads to a decrease in the percentage of disputes in one year. It is observed that almost half of the respondents who report less than two disputes in VC live around 3 kilometers from the VC, and it is almost one-fifth report two or more disputes. Therefore, it indicates that home distance from the VC is an important issue for dispute settlement.

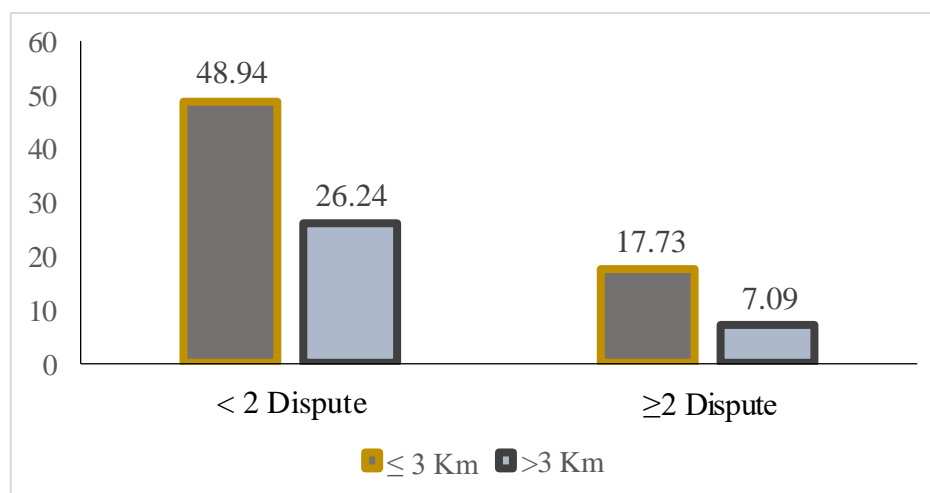


Figure 1. Distance from UP and dispute in one year

Reasons for choosing VCs

Table 6 illustrates the reason for choosing the VC as a medium of dispute settlement. It is revealed that people strongly agree that VCs serve people at a lower cost. Respondents agreed that the VC is a familiar medium, and people have easy access to it. In addition, they use VCs for lower distances, and they think that it protects the disputants' reputations. But a concerning issue is that people are neutral about the fairness and reliability of the VC.

Table 6. Reasons for choosing the VC

Reasons	Mean	Std. Dev.	Min	Max
Cost of settlement is lower	5.00	0.00	5	5
We are familiar with the VC member	4.86	0.38	4	5
We use it because settlement time is lower	4.29	1.11	2	5
It safe our reputation and solve the problem	4.29	0.76	3	5
I use VC because of lower distance from my home	4.14	1.46	1	5
It is easier to access the judiciary service	4.00	1.41	1	5
It is more reliable than other service	3.86	0.69	3	5
We trust with the fairness of settlement	3.86	1.22	2	5

Findings from Focus Group Discussion and Key Informant Interviews: SWOT analysis is developed based on FGDs and KIIs.

One FGD participant of civil society member mentioned:

The main challenges to the proper functioning of the VC are local political pressure, pressure from local elites, and sometimes nepotism, which hinders effective judgment. He expressed that the majority of local leaders want to settle the cases by using informal mechanisms like *Shalish because*, in this mechanism, they exercise their power without a legal boundary. Therefore, they demotivate the disputants to report the cases to the VC.

Table 7. SWOT analysis of the VC

Strength	Weakness
<ul style="list-style-type: none"> • Fair justice process • Well accepted body • Existence of specific rules and laws • Existence of Union Parisad: A well-organized local body • No requirement of advocates • Existence of procedures against corruption • Solving local level problems • Focus on coordination rather to provide hard punishment • Easy accessible 	<ul style="list-style-type: none"> • Lack of infrastructure • Lack of workforce to collect fines • Limited pecuniary jurisdiction (up to 75,000 BDT) • Unexperienced judges panel • Domination of male members • Lower women participation • Irregularity
Opportunity	Threat
<ul style="list-style-type: none"> • Solving disputes takes less time • Less cost • Express own views fearlessly • Effective judgment for small disputes • Free from harassment • Focus on maintaining social ties • Reduce the pressure on the formal justice system • Develop strong leadership 	<ul style="list-style-type: none"> • Nepotism • Local-level political pressure • Pressure from elite people • Bias judgment • Conflict among committee members

Another FGD participants, an elected member, focuses on:

The major weaknesses of VCs towards full operationalization are a lack of logistical support, infrastructural facilities, and a lack of workforce to collect fines. He describes that in most cases, they try to solve the cases without imposing any penalty since they do not have sufficient support to collect the fines or impose the penalty. Therefore, the disputant searches for an alternative mechanism like a district court or police station.

One of the KII participants, a VC member, mentioned on the same issue that the lack of an experienced judge's panel, the lack of infrastructural facilities, and women's participation in the committee are the major challenges towards the full operationalization of VCs.

In summary, the main strengths of the VC are that it ensures fair justices, the existence of rules and regulations, a well-accepted and organized body, easy access and less paperwork. Interestingly, the majority of VC service recipients expressed satisfaction and confidence in the service. To justify the prospects of VC, respondents report that the cost of VC is considerably cheaper than the formal courts in terms of both cost of service and time. Regarding the problems of VCs, they identify that people are not very aware of VCs, and lack of manpower, logistic support, infrastructure, and limited pecuniary jurisdiction (up to 75,000 BDT) are the major barriers to making VCs an effective alternative of formal court system. They also identified nepotism, corruption, irregularities, and local political pressure as major threats to ensuring proper justice in VCs. Table 7 describes the SWOT analysis of the VC mechanism.

Challenges of VCs

Several challenges were identified in VCs, these are as follows:

1. Lack of awareness about the VC law

The study reveals that people have limited knowledge about the VC, but they are not aware of the basic VC law, which creates barriers to making it fully operational at the local level. This is consistent with the previous findings of Hossain, 2012 and Sarker, 2013 where they report that VC ensures the justice locally but remains ineffective because of a lack awareness about the law of VC.

2. Lack of budget and logistic support

Manpower is an important element for an organization to fully operationalize; otherwise, there is a chance of slow performance by the institution. Generally, the UP chairman and members perform the duty of judge in the VC (Village Court Act, 2006). It is also important to sanction a separate budget to operate the organization. But the VC faces a lack of budget as well as the logistic support like manpower, trial rooms, computers and others. This finding is consistent with the findings of Islam and Alam, 2017.

3. Monitoring and accountability problems

The absence of proper monitoring and accountability creates hindrances to operationalizing VCs at the local level. Generally, the UP-chairman exercises supreme power at the local level. Additionally, the work of judges is not properly monitored, and the chairman is not held accountable for his/her decisions.

4. Lack of training

For every job to be done correctly, training is a crucial prerequisite. The study found that VC officials have not yet received the proper training they need. Even UP representatives were found to lack a fundamental understanding of the VC's law.

5. Reducing corruption

Reducing corruption is a significant challenge for policymakers and stakeholders in the VC. Because of the lack of a monitoring system, there is a huge possibility of corruption.

6. Lack of legal knowledge among VC members

The lack of legal knowledge among VC (VC) members hinders their ability to make informed and fair judgments. It can lead to misinterpretation of laws, resulting in inconsistent or incorrect rulings. This deficiency may erode public trust in the VC system and impede access to justice. Additionally, inadequate legal understanding can contribute to delays in case resolution and may necessitate referrals to higher courts, increasing the burden on the formal judicial system.

Suggestions to overcome the challenges of VCs

This study also tries to reveal the suggestions from service recipients and civil society groups to overcome the challenges. The service recipient group suggests that Union Parishad can solve the challenges by

1. Arranging yard and ward meetings for increasing awareness among villagers regarding VC;
2. Creating a fair and free environment to provide impartial judgment for the service recipients.

In addition, they also think that local government bodies can fix the challenges by

1. Monitoring VC-related activities properly;
2. Providing necessary logistic support and recruiting a field supervisor and an assistant for VC;
3. Amending the VC Act regarding the pecuniary jurisdiction of 75,000 BDT; and
4. Arranging training for VC-related personnel to improve their skills.

Civil society groups also suggest that UP members and local administration bodies have some responsibility to solve the challenges e.g.,

1. Increasing publicity for VC;
2. Free from political power and nepotism; and
3. Arranging ward meetings.

They also suggest central government can raise awareness nationally to disseminate knowledge about VC by

1. Developing regular monitoring of VC activities;

2. Broadcasting VC-related programs on radio and television;
3. Arranging live broadcasts (sometimes) of VC trials and judgments;
4. Media coverage of VC-related programs; and
5. Installing billboards in different places of public gathering, such as huts, bazars, and stations.

Discussion

This study aims to identify stakeholders in dispute settlement and conduct a SWOT analysis of VC, which is denoted as an effective alternative dispute settlement mechanism. Basically, it reduces the pressure of a huge caseload of formal judicial mechanisms, specifically cases that can be solved locally. A mixed method approach has been adopted to collect the qualitative and quantitative data. The study found that middle-aged people mostly report disputes in VCs. Basically, middle-aged people are engaged with outside homework and most of the time they play the role of household head. Therefore, they suffer from disputes and manage them. The study findings are consistent with Abusaleh & Islam (2019), where they find that almost 30% of the respondents in the 31-40 age group visit VC to settle the disputes.

The study also finds that the respondents who completed primary and secondary education are mostly filing disputes in VCs. It is expected that educated people are more concerned about the negative effects of disputes. On the other hand, most of the uneducated people are not much concerned about the disputes, and generally, they engage in informal work where the probability of involving disputes is higher. It is consistent with the findings of Sarker & Islam (2013), where they report that most of the disputants are below Secondary School Certificate level.

The study findings also concluded that distance and income were negatively related to dispute filing in VCs. It is because easy access to VCs generally increases the probability of filing disputes. Literature describes low-income people as mostly uneducated and engaged in informal work (Sarker & Islam, 2013). Therefore, they have a higher probability of engaging with issues that trigger them to report disputes to VCs. It is in line with the findings of Sarker & Islam (2013).

Qualitative analysis result indicates that fair justices, the existence of rules and regulations, a well-accepted and organized body, easy access and less paperwork are the strengths of VCs, which is consistent with the findings of Bhuiyan et al. (2019). The challenges of the VC are a lack of manpower, awareness, logistic support, infrastructure and limited pecuniary jurisdiction (up to 75,000 BDT). It is necessary to have sufficient staff to manage the operations for any institution or organization to operate well; otherwise, there is a high likelihood of slow performance. Due to a lack of staff, the UPs' secretaries are required to do the VC's administrative tasks. For the continuance of better and quicker services, logistical assistance is also crucial. Numerous investigations revealed that the VCs operate with an insufficient personnel system. Additionally, it lacked logistical resources like a "Trial Room," a computer for VC work, and a separate facility, all of which made it more difficult to make effective (Islam and Alam, 2017).

Solving disputes in less time and cost, expressing views without harassment and reducing the pressure of formal justice delivery mechanisms are the opportunities of VCs, which is consistent with the findings of Ahmed and Islam (2013). Nepotism, corruption, irregularity and local political pressure are the most concerning barriers to the effectiveness of VCs. Numerous studies have shown that VC chairmen and members are corrupt, making decisions that benefit themselves or their preferred parties (Islam and Alam, 2017). Due to Bangladesh's unique political culture, local government party leaders have a direct influence on the elected party men who decide disputes in VCs. Political parties not only elect or nominate the chairman of UPs but also the majority of the local representatives; as a result, party-elected members don't actually have any power over the UP (Saadi et al., 2014).

This study is not beyond its limitations. The limitation of this study is that no econometric modelling has been performed for analysis. This study considers only the service recipients' group. Thus, the findings cannot be generalized to all.

Conclusion

In developing countries like Bangladesh, access to justice continues to be an issue, especially for the rural poor. Access to justice on an equitable basis is crucial for fostering effective government. To offer justice for rural impoverished people who cannot regularly interact with an urban-centric legal system, the VC was formed. Another

goal was to reduce the workload of the formal courts in addition to developing this rural legal system. This study uses cross-sectional data to investigate the pattern of dispute settlement and SWOT analysis of VCs in rural Bangladesh.

This study recognized that middle-aged individuals with lower- and middle-income backgrounds play a key role in reporting disputes in VCs. The SWOT analysis identified the challenges, i.e., manpower shortages, logistic and infrastructure limitations, corruption, training gaps, and accountability issues. However, from this study VCs exhibited strengths in delivering fair justice, adhering to established rules, being well-organized, offering accessibility, and minimizing paperwork. By identifying the key stakeholders and understanding the challenges and strengths through SWOT analysis, policymakers can devise targeted strategies. The findings of this study provide valuable insight to the policymakers and stakeholders about how to support and improve the VC system to address these challenges for the betterment of rural communities. With potential benefits like cost and time savings, reduced harassment, and eased burden on formal courts, policymakers must address these challenges to enhance the effectiveness of VCs. The key recommendations are as follows: a) Policymakers can provide essential policy supports for regular training to ensure that VC personnel and related stakeholders are equipped with the skills and knowledge of VC and related laws to carry out their duties effectively, b) The government should take necessary initiatives to strengthen VC with recruiting necessary manpower and providing essential logistic supports (e.g., awareness building and publicity of VC) for its proper functioning, and c) Policymakers can take initiatives to fix the cut off limit 2,00,000 BDT for the present time. The amount of BDT should be changed based on inflation rate for every 10 years.

The novelty of this study is identification of the challenges of VC, and the strengths and opportunities of VC to overcome its challenges and making VC more operative and effective. Adopting above mentioned policies can make VC as an effective, accountable, and inclusive institution for providing easy access to justice for rural community and their wellbeing. It needs further research regarding knowledge, attitude and perception of local people to VC; socio-economic and cultural benefits of VC; and institutional perspectives of VC to achieving SDGs. Thus, it is urgent to take the necessary action to develop the VC structure to make it more functional.

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Conflict of Interest

The authors declare no conflict of interest.

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NEWS TREATMENT ON THE PADMA BRIDGE INAUGURATION: A STUDY ON GLOBAL MEDIA PERSPECTIVE

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Abstract

The Padma Bridge inauguration, a landmark infrastructure project, has garnered significant attention from media outlets worldwide. This study delves into the diverse global media perspectives surrounding the inauguration of the Padma Bridge. The study's main objective is to evaluate and quantify the global media coverage of the Padma Bridge's inauguration on June 25, 2022 with a focus on how the international media views the event. About 40 news articles from various globally famous news media were chosen to be used in the study's qualitative and quantitative analysis. This study attempts to move forward with data gathered from various international news media through purposive sampling by using Google Search Engine Customization from June 24 to 30, particularly the 25th, which is the date of Padma Bridge's inauguration searching by using keywords like 'Padma Bridge inauguration related news coverage in global media'. By employing a comprehensive content analysis approach, this study examines how the event was covered by media outlets across the globe. Findings reveal that media treatment of the Padma Bridge inauguration varies significantly based on geographical location, political affiliations, and cultural factors. While some media outlets highlighted the inauguration as a symbol of economic progress and regional connectivity, others critiqued the project's cost and environmental impact. The chosen reports' most focused subject, as shown through analysis is Bangladesh's potential and audacity to fulfill its' people's dream. Additionally, it provides insights into the complex interplay between media, politics, and public perception of major infrastructure projects. This study also contributes to the fields of media studies, international relations, and infrastructure development, shedding light on the intricate dynamics that influence global media coverage of significant events like the Padma Bridge inauguration.

Keywords: Padma multipurpose bridge, Global media, News, Inauguration, Bangladesh

Introduction

One of the biggest, most significant, and most challenging self-financing projects for the government of Bangladesh is the Padma Bridge project and it was up to the government to create self-financing after the World Bank's shelter plan (Daily Star, 2022). The Bangladeshi districts of Louhajong, Munshiganj, Shariatpur, and Madaripur has connected by the building of a multipurpose road and rail bridge across the Padma River. It has connected the nation's south-west to its north and east. The two-level steel truss bridge includes a four-lane roadway on the upper level and a single-track railway on the lower level. With a 150 m span, 6150 m overall length, and 18.10 m width, it is the longest bridge in the Padma-Brahmaputra-Meghna river basins in the country (Islam et al., 2020).

The Bangladeshi people's ideal name for the structure that would transform their nation's economy is Padma Bridge. Twenty-one districts and 27% of the population of the country is in the south-west. To determine whether the inauguration of the Padma Bridge by Prime Minister Sheikh Hasina on June 25, 2022 would be a source of national pride for Bangladesh, this study examines how international media has covered the event (Daily Star, 2022). The Padma Bridge project in Bangladesh has been generating headlines in international media, especially in light of its importance to the nation's politics and economy. According to Maunsell, the project's designer, the Benefit-Cost Ratio (BCR) of the project was 1.6% in 2010 and its Economic Internal Rate of Return (ERR) was 18% (Haider, 2021).

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The Japan International Cooperation Agency (JICA) conducted accessibility studies, which indicate that when the Padma Bridge is finished, daily traffic will increase to 21,300 cars and 41,600 vehicles per day by 2025 (Vazquez et al., 2012). While the project calls for building a straightforward bridge across the Mawa-Jajira Corridor for a distance of around 6.15 kilometers, of which 6 kilometers are at the Mawa site and 12 kilometers are at the Jajira site, it will save more than 681,600 gallons of gasoline every day (Sharmin et al., 2017). The Mawa location is home to the 0.273-kilometer-long River Training Works (RTWs).

The construction of Padma Bridge will have a huge positive impact on the economy. Capital inflows will encourage the growth of commercial and industrial activity and expand the neighborhood's economic and employment potential. It is quite challenging to build the bridge because Padma turns into a swift-moving river during a storm and since it is situated in a seismically active area. Bangladesh is building the Padma Multipurpose Bridge, a multifunctional street railway bridge spanning the Padma River. The Padma Bridge is the most challenging building venture in all of Bangladesh. According to Islam et al. (2020), the two-story steel pallet bridge will carry a separate track railway line on the lower level and a four-way roadway on the top level.

The construction of the envisioned Padma multifunctional bridge is a significant undertaking that calls for several advanced projects. To improve connections with the country's southwest, the Bangladeshi government also plans to develop roads, railroads, transmission, and telecommunications companies in addition to the Padma Multipurpose Bridge. The southwest of these areas will see provocative and encouraging development projects in addition to increased urbanization. The government estimates that when the new bridge is finished, Bangladesh's GDP will rise by 1.2 percent. These modifications have brought nature and energy together in the mission-affected region (Sohag, 2022).

A more thorough evaluation of the Padma Bridge's effects on the neighborhood, family wage use, geotechnical needs, and territorial demands will be made in general (Jalil & Mia, 2021). This study aims to evaluate the multipurpose Padma Bridge's news coverage in different global media on the inauguration of Padma Bridge. As a result of the preceding research, we can infer that worldwide media coverage of the Padma Bridge's opening is critical for understanding what other nations' media believe about the bridge's openings that will help to disclose what world media thinks and says about the issue. The global media has been crucial in drawing attention to the possible effects of the Padma Bridge in Bangladesh. The media has assisted in increasing awareness of the significance of infrastructure development in Bangladesh by reporting bridge building and its potential effects on economic and social growth. In addition, the news coverage of the Padma Bridge by the global media has highlighted the capability of Bangladesh to fulfill huge projects like the Padma Bridge and the government's focus on fulfilling the people's dream.

While there are challenges and controversies surrounding the project, the potential economic and social benefits of the bridge are significant and, in that sector, the global media coverage has great impacts that how they report on the Padma Bridge inauguration and in short what they are thinking about the issue. As the global media news coverage on any important issue is very impactful, the news coverage on the inauguration of Padma Bridge is also significant because it will create a positive image of Bangladesh and also will help to get more focus on Bangladesh issues in future that Bangladesh can perfectly complete these types of infrastructural projects with courage.

For all that reason, this kind of news coverage is important and that's the significance of the study. The reason behind choosing the topic is that it holds importance as it delves into how the world media covered the inauguration of the Padma Bridge. This research can provide insights into how a major infrastructure project's significance and impact are perceived on a global scale. It could reveal patterns in media bias, framing, or portrayal of development projects, shedding light on the bridge's geopolitical, economic, and social implications. The findings might also contribute to understanding how narratives are constructed and disseminated across diverse media outlets, impacting public perception and international relations.

The primary objective of this study is to find out how the opening of the Padma Bridge was covered by the worldwide media. Examining how the inauguration of the Padma Bridge is portrayed in the international media is another goal. Another crucial goal is to investigate, quantify, and assess how the international media covered the opening of Padma Bridge.

Literature Review

Padma Bridge is one of the most discussed issues when researching the economic development-related issues of Bangladesh and some studies were conducted on Padma Bridge and other related things to Padma Bridge. Because of the Padma Bridge, according to Sohag (2022). The time and cost of crossing the river will be greatly reduced, and the cross-Padma transit system's dependability will be improved. The bridge would shorten the route from the southwest to Dhaka by 100 kilometers while reducing travel times. These brand-new and historic tourist destinations, along with Kuakata Beach in the south, the Sundarbans, the 60-domed mosque, Bangabandhu Mazar in Tungipara, and the historic and contemporary resorts at Mawa and Jazira, has drawn tourists from both domestic and foreign countries as the tourism industry has flourished (Hossain, 2022). It also indicates that the Padma Bridge was built to boost cross-Padma transport reliability while considerably reducing travel time and cost over the river. The bridge will cut the distance from the south-west to Dhaka by 100 kilometers and significantly reduce travel time. By providing a dependable and quick transportation link, the Padma Bridge will serve to encourage economic development in the south-west area.

Travel time between Dhaka Division and the south-west of Bangladesh, and maybe to India, will be reduced for the bridge. The Padma Bridge will result in huge cost savings for transportation as well as significant structural changes to the economy in the southwest region. Changes in the relative costs of goods, services, and production inputs will encourage the development of new businesses, the relocation of existing ones, and modifications to how existing businesses are run (Ahmed, 2022). The benefit-cost ratio for Padma Bridge is quite high. We will gain a lot from shorter travel times. Additionally, better connectivity will help unite the nation's underdeveloped regions with the rest of the nation and it has linked the industrial district of Khulna to Mongla, our second-most important port. The trans-Asian railroad and the Asian Highway will be connected by Padma Bridge (Adhikary, 2022).

Padma Bridge is important for the economy of Bangladesh and the building of the bridge will have a substantial economic impact on the nation (Haider, 2021). Also, the ease of transportation would create new economic opportunities in the agricultural and industrial sectors, according to Khan & Naher (2021). Due to the development of a new center for investments that attracts both domestic and global capital, several new industrial buildings and job possibilities will be built. To fulfill increasing industrial needs, there will be more recruitment, retraining, or up-skilling of the workforce, as well as perhaps higher wages. Greater economic possibilities will eventually help to reduce poverty, raise living standards, and benefit future generations by lowering the cost of healthcare and education. Due to its potential to help Bangladesh meet a number of Sustainable Development Goals (SDGs), the Padma Bridge has received considerable attention from the international media (Rashid et al., 2023).

From the view of Talukdar (2022), new resorts, hotels, shopping malls, and other establishments would be erected in Mawa and Jazeera, greatly enhancing the tourism industry. A few neighboring nations will be able to use the ports of Mongla and Payra once they are operational. According to estimates from 2010, traffic would treble, and the number of vehicles would rise by 6-7 percent annually if the bridge were to be opened where 12,000 cars cross the Padma River each day, reaching 67,000 vehicles every day by 2050. In any event, a separate World Bank analysis (Islam et al., 2020) estimates that this bridge will directly benefit 30 million people, or about one-fifth of all civilians in the nation. Padma Bridge operations will have a substantial impact on the south-west's economy, according to research by Jalil & Mia (2021). So, the research on global media coverage of the Padma Bridge inauguration has much importance because it can provide insights into how a major infrastructure project's significance and impact are perceived on a global scale.

Theoretical Framework

This study is related to two theoretical concepts: framing and agenda setting. The creation of new messages and their impact on audiences are examined through (Mass Communication Theory, 2017). Like the agenda-setting tradition, the idea of framing broadens research by focusing on the content of the pertinent topics rather than a narrow topic. Framing theory asserts that the media highlights specific occurrences and then contextualizes them. Agenda Setting Theory has been modified into Framing Theory, and both theories describe how media may draw attention away from a topic's significance.

Framing and agenda-setting go hand in hand. The framing hypothesis contends that after paying particular attention to a specific issue, the media convey it to the public inside a field or frame. They have an influence not just on what we think, but also on how we think about it (Mass Communication Theory, 2017). This study is based on multiple news pieces published by various worldwide media outlets to assess what people believe about the Padma Bridge's opening, which reflects the media's point of view and is directly tied to the idea and is closely connected with those theories that are selected for analysis.

Framing theory also emphasizes how media representations can shape public perceptions, while agenda-setting theory examines the media's influence on the salience of issues. By analyzing news coverage from various global media outlets, this study seeks to uncover the relationship between these two theoretical frameworks and their impact on the portrayal of the Padma Bridge inauguration. The correlation between framing and agenda-setting theory in the context of news treatment on the Padma Bridge inauguration has significant implications for understanding the role of the media in shaping public opinion and agenda construction.

Methodology

Regarding the nature and requirement of the present study, content analysis research methods have been adopted to explore and measure the news coverage of different global media on the inauguration of Padma Bridge. About forty (40) news articles from many internationally famous news media outlets that were broadcasted from different viewpoints were chosen to conduct the research using qualitative and quantitative analysis. The study attempts to move forward with data gathered from various international news media through purposive (Google Search Engine Customization) sampling from June 24 to June 30 in the year of 2022, with a focus on the news coverage of the inauguration of the Padma Bridge on June 25, 2022. Textual analysis is done using the content analysis method to examine how various news media from various countries treat the news. The researcher used a keyword in English titled "global media news coverage on Padma Bridge inauguration" through Google.

Population and Sampling

There are different types of media (print, online, and electronic) worldwide that published so much news on the inauguration of Padma Bridge. From all of them, the researcher has selected forty (40) news stories from different countries' media news which were published from date 24th to 30th of June 2022. Here, the purposive sampling method is used to sample data for better analysis.

Result and Discussion

The completion of the Padma Bridge signifies a dream come true for the nation's 170 million residents. By constructing the Padma Bridge with its funds, the Bangladeshi government set an example for other South Asian nations, which will undoubtedly inspire other nations to advance and carry out similar projects of this nature to promote regional connectivity. Numerous media outlets from different nations have different perspectives on the Padma Bridge problem. Some international media saw it as a cause for celebration, while others viewed it as one of Bangladesh's greatest triumphs. The capacity of the Bangladeshi administration to realize a dream in the face of several obstacles is also mentioned by certain other international media.

Approximately 40 news stories from various international news media agencies were published on the topic of the Padma Bridge's opening. Some international media like ABC News, AP News, ALJAZEERA, Arab News, The Economic Times, Bloomberg, The Hindustan Times, The Hindu, NDTV, Pakistan Today, Khaleej Times, Global Times from China, the Malaysian Insight from Malaysia are included in this study. For ease of comprehension, the country of the media, name of the media, number of news they have published, position and picture treatment, and also the type of column and edition of all the chosen news are listed in Table 1.

Table 1. Name of Different Global Media including Country Origin

Sl. No.	Country	Newspaper & TV.	Number of News	Position of News	Picture Treatment	Type of Column	Edition (Online)
01	USA	ABC News	01	Front Page	Yes	03	Print
		The Washington Post	01	Back Page	Yes	02	Print
		VOA NEWS	02	Inner Page	Yes	02	Online
		AP News	01	Front Page	Yes	02	Print
		Bloomberg	02	Front Page	Yes	03	Online
02	Qatar	The Seattle Times	01	Back Page	Yes	01	Online
		ALJAZEERA	02	Front Page	Yes	03	Online
		The Indian Express	02	Front Page	Yes	02	Online
03	India	Hindustan Times	01	Back Page	No	01	Print
		THE HINDU	01	Inner Page	Yes	02	Online
		NDTV	02	Front Page	Yes	03	Online
		India Today	02	Back Page	Yes	02	Print
		Ananda Bazar Online	02	Back Page	Yes	03	Online
		NEWS18Bangla	01	Front Page	Yes	02	Online
		ZEE News	01	Inner Page	Yes	02	Online
		R.REPUBLICWORLD.COM	01	Back Page	Yes	01	Online
		WION TV	01	Inner Page	No	01	Online
		The Economic Times	02	Inner Page	Yes	03	Print
04	France	AFP	01	Front Page	Yes	03	Print
		ARAB NEWS	01	Back Page	Yes	02	Online
05	Arab	Gulf News	01	Front Page	Yes	03	Online
		Daily Times	02	Back Page	Yes	02	Print
06	Pakistan	Pakistan Today	01	Inner Page	No	01	Online
		BBC NEWS BANGLA	01	Front Page	Yes	03	Online
07	UK	China Daily.Com.CN	02	Back Page	Yes	01	Print
		Global Times	01	Inner Page	Yes	03	Online
08	China	The Federal	01	Inner Page	Yes	01	Online
		Asia Times	01	Front Page	Yes	03	Online
09	South Korea	Khaleej Times	01	Inner Page	Yes	01	Online
		The Malaysian Insight	01	Back Page	Yes	01	Online
10	Hong Kong						
11	UAE						
12	Malaysia						

Source: Information is collected from the news media's own websites through Google search.

This table shows the different global media's news coverage of the Padma Bridge inauguration. Also, the country of news media, name of media, number of news, position of news, etc. are presented in Table 1.

News Treatment of Padma Bridge Inauguration

Researchers have selected about 40 world media news on the inauguration of Padma Bridge from different angles. All about the news treatment of different country's media are given below with detailed descriptions:

ABC News

ABC News is the name of the American television network's news department. The network's centerpiece is the weekday evening program ABC World News Tonight with David Muir though there are some other special programs on different days on different exclusive issues that are popular. According to ABC News article on the completion of the Padma Bridge, Bangladesh commemorates the opening of the nation's longest bridge and is a source of national pride. Also, it says that the Padma Bridge has much impact on the country's overall development.

ALJAZEERA

One of the biggest and most powerful international news networks in the world right now is Al Jazeera. The state-owned worldwide news network in Arabic for Qatar is called Al Jazeera. The opening of the Padma Bridge on June 25, 2022, was covered by Al Jazeera twice. The network described the event as a dream realized for 170 million Bangladeshis and a special infrastructure project of the country's government by saying 'PM Hasina opens Bangladesh's longest bridge over River Padma.' (ALJAZEERA, 2022)

AFP

Paris, France serves as the home base for the Agence France-Presse (AFP) French worldwide news agency. In addition to having news offices spread throughout 201 locations in 151 different countries, AFP also has regional offices in Nicosia, Montevideo, Hong Kong, and Washington, D.C. As a prominent international news organization, AFP provides timely, thorough, and reliable coverage of the events that shape our world and the problems that influence our everyday lives. As it's a regular duty to provide reliable news coverage on different recent issues, AFP also covered news on the inauguration of Padma Bridge at the 25th headlining 'Bangladesh opens bridge plagued by graft claims, lynchings'. (AFP, 2022)

AP News

An American news organization with its main office in New York City is called The Associated Press (AP). American newspapers, and broadcasters get its news reports. Since the award's establishment in 1917, The AP has taken home 56 Pulitzer Prizes in total, including 34 for photography. The popular AP Stylebook is another thing for which it is renowned. On the inauguration AP News also covered news on its opening with the headline 'Bangladesh marks the opening of country's longest bridge and said it's a huge achievement for the country's people for their development.' (AP News, 2022)

ARAB NEWS

Arab News is the name of the first English-language newspaper to be printed in Saudi Arabia. Hisham and Mohammed Ali Hafiz established it in 1975. This media also reported on the bridge inauguration saying that 'Bangladesh inaugurates USD 3.6 billion Padma Bridge.' (ARAB News, 2022)

Bloomberg

Located in Midtown Manhattan, New York City, Bloomberg L.P. is a privately held financial, software, data, and media company. Bloomberg has reported on the Padma Bridge inauguration talks about it 'a dream project for Bangladeshi people which is done totally with the country's funding also highlights the PM Sheikh Hasina's indomitable courage to make the impossible thing possible.

The Indian Express

An Indian news publishing organization is called Indian Express Limited. More than a dozen cities, including New Delhi, Mumbai, Ahmedabad, Bangalore, Kolkata, Pune, Chandigarh, Hyderabad, Kochi, Lucknow, Jaipur, Nagpur, Vadodara, and Chennai, receive daily deliveries of the company's publications. The Indian cinema business is covered in its weekly entertainment magazine, Screen, which has a considerable readership. The Padma Bridge opening was also reported by The Indian Express, which stated in their article that the bridge is more than just a collection of bricks and cement; rather, it is a representation of Bangladesh's pride, capability, and dignity. Another article headlined as, 'PM Hasina opens Bangladesh's longest bridge, calls it symbol of country's pride.' (The Indian Express, 2022)

Hindustan Times

Hindustan Times is a daily newspaper in English published in India. It is based in Delhi. It is Shobhana Bhartia's and the K. K. Birla family-controlled company HT Media's main publication. Padma Bridge's inauguration is also covered in Hindustan Times on media claim of Bangladesh's Padma Bridge is a Chinese success story and it was reported on the 26th June of 2022.

THE HINDU

The Hindu is a daily newspaper published in India in English. The Hindu Group is based in Chennai, Tamil Nadu. The second-most widely read English-language daily in India, it is one of the historical Indian newspapers. According to The Hindu, the Padma Bridge project was sponsored by the Bangladeshi government and is a source of national pride for the Bangladeshi people since it proves that Bangladesh is capable of completing these kinds of huge projects.

NDTV

New Delhi Television Ltd., an Indian news firm, focuses on broadcast and internet news distribution. In India, the company is regarded as a pioneer of independent news broadcasting and is credited with launching the first 24-hour news channel and lifestyle channel. The opening of Bangladesh's longest rail-road bridge, which connects the southern portion of the country with the capital, was reported by NDTV on August 25 and was described as a source of pride for the Bangladeshi people. NDTV's news headline was 'PM Sheikh Hasina Inaugurates Bangladesh's Longest Rail-Road Bridge.' (NDTV, 2022)

The Washington Post

The Washington Post, a daily American newspaper, is printed in Washington, D.C. It also covered news on the Padma Bridge inauguration and tried to highlight that Padma Bridge is the longest bridge in Bangladesh and it is fulfillment of the people's dream.

VOA NEWS

Voice of America is a United States of America's state-owned news organization and global radio broadcaster. It is the biggest and oldest worldwide broadcaster supported by US money. About the Padma Bridge inauguration, VOA News covered news, and, in that news, they tried to mention the significance of the bridge and its overall background and headlined that 'Bangladesh unveils Padma River Bridge.' (Mahmud, 2022)

Daily Times

The Daily Times is a Pakistani newspaper published in English. Daily Times, which debuted on April 9, 2002, is concurrently published in Lahore, Islamabad, and Karachi. 'Story of Bangladesh's Padma Bridge: More than Just a Bridge' (Khattak, 2022) is the headline of the news covered by Daily Times on the Padma Bridge which described the importance and impacts of its' and tried to say that this Bridge is more than a concrete bridge, it's a dream.

India Today

Living Media India Ltd. in India publishes the weekly news magazine India Today in English. The Padma Bridge opening was covered in India Today's news, and the article aimed to get readers to consider how PM Sheikh Hasina

used the inaugural to convert tragedy into an opportunity and how it affected GDP development and headlined that 'Inauguration of Bangladesh's Padma Bridge by Sheikh Hasina: Boost of trade and economy.' (Khokon, 2022)

Ananda Bazar Online

The ABP Group owns the daily newspaper Anandabazar Patrika, published in India in the Bengali language. On the Padma Bridge inauguration, Ananda Bazar's online news media had huge coverage and covered more than three pieces of news and mainly tried to focus on the grand opening of the bridge. Also, it tried to discuss the connection of the southern part of Bangladesh with the capital city Dhaka which will help to save time.

BBC NEWS BANGLA

Delivers news from Bangladesh, its neighbors, and the entire world. In addition to correspondent reports, there are interviews, newspaper reviews, and live phone-ins. BBC NEWS BANGLA also covered news on the inauguration of Padma Bridge. It attempted to concentrate on the implications of linking the southern part of the country with the capital.

China Daily.Com.CN

China Daily, established in 1981, is the only national newspaper published in English in China. As it is a Chinese media, reporting on the Padma Bridge inauguration it focuses on the Chinese company that undertook the project and helped to make it happen.

NEWS18Bangla

Network 18, a division of Reliance Industries, is the owner of News18 Bangla, a 24-hour Bengali news channel. The debut date of this free-to-air channel is March 11, 2014. On the reporting of the Padma Bridge's inauguration, the longest bridge in the nation is described as a source of pride and power by saying that 'Padma Bridge: Bangladesh's Longest Bridge to Cut Dhaka-Kolkata Travel Time by Half.' (NEWS18Bangla, 2022)

ZEE News

The Essel Group, a subsidiary of Subhash Chandra, owns the Hindi-language news channel Zee News in India. The Zee Media Corporation's main channel debuted on August 27, 1999. ZEE News covered news on the Padma Bridge inauguration on the 26th, 27th, and 28th of June 2022. In its reports, it mainly focuses on the impact and importance of the bridge in reducing the Dhaka-Kolkata travel time which has an impact on the country's overall economic improvement by headlining 'PM Sheikh Hasina inaugurates Bangladesh's longest Padma Bridge, to cut Dhaka-Kolkata travel time.' (ZEE News, 2022)

R.REPUBLICWORLD.COM

Republic TV debuted on May 6, 2017. The channel was made available nationwide through cable television providers and DTH systems as a free-to-air channel. In its news coverage of the Padma Bridge inauguration, it discussed about India's comments and congratulations to Bangladesh on the completion of the Padma Bridge and the comments of the Indian Embassy.

The Economic Times

India publishes The Economic Times, a daily business newspaper. It belongs to The Times Group. In 1961, The Economic Times made its print debut. This newspaper reported on the opening of the Padma Bridge under the headline, 'PM Hasina opens Bangladesh's longest bridge, calls it the symbol of country's pride' (The Economic Times, 2022). It was noted that the bridge's opening is significant because it was entirely financed by domestic funding.

The Federal

The Federal publishes news, analysis, and commentary like any other digital media platform. It aims to examine India from the standpoint of the states, with a concentration on the south in particular. The Federal covered news on the

inauguration of Padma Bridge which says about China's claim as their company completed the project of Padma Bridge.

Asia Times

The Hong Kong-based English-language news media publisher Asia Times, formerly known as Asia Times Online, provides Asian-centric coverage of politics, economics, business, and culture. Asia Times also covered news on the inauguration of Padma Bridge and the headline was 'Bangladeshis welcome the new Padma Bridge.' (Asia Times, 2022). The report says that Padma Bridge is the longest bridge ever constructed in Bangladesh and the government of Bangladesh decided to build it with its funds and the government of Bangladesh made it true by the hand of PM Sheikh Hasina.

WION TV

WION (World is One News) is a New Delhi-based, international English-language news channel. It is a channel on the Zee Media network and is owned by the Essel Group. WION TV covered different news on the issue of the Padma Bridge Inauguration on different days and tried to say that it's the completion of the dream of the people of Bangladesh and a pride and courage of Bangladesh that Bangladesh can fulfill big projects like Padma Bridge for the overall development of the country's people. One article headlined that 'Grand project: finally, Bangladesh unveils multipurpose bridge on Padma river.' (Walia, 2022)

Gulf News

Daily English-language newspaper Gulf News is published in Saudi Arabia. It was initially introduced in 1978 and is now sold across the United Arab Emirates as well as in other Persian Gulf nations. Gulf News covered news on the 25th of June on the inauguration of the Padma Multi-Purpose Bridge by headlining 'Bangladesh opens bridge plagued by graft claims, lynching's' (Gulf News, 2022). In its reporting, some rumors regarding Padma Bridge are discussed such as rumors of human sacrifices.

Khaleej Times

In Dubai, United Arab Emirates, the daily English-language newspaper Khaleej Times is published. The oldest English daily newspaper in the UAE was first published on April 16, 1978. Khaleej Times says on the Padma Bridge inauguration that the prime minister of Bangladesh Sheikh Hasina, welcomed the inauguration of the nation's longest bridge, which was constructed over eight years despite delays brought on by political disputes and accusations of corruption and the news headline was that 'Bangladesh: PM Hasina opens country's longest bridge.' (Khaleej Times, 2022)

The Malaysian Insight

The Malaysian Insight offers an unbiased perspective on Malaysia, its politics, economics, people, and current events. With the completion of the Padma Multipurpose Bridge, which is now the longest in the country, Prime Minister Sheikh Hasina has achieved a significant infrastructural goal in the almost eight years since work began. The headline was 'Bangladesh opens bridge plagued by graft claims, lynchings.' (The Malaysian Insight, 2022)

Pakistan Today

Pakistan's Naws Media Company publishes Pakistan Today which is a daily newspaper in English. Pakistan Today also makes coverage on the inauguration of Padma Bridge by headlining that 'Padma Bridge proves Bangladeshi economy potential' (Talukdar, 2022). Also, it has much importance in the country's overall economic development.

The Seattle Times

The Seattle Times is one of the few independently run, locally owned news companies in the United States. It has won 11 Pulitzer Prizes and is Washington State's most popular online news source. This media says about the inauguration of Padma Bridge in its news headline, 'Bangladesh marks opening of country's longest bridge.' (Alam, 2022)

Global Times

The Chinese Communist Party's official newspaper, The People's Daily, publishes a daily tabloid called The Global Times that provides ultra-nationalistic commentary on world affairs. Global Times covered two news on the Padma Bridge inauguration and headlined like 'Chinese-built biggest bridge in Bangladesh opens, to boost local GDP growth' (Global Times, 2022). It focuses mostly on China's assistance in the construction of the Padma Bridge, which is also a crucial component of the trans-Asian road network and will significantly increase regional commerce.

These are all about the news coverage of the inauguration of Padma Bridge in detail. There is also the presence of pictures which is used in almost every report and the maximum of the news is two and three columns though there are few in one column which are shown in Table 1. Also, most of the news is on the front and back pages and some are on the inner pages of the media.

Pictures of Different Global News Media



Figure 1. Headlines of The Indian Express (25 June 2022); (The Indian Express 2022)

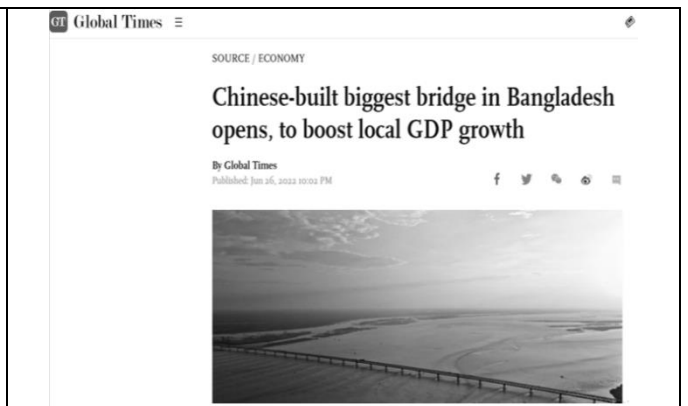


Figure 2. Headlines of Global Times (26 June 2022); (Global Times 2022)



Figure 3. Headlines of Khaleej Times (25 June 2022); (Khaleej Times 2022)

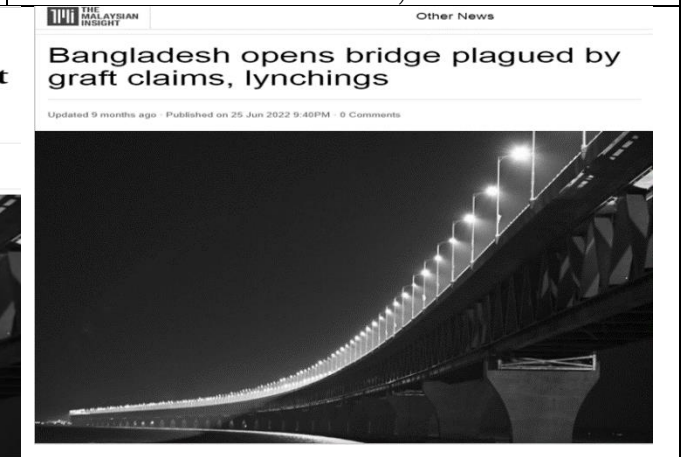


Figure 4. Headlines of The Malaysian Insight (25 June 2022); (The Malaysian Insight 2022)

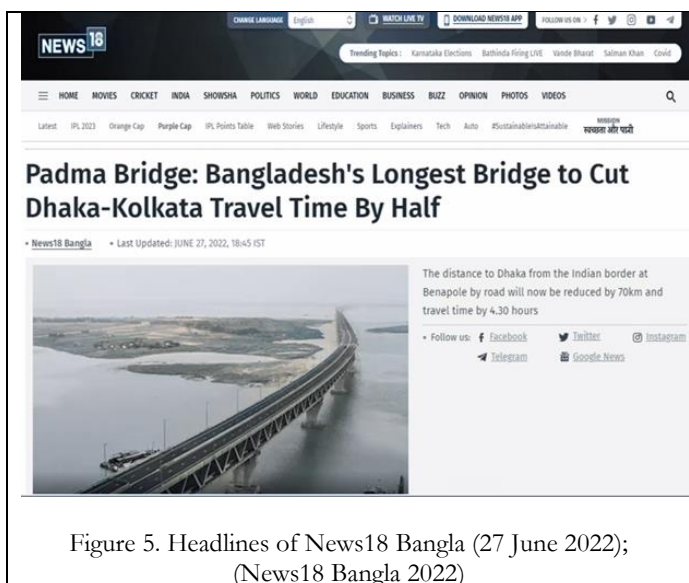


Figure 5. Headlines of News18 Bangla (27 June 2022); (News18 Bangla 2022)

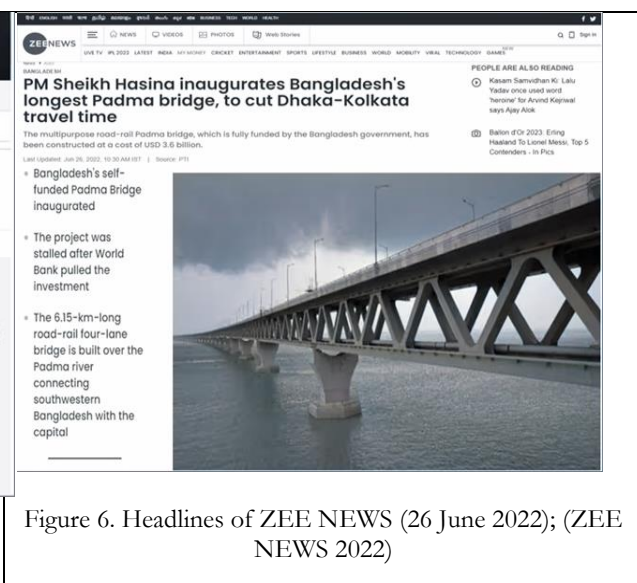


Figure 6. Headlines of ZEE NEWS (26 June 2022); (ZEE NEWS 2022)

Comparative Analysis of Different Country’s News Coverage on the Inauguration of Padma Bridge

There are 12 country’s news coverage on the inauguration which are USA, Qatar, India, France, Saudi Arab, Pakistan, UK, China, South Korea, Hong Kong, UAE, and Malaysia. The news media of USA says that Bangladesh commemorates the opening of the nation's longest bridge and is a source of national pride. Also, it says that the Padma Bridge have many impacts on the country’s overall development, and they mainly tried to highlight that Padma Bridge is the longest bridge in Bangladesh and it is fulfillment of the people’s dream.

The news media of Qatar described the inauguration event as a dream realized for 170 million Bangladeshis and a special infrastructure project of the country's government, which is headed by Prime Minister Sheikh Hasina. The Padma Bridge opening was also reported by the Indian news media, and they presented this issues that the bridge is more than just a collection of bricks and cement; rather, it is a representation of Bangladesh's pride, capability, and dignity and this bridge will link the capital city with Bangladesh's southern region which will help in overall economic development of the country. Not only that, but the Indian media also said that the Padma Bridge project was totally sponsored by the Bangladeshi government and is a source of national pride for the Bangladeshi people since it proves that Bangladesh is capable of completing these kinds of huge projects and on the other hand, they also focused on the media claim of Bangladesh’s Padma Bridge is a Chinese success story. News media of France also reported on the issue, and they discussed about the importance of the inauguration of Padma Bridge for the country. Saudi news media discussed about the bridge cost estimated \$3.6 billion to build which are all from domestic funding of the country and this bridge will boost the SDG’s of Bangladesh and also some rumors regarding Padma Bridge is discussed such as human sacrifices which is a negative issue.

The media of Pakistan focused on the importance of the bridge and says that the Bangladeshi Padma Bridge is more than just a bridge which proves the economic potentiality of Bangladesh. Media of China also deeply thinks about the issue and focuses mostly on China's assistance in the construction of the Padma Bridge, which is also a crucial component of the trans-Asian road network and will significantly increase regional commerce. Not only the Pak and China media focused on the issue, also the media of UK deeply concerned about the issue because of its importance on the overall development of Bangladesh. News media of Hong Kong says that the Padma Bridge is the longest bridge ever constructed in Bangladesh and the government of Bangladesh decided to build it by its own fund and the government of Bangladesh made it true by the hand of PM Sheikh Hasina though the South Korean media thinks the issue differently by focusing on the China’s claim as their company completed the project of Padma Bridge.

The UAE news media also gave the story significant coverage and said that the Bangladeshi prime minister was pleased with the opening of the country's longest bridge, which was built over the course of eight years despite

delays brought on by political disagreements and charges of corruption. The Padma multipurpose bridge, which is now the longest in the nation, has been completed and inaugurated, and the Malaysian media has also expressed support for the project. They claim that in the nearly eight years since construction began, Prime Minister Sheikh Hasina has accomplished a significant infrastructure goal. It all has to do with contrasting the news reports from various international media outlets on the opening of Bangladesh's Padma Multipurpose Bridge.

Conclusion

The Padma Bridge, one of Bangladesh's most significant infrastructure projects, has connected the south-west part of the country with Dhaka, the country's capital. By enhancing mobility and communication between the various areas of the country, the bridge is anticipated to play an important role in Bangladesh's economic growth. It has created a direct rail and road connection that has saved travel time and expenses between the southwest area and Dhaka. Furthermore, through fostering regional trade and generating job opportunities, the Padma Bridge is anticipated to have a favourable effect on social development and poverty reduction. Additionally, it has made it easier for residents in the southwest area to access healthcare, education, and other crucial services.

For all that reason, the inauguration of Padma Bridge and the different global media's news coverage and thinking is very much important. The researchers' major goal is to understand how the international media reported on the opening of Bangladesh's longest bridge, the Padma Bridge, and what they genuinely think of it. So, this research is very much important for the overall development of Bangladesh through creating a good image of the country's infrastructural development and Bangladesh's ability to full fill such type of mega projects like Padma Bridge.

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Conflict of Interest

The authors declare no conflict of interest.

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BODY SHAMING THROUGH MEMES IN SOCIAL MEDIA: A STUDY ON FIVE FACEBOOK PAGES

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Abstract

The phenomenon of body shaming through memes on social media platforms, particularly on Facebook, has garnered attention due to its potential impact on individuals' self-esteem and body image. This study aims to investigate the prevalence and varieties of body shaming practiced via memes in Bangladesh, to explain the motivations behind body shaming via memes, and to identify the communities that are most affected by body shaming. It also seeks to determine the medium used for body shaming and the effect that trolling has on people's minds. This study used a mixed-method approach. Five Facebook pages were selected using the purposive sampling method and data was collected from 1st October 2021 to 30th September 2022 from those pages. In the quantitative part content analysis technique was applied to collect data, basically text, images, and videos. In the qualitative part, Focus Group Discussion (FGD) and Key Informant Interview (KII) have been used to gather in-depth insights, perspectives, and opinions from participants. Twelve students from two groups representing various universities took part in the FGD and 5 experts attended KII from various fields (Law, Social Media expert, Psychologist, and Human Rights worker). The results indicate that, if anything does not fit their viewpoint, people on Facebook can be observed talking critically about it. On Facebook, users not only criticize others but even themselves. In the Bangladeshi environment, more comments about size, height, masculinity, and skin tone were seen. Not just girls, but also boys and transgender people have been shown to be the targets of body-shaming memes. Whereas girls were thought to be the primary victims, most of the viral content featured boys or men as opposed to girls. To get money, many individuals make memes. The most significant cause of body shaming on social media is ignorance about online etiquette. People who experience body shaming often begin to detest themselves. People circulate body-shaming-related memes to appear cool in the eyes of others, and to elicit more likes, comments, or shares on social media.

Keywords: Body Shaming, Memes, Social Media, Facebook, Victim

Introduction

People are now connecting to more social media sites on a daily basis. In 2022, 4.9 billion people were active in social media. In 2022, Facebook continued to be the most popular social networking site (Ruby, 2023). Facebook is used by individuals for communication, people communicate their ideas and beliefs to one another, and some people use it for entertainment. People share things on social media because they want the content to reflect their online persona (68%), they want to improve the lives of others (94%), they want to develop and nurture relationships (80%), they enjoy the interaction and feedback from other users (81%), and they want to spread the word about an issue they care about (84%) (Rogers, 2023).

For entertainment purposes, Facebook, like many social media platforms, has been a space where memes encompass a wide range of topics, including those that unfortunately touch on sensitive issues like body shaming. Unknowingly, many people engage in body shaming. Jokes are frequently used to break up awkward situations or just to get people to chuckle. And in doing so, there are many jokes made about the limitations of other people's bodies. Some people conduct themselves in accordance with what they think to be beauty standards. On social media, some users upload content only in the hopes of receiving likes and comments on their postings. Sometimes people go with the flow without knowing the real facts. Memes can be intimidating or harassing, even though they are a form of fun. Sometimes, these kinds of memes present society with a standard of body image. Balpreet Kaur is

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a young woman who experiences this issue because of her facial hair (Guillard, 2015). Memes can be in text, image, GIF or video format Body shaming memes means making fun of a certain person or group through memes.

Body shaming can be harmful to any person for a long time. For example, we can talk about an incident that happened in Bangladesh on 26th June 2021. Samin, a 10th-class student of the Banasree branch of Ideal School and College, died prematurely due to anorexia nervosa in Dhaka (Nipa, 2021). This is the tragic consequence of being bullied by schoolmates and teachers. Being overweight, he was constantly bullied by his classmates at school and even bullied and shamed by teachers. Such incidents are very common in Bangladesh. A survey by the Achol Foundation found that 43.89 percent of women face harassment through social media (Abedin, 2022). Laughter and jokes about skin color, weight, and height are seen as very common in the context of Bangladesh. The number of social media users is increasing in Bangladesh. According to Bangladesh Telecommunication Regulatory Commission (BTRC) the number of internet users in Bangladesh is 12.5 core (Milon, 2022).

Online harassment is also increasing. Trolling is started only if it is a little different from normal if it is not according to the set standards of society. The memes feature images of overweight men and women, or people with disabilities, and a name. 'I'm looking for (name), can you tag him?'. Some memes show fat or plus-size people naked, in absurd poses, wearing bikinis, or wearing bizarre clothing. Other memes show ladies with body hair in places that are typically shaved in popular culture, or people with facial or dental deformities (Gibbs, 2018). In other words, horrible examples of gender stereotypes are being seen through social media. And a lot of these kinds of memes are being shared within moments. Such a statement affects the mindset of a teenager and creates an eating disorder. Not just teenagers but people of any age tend to lose their self-confidence (Abate, 2020). The study has clarified the trend of body shaming in Bangladesh through memes on Facebook. As Facebook is the most used social media platform and available to all, it is a matter of concern how people are using it (Lua, 2023).

To carry out this research, three objectives are chosen to explore trends and types of body shaming through memes in Bangladesh. Besides, it explains the reasons behind body shaming through memes and which communities are mainly victims of body shaming. As well as to determine the media type that is used for body shaming and the psychological and mental effects of trolling. This paper will focus on body shaming that is done through memes on social media, especially Facebook.

Theoretical framework

To conduct this research three theories have been used: Uses and Gratification Theory, Spiral of Silence Theory, and Representation Theory. The major application of these theories in the study is to provide a well-rounded analysis of the phenomenon of body shaming through memes on social media. By employing these three theories, the study offered a holistic perspective on the issue, addressing both the individual motivations and societal influences related to body-shaming memes on social media.

Uses and Gratification Theory

This theory focuses on understanding why individuals engage with media content and how they derive gratification from it. By employing this theory, researchers can uncover the motivations behind people's interactions with memes related to body shaming on platforms like Facebook. The Uses and Gratification Hypotheses talk about how the media affects people. It discusses how people utilize the media to meet their wants and feel content when those needs are met (Vinney, 2019). This theory is related to the study topic because it will help to find out the reasons behind body shaming through memes.

Spiral of Silence

This theory provides a conceptual framework to shed light on how an individual's perception of majority opinion influences their willingness to express themselves on social media platforms. The phrase spiral of silence, first used by German political scientist Elisabeth Noelle-Neumann in 1974, refers to the dynamic process by which individuals' willingness to express their opinions publicly may change in response to the perceived majority or minority viewpoints (Drew, 2023). The spiral is started or reinforced when someone in the perceived opinion confidently expresses their support for the majority opinion. As a result, the minority starts to feel increasingly removed from a space where they feel safe expressing their opinions and starts to feel their fears (Drew, 2023).

This theory goes with the topic. People confined themselves within four walls due to bullying or shaming. People find it difficult to express themselves when they feel unwelcome or that many others are making fun of them because of their appearance.

Representation Theory

Representation theory offers a framework for analyzing how certain groups or individuals are represented and portrayed in visual content like memes. This theory aids in comprehending how these representations may support negative body image stereotypes, prejudices, or attitudes. Stuart Hall believed representation was the 'process by which members of a culture use language to produce meaning'. It is the organization of signs, which we use to understand and describe the world, into a wider set of values or ideologies. These meanings are not fixed or real; they are produced and defined by society (Hall, 1985). The theory helps analyze how these memes contribute to shaping societal attitudes and beliefs about body image, potentially influencing self-esteem, and mental health.

Literature Review

People are vulnerable to 'body shaming' on social media, which is a common occurrence of receiving hurtful feedback when our bodies don't meet the unattainable beauty standards imposed by society in the modern era (Datar, 2019). There is a lot of stuff written about online body shaming. A few related papers are presented following to complete this work.

Mehedi (2022) published an article named, 'Laws or awareness are needed to prevent body shaming'. It has been found that 69.92 percent of young women have been subjected to negative comments about their physical appearance. Kariko & Anasih (2019) showed that 70% of college students in Jakarta have faced anxiety attacks because of internet memes. This paper also shows that 47% of the respondents get relief from their anxiety attacks. The students state that they were able to cope with their mental issues through these memes. Strickland & Walden (2023) describe how body shaming may occur through (1) criticizing your appearance, (2) criticizing another's appearance in front of them (3) criticizing another's appearance without their knowledge. Bell (2016) published an article named 'The people who make body-shaming Memes'. The paper states that these types of memes are set in a situation where the victims are thought to be unattractive.

Datar (2019) shows that people who are using social network sites like Facebook, Instagram, and Pinterest are facing 'body dysmorphic disorders (BDD) and 'eating disorders. Especially young girls, women, and teenagers now believe that their body represents who they are. Social media is now setting a standard of how people should live. When people don't match with the so-called standard then they face body shaming. Puluhalawa & Husain (2021) describe that in Indonesia, 49% of social media users have been bullied/mockled/harassed in various ways. The paper shows that people from different aspects of life are the victims of body shaming. (Boerma et al., 2016) in their survey show that women self-report their health poor than men. The results also indicate that men also face body shame. The study indicates that women objectify their bodies more than men. Konica (2019) published an article about body shaming. The article highlights that women are the prime victims of body shaming in Bangladesh. The newspaper highlights the fact that men also face body shaming in the context of Bangladesh. Paglia (2022) mentions why people troll and they showed the reasons. People troll others for taking revenge, for attention seeking or due to boredom, and for personal amusement. Abedin (2022) showed that sometimes body shaming is promoted in the media just to increase the Television Rating Point (TRP). The article also mentions that fat people are taken in the role of fools, and black people in the role of villains this is how the characters are published in the media.

In the past, there have been various works on body shaming in the context of Bangladesh, but the body shaming that people of any gender can face through memes on Facebook has not been focused on. This study has found out what types of Facebook memes are used to do body shaming. Thus, this will certainly help to understand who the victim of body shaming through memes in the context of Bangladesh.

Materials and Method

This research was conducted through a mixed-method approach. The issue of body shaming in Bangladesh through Facebook memes has been highlighted in this study. Qualitative and quantitative methods have been used as the method of study. Convergent mixed methods approach had been taken to conduct this study because Convergent parallel design involves gathering and analyzing qualitative and quantitative data, comparing, or correlating the two,

and then interpreting the results (George, 2023). In qualitative research, words, images, and sounds are collected instead of numerical data. The primary goal is to investigate subjective experiences, beliefs, and attitudes, typically through observation and interviews. Comparatively, quantitative research collects numerical data and analyses it using statistical methods. Producing true, empirical data that can be measured and quantified is the aim. Making forecasts, seeing trends, and testing hypotheses are common uses for quantitative research (McLeod, 2023). Data were gathered utilizing coding sheets, key informant interviews, and focus group discussions; these techniques make it simple to get additional data quickly. Explanatory techniques have also been employed to gather data. For coding inductive and deductive approaches have been taken because deductive reasoning tries to test an existing theory, whereas inductive reasoning aims to construct a theory (Streefkerk, 2023). Memes about body images or body shaming on Facebook have been used as primary data. This research has been conducted using content analysis. By focusing on specific phrases, and concepts found in text, photos, or videos, Facebook memes have been examined. In this study, the coding sheet was used to categorize the data. In addition, to gain the appropriate result in this case content analysis has been used.

In the qualitative part, KII and FGD have been used. In part, KII participants were specialists in this related sector Law, Jatiya Kabi Kazi Nazrul Islam University, Mass Communication and Journalism Discipline, Khulna University (two specialists from this sector), Mental Health Counselor, Human Rights which has been chosen randomly. In the FGD part, twelve participants were selected from different educational institutions. Three of them were from school, from college two participants were taken, and from university seven participants were taken.

In this study, five Bangladeshi memes related Facebook pages have been taken purposively. Pages with many followers are taken as samples. From these memes related to facebook pages text, images, videos, and animated pictures were taken for analysis. Selected five Facebook pages are:

- *Weird Naaa?*
- *Attitude*
- *Bang*
- *Chumu Dibo*
- *Aj porjonto ja ja pap korechi*

The memes were collected from Facebook from 1 October 2021 to 30 September, 2022.

Basic Information of Facebook pages

Page No	Facebook Page Name	Established	Follower K ¹ ,M ²	Rules/Regulation	Total Posts	Body Shaming memes	Top Post	Types of memes
1	<i>Weird Naaa?</i>	3.12.2019	308K	No	1439	36	React-14K	Skin colour
2	<i>Attitude</i>	20.11.2019	583K	No	763	29	React-265K	Body Size
3	<i>Bang</i>	5.11.2019	1M	NO	2229	57	7.6K	Skin Colour, Body Size, Height
4	<i>Chumu Dibo</i>	11.2.2021	421K	No	2664	25	20K	Skin Colour, Body Size, Height
5.	<i>Aj porjonto ja ja pap korechi</i>	2019	283K	No	1930	129	14K	Body Size, Height

Figure 1. Facebook page's basic information

¹ K= Thousand
² M= Million

Results

The given table provides five individual Facebook pages that contain some of the posts that are specific to body shaming which are mentioned in terms of nine sections over the past year.

Page No.	Facebook page name	Number of Memes	Types of Memes	Total Word	React	Comment	Share	Victim (*B-Boy, G-Girl, Transgender, Bo-Both, M-Men, W-Women)	Language
01.	<i>Weird Naaa?</i>	36	Text Poster	363	106.3K	9.9K	2.5K	Bo(04), G(02), M(02), T(01)	Bengali English
02.	<i>Attitude</i>	28	Text Poster Video	59	739.1K	40.2K	56.8K	B(06), G(05), M(04), T(03)	Bengali English
03.	<i>Bang</i>	57	Text Poster	626	174.7K	35.3K	6.9K	Bo(07), B(05), G(09), M(04), W(01)	Bengali English
04.	<i>Chumu Dibo</i>	106	Text Poster Video Photo	1143	350.5K	49.2K	39.5K	B(12), G(12), M(03), W(03), T(03)	Bengali English
05.	<i>Aj porjonto ja ja pap korechi</i>	128	Text Poster Photo	918	142.9K	13.14K	3.53K	B(11), G(08), M(10), W(08), T(03)	Bengali English

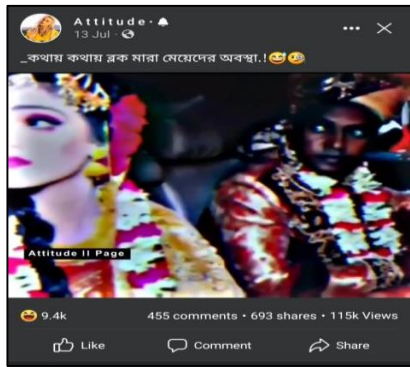
Figure 2. Data from five Facebook pages

Data from five Facebook pages

The provided table illustrates the information about five different pages on Facebook that are specific to body shaming over one year. All around, the two pages named '*Aj porjonto ja ja pap korechi*' and '*Chumu Dibo*' had the highest number of posts which is over 100 on this plot, while the other three have a minimum of just under 60. First, the page titled '*Weird Naaa?*' has 36 posts which include texts and posters that took 106.3K reactions, 9.9K comments, and 2.5K shares where men, women boys, and girls are specific sufferers.

Secondly, the following page is called '*Attitude*' which had only 28 memes over the whole time and ranked 4th across the board and took 739.1K responses which is the highest of the whole period, and placed 1st in terms of reactions, had also 40.2K comments, and 56.8K stakes. Men and both boys and girls and transgender are the main victims of these memes. Thirdly, the '*Bang*' which placed 3rd had 57 memes related to body shaming most of them containing texts that had 174.7K reactions, 35.3K comments, and 6.9K shares where both men and women, boys and girls are the targets. Finally, the page called '*Chumu Dibo*' ranked 2nd with 106 memes that relate to body shaming that contain 1143 words with posters, texts, and photos that took 350.05K responses, 49.2K comments, and 39.5K stakes however most of the victims are both boys and girls on these memes. On the other hand, '*Aj porjonto ja ja pap korechi*' placed 1st in terms of the number of 128 posts which includes texts, photos, and videos, and the posts took around 142.9K responses of these memes, 13.14K comments, and 3.53K shares where most of the sufferers are transgender, men, women and younger peoples.

Picture 2: Facebook Posts of Attitude Page



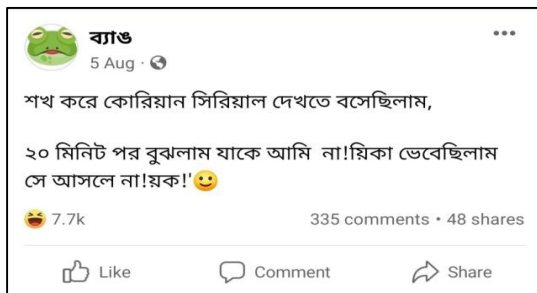
Snapshot 3; Here victim is the man (postdate 13.07.2022)



Snapshot 4; Fat Shaming is seen here (postdate 26.05.2022)

The victim’s snapshots 3 and 4 are male. And it was seen that such posts got more reach than other posts. In the first one, skin color and in the second one, body size, are compared.

Picture 3: Facebook Posts of Bang



Snapshot 5; Girls are the victims for their height (postdate5.08.2022)



Snapshot 6;Men are criticized for their look (postdate 15.05.2022)

In snapshot 5 the victim is male. Memes about male masculinity have been created through this post. Korean men are compared to women for physical appearance. Snapshot 6 shows memes about height of girls. Here short girls are compared to gas cylinders.

Picture 4: Facebook Posts of Chumu Dibo



Snapshot7; Boys are the victim here (postdate 21.07.2022)



Snapshot 8;Victims are the boys(postdate 29.07.2022)

In both snapshot 7 and 8 victims were boys and men. Both memes set up the standard of masculinity. A man without a beard is said to be unmarriageable in the 1st Mims and in the 2nd Mims boys with hair bands are compared to girls.

Picture 5: Facebook Posts of Aj porjonto ja ja pap korechi



Snapshot 9; Height has been criticized here (postdate 19.05.2022)



Snapshot 10; Victims are from both gender (postdate 9.08.2022)

Snapshots 9 and 10 are about physical appearance. In the first post the victims are from all genders and the post is about height. And the second post is about the appearance of people where a standard is required for marriage.

Focus Group Discussion (FGD) and Key Informant Interview (KII)

Trends of Body Shaming

Body shaming has entered our daily life. To feel better, many bury themselves behind technology and body shame others on social media. Most of us are vulnerable to "body shaming" on social media, which is a common phenomenon of receiving harsh criticism when our bodies don't meet the unattainable beauty standards imposed by the society of today's time. Teenagers, girls, and young women's lives continue to be profoundly shaped by social media in important ways. It has a negative impact on one's body image and perpetuates the false ideas about "how we should look" that we as individuals must primarily validate and uphold.

According to (KII P2):

"We often don't realize the body shaming we do with funny jokes. Currently, in various drama content, those who are comparatively fat are presented as if their job is to joke. Calling someone fat, calling someone black is normalized in real life, we see the reflection of such things on social media as well."

Another (FGD1 P1) mentioned that-

In the past, people would make fun of one's physical flaws in public. It has significantly decreased as of late. The online platform has, however, grown significantly. Now more than ever, people are writing and spreading posts that make fun of others.

The result revealed through (KII P4)-

On Facebook, the person gives different opinions from his ideology. If something is different from what the person wants, then he criticizes it.

Types of Body Shaming

Body shaming is seen more about skin color, body size, height, age in any medium. FGD (P,1,3,5) stated that-
Body shaming is more about issues like fat shaming, skin color.

Participants of FGD (P2, 9, 10) mentioned that-

Thin and overweight people are the subjects of body shaming.

One of the participants (FGD1 P3) commented that-

Memes about people's own bodies are frequently shared. Sometimes they tell themselves they're not attractive, they're short, and they're obese. They are body shaming themselves by disseminating such memes.

FGD (P4, 7, 8) stated that-
Many boys are compared to transgender for their physical condition.

According to FGD (P5, 6) -

Fat shaming, shaming of thinness, small breast (so many actresses like Sonam Kapoor, Deepika Padukone), body shape (Ananta Jalil for his chest), masculinity (Korean boys), facial features (same, Korean boys are often shamed for their smooth textured, beard free faces, also compared with girls. At the same time compared to South Indian bearded heroes it is shown that muscular, bearded heroes are manlier).

In our society, it is very normal to describe someone as bald if they have no hair, and fat if they are healthy. Not much importance is given to the fact that these things can reduce one's confidence level.

Reason behind body shaming through Memes

An obsession with appearance can lead to unreasonable expectations that are impossible to meet. One of the participants (KII P1) stated that-

Body shaming happens because of the lack of security on social media. Besides, things like body shaming happen due to the use of Facebook without knowing the correct use at a very young age. There is a way to earn from Facebook. Many people also create comedy memes for the purpose of income. Apart from this, body shaming happens due to the ignorance of family, government, and law agencies.

A respondent of (KII P4) commented that-

Body shaming on social media is an unhealthy process that exposes negative thoughts. Many people share such posts to become viral.

Many also associate themselves with troll culture as a way for people to withdraw from constructive discussion. Achievements are downplayed through memes rather than acknowledging the good.

Another respondent of (KII P3)-

People sit behind the device and try to remove their frustration. Such people get a perverse pleasure by body shaming others. Freud's theory works here - people get pleasure from hurting others. People share memes to reduce loneliness and relieve stress.

According to (KII P2) -

We have normalized making fun of someone's body. Body shaming related posts are often shared to make them look cool. Our education about media literacy is not clear, which makes such incidents more common.

The victims of body shaming

Another respondent of (KII P4) mentioned that-

Major victims of body shaming are girls. Girls experience body shaming from both girls and boys.

A participant of (KII P2) stated that-

Body-shaming via memes is more common among women, while men also face body-shaming, but men's content does not spread as much as women's content.

On 1st September 2022 (Islam,2022) there was a dress freedom rally in Dhaka University, where one girl was trolled for her health and another for her dress. A boy also faced trolls for his dress but was less viral than the girls.

Mental and Psychological Effects

People who face body shaming feel that they are unwanted in society; they think that society will not accept them. At one time many people take extreme-level decisions like suicide.

Another respondent of (KII P2) stated that-

When a person facing body shaming-related issues comes across such memes, he/she compares himself/herself with those issues and must go through mental trauma many times. They shut themselves off from society; this is where the spiral of silence comes into play.

Ways to stop body shaming

(KII P4) mentioned that-

One must converse with oneself. Individuals must identify their own deficiencies. A different route should be taken, and confidence should be boosted with other resources.

Another (KII P3) stated -

Body shaming can be reduced through memes by raising awareness. Campaigns can be made on how mere fun can ruin someone's life. The government can make laws to deal with such matters.

Discussion

In this study, trends and types of body shaming are given focus. It also tries to explain the reasons behind body shaming through memes and which communities are mainly victim of body shaming. And lastly, this paper tries to find out which type of medium is used for body shaming and has trolling mental and psychological effects. Kariko & Anasih (2019) in their study showed that 70% of college students in Jakarta have faced anxiety attacks for internet memes. In Bangladesh, there is no information about the percentage of people who use body shaming faces through memes on social media. However, according to Abedin (2022), 69.92 percent of young women were subjected to negative comments about their physical appearance. People can be seen talking negatively on Facebook if it is not according to their ideology. This can cause the effects of Spiral of Silence where victims can confine themselves within four walls due to the fear of rejection. Apart from criticizing others, people also criticize themselves on Facebook. Like I'm not beautiful, I'm black - such memes are shared. Strickland & Walden (2023) also described in the study how body shaming may occur through (1) criticizing your own appearance, (2) criticizing another's appearance in front of them (3) criticizing another's appearance without their knowledge.

More jokes about skin tone, size, height, and masculinity were seen in the setting of Bangladesh in this study. According to Mehedi (2022) of fat bodies, less hair, and skin color, people face body shaming in the context of Bangladesh. In the case of body shaming, sexual content has also been found in the study. Tempesta (2017) showed in the study a body-shaming meme where a man body-shamed a plus-sized model by including her photo in a meme and captioning it. Girls that I like versus Girls that like me. According to the findings from the qualitative study, body shaming occurs in Bangladesh through Facebook memes. Many people share memes on social media with the mindset of going viral. An analogy can be found in a Bell (2016) article where it is said that Meme creators get more encouragement when people share more of this type of content, even if it is to get some extra likes. Social media is currently being used as a means of earning money. This was highlighted in a Bell (2016) report which is related to Uses and Gratification Theory where people use media according to their needs.

Body shaming has many effects on people's mental health. Suffering from an inferiority complex to extreme levels, people commit suicide. Various unwritten standards are set by the media. This study found many memes that set standards indirectly. Some memes have been seen where the height standard for girls is set at 5.4'. A girl whose height is less than this has been compared to a gas cylinder. Those who are overweight are trying to get a slim figure by dieting. They suffer from an inferiority complex when they cannot meet the standard, and this affects their personal life as well as their family and social life. If they cannot stand up to society's standards, they feel that society does not accept them. Then they shut themselves down, and their normal performance diminishes which is related to Spiral of Silence Theory. Datar (2019) published a piece about body image and body shaming. It demonstrates that users of social networking sites like Facebook, Instagram, and Pinterest struggle with 'eating disorders' and 'body dysmorphic disorders' (BDD) Young girls, women, and teenagers today think that their bodies reflect who they are. Social media is currently defining the ideal way for individuals to live. People who don't fit the "standard" are subjected to body shaming. Women self-report their health as being worse than males do, according to a survey by Strickland & Walden (2016). According to research by Kariko & Anasih (2019), 70% of Jakarta's college students had experienced panic episodes due to internet memes.

This study shows that individual awareness is very important to stop body shaming on Facebook through memes. Body shaming can be prevented only if every person is aware of the mental problems caused by body shaming and is aware of their own place. It can be stopped by campaigning on the body shaming that can happen through memes. If the government and various law agencies help in making laws and implementing them, then this mental disorder can be eliminated very easily. Family plays an important role in the ideology of man, moral education from childhood helps to distance oneself from such activities. Media and journalists can play an important role in this regard by creating awareness reports. Body shaming can be prevented through memes if everyone puts themselves in the victim's place and thinks with empathy. Safer Internet use and restrictions on social media use up to age can also reduce this trend of body shaming.

Conclusion

This study aims to find out trends and types of body shaming that are done through Facebook memes in Bangladesh, the victims of it, their effects, and why people engage themselves in body shaming through memes. In the theoretical framework, three theories have been used for the relevancy of the study. Here Uses and Gratification Theory, Spiral of Silence Theory and Representation theories are the base of the study. Use and Gratification theory is taken because people are using social media according to their needs to satisfy themselves. And Spiral of Silence

theory helps to show how these memes affect people. Besides Representation theory helps to portray the victims. This study indicates that people share body shaming-related memes to make them cool in front of others, and to get more reactions, comments, or shares on social media in order to go viral. Many people troll others just for fun without understanding the aftereffects of body shaming. This study finds the lack of internet literacy and lack of personal awareness as the reasons behind such social problems. Even the topic of earning money through Facebook can act as a reason to share or create such memes. Body size, height, skin color, and masculinity memes are more noticeable. Not just girls, boys, and even transgender have been found to be victims of body shaming through memes. Girls were considered the main victims, but most of the viral content was about boys or men in comparison with girls. Not only body shaming by others but there was also content about body shaming that was shared by the victims themselves. Due to body shaming through memes, things like losing confidence, going into depression, and suffering from an inferiority complex have been seen due to body shaming through memes. The study findings revealed that it is possible to stop this body shaming trend on Facebook through individual awareness, and adequate education about internet usage and laws. By addressing the relationship between body shaming and memes, we can help create a more welcoming and secure online space for everyone, encouraging respect, empathy, and responsible content creation.

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Conflict of Interest

The authors declare no conflict of interest.

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MEASUREMENT OF MILITANCY NEWS COVERAGE IN THE NATIONAL DAILIES OF BANGLADESH

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Abstract

The purpose of this study is to measure the militancy news coverage in the national dailies of Bangladesh. Content analysis method is used to get information. The purposive sampling technique is used in this study where agenda setting theory is applied. A total of five national dailies are taken as samples in this study. Those are The Daily Prothom Alo, The Daily Star, The Daily Ittefaq, The Daily Kaler Kantbo, and The Daily Janakantha. Publications from 1st January 2019 to 31st December 2019 of these five dailies are included in this study. All sorts of militancy-related news are counted here and analyzed using Microsoft Excel. This study unearths that five dailies publish about 1,62,000 pieces of news in a year. Among them, the number of militancy related news is 377 which is far fewer compared to other news. Here only 0.23% of the news is regarding militancy. Out of five dailies, The Daily Janakantha publishes the highest news regarding this issue. On the other hand, the Daily Star has the lowest coverage. Daily Prothom Alo, Daily Ittefaq and Daily Kalerkantbo secure second, third and fourth position respectively among the five dailies on publishing militancy news in a year. Here most of the news is one-columned. Again, almost one-third of the news is without photos. Besides, the highest numbers of news are published in the inner pages. Here November has the highest coverage and August has the lowest. The study also explores that most of the militancy-related stories are presented fairly, systematically, and well-balanced. The study recommends that the daily newspapers of Bangladesh should increase the publication of militancy news in a constructive manner with more sincerity.

Keywords: Militancy, News, Newspaper, Coverage, Bangladesh.

Introduction

Militancy refers to using violence or aggressiveness, usually to support a cause. It can be defined as the quality or state of being militant. Militancy is also defined as the use of violent or hostile methods to support a political or social reason (Anwuri and Olanrewaju, 2020). It is one of the most talkative issues in this present era. It is a matter of concern for the peace-loving people around the world. Militants are active in different countries with different ideologies, names, and systems (Qaim, 2018).

One of the serious matters in Bangladesh is militancy. When Afghan war was started in 1980s Bangladesh started becoming victim to militancy. Around 3000 people joined at that war from Bangladesh. During this period some people met Usama Bin Laden and they started militancy operation in Bangladesh after returning Bangladesh (Manik, 2005).

A lot of militant groups are active in Bangladesh in different names. Jamaat-ul-Mujahideen Bangladesh (JMB), Ansarullah Bangla Team (ABT), Harkat-ul-jihad-al islami bangladesh (Huji-B), Islamic State (IS), Ansar ul Islam, Allar Dol, Hizb ut-Tahrir, Al-Qaeda, Bangladesh, Shahadat E Alhikma, Islamic Solidarity Front, Tamiruddin Bangladesh, Shahadat E Nabuyah, Towhidi Trust, Al Harat Al Islamia, Muslim Millat, Al Khidmat hijbul Mahdi, Al Markajul Al Islami, Shahaba Parisahad, Katel Bahini, Kalema Jamat, Forkan Movement, World Islamic Front, Sariah

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council, Bangladesh Anti-Terrorist Party, Zaid Al Qaeda are among them (“*Bangladesher Joto*,” 2019). Most of the militants are from 20-30 years old and students by profession (Riaz, 2008).

A huge number of students are missing now, and nobody knows their present condition, not even the members of their family. Law enforcers suspect that those students have joined any of the militant groups (Sultan, 2022).

Media are covering these incidents from different angles in recent days. The study is conducted to explore some objectives. First of all, its aim is to measure the quantity of militancy news coverage in the national dailies of Bangladesh. Secondly it tries to identify the style of militancy news coverage in the dailies of Bangladesh and to unfold the nature of presentation of militancy news published in the dailies of Bangladesh.

Theoretical framework

This study is closely related to agenda-setting theory. This theory suggests that the media plays a significant role in influencing which topics or issues are considered important by the public (McCombs and Reynolds, 2002). Maxwell McCombs and Donald Shaw proposed this theory in 1972. This theory highlights the role of media not in telling people what to think, but in influencing what to think about (Entman, 2007).

This theory operates on three levels:

Media Agenda: This refers to the issues and topics that media outlets choose to cover and present to their audiences. Through their editorial decisions, media outlets determine what information is accessible to the public.

Public Agenda: This is the set of issues that the public considers significant. It is shaped, to a great extent, by the media agenda. The prominence and frequency of media coverage influence which topics the public deems important.

Agenda-setting theory doesn't assert that media dictate people's opinions, but it underscores the media's power to shape the emphasis and priority attached to issues. The media's role is particularly crucial when individuals lack firsthand experience or direct information about an issue.

Policy agenda: There are lots of issues in media which are introduced by the policy maker of a society. Policy maker's decisions, speech, opinion regarding any issues is also covered by media (McCombs et al., 1972).

As media publish the militancy related stories depending on their own style, agenda setting theory is most appropriate in this study.

Literature Review

To investigate the militant news coverage in newspapers, some studies were conducted in different countries in different angles. A study was conducted in Nigeria to find out the overall quality of militancy news. Here Onyekosor (2015) explored that having a few flaws, fair and balanced reporting is covered in Niger Delta. It also found that the newspapers give low importance to reporting on militancy in this area and do not approve of militancy as an important option for settling down the problems in Niger Delta.

A study was published from India to investigate into the frame of the militancy related news. Kaul and Saxena (2022) stated that the Media to publish the fight in the nationalist frame, reporting basically on how authority is confronting militancy. They also said reports seemed concerned with detailing diseases, actions of stone palters and the administration's move to regulate the militancy, but sources quoted in most news were from the authority.

In another study Ebim (2017) said that the range to which the speech of media tagging has affected the overall discourse of rebel activities as published in the Nigerian newspaper. The study also said that tagging in the media is critical and can cause alienation. The study also reveals that speech use and the selections made either capture or worsen a situation, particularly in a crisis or disordered area.

In Malaysia a study was conducted regarding Islam and terrorism entitled. Here Yusof et al. (2013) said that after the Twin Tower attack international media began publishing news which made link between Islam and Terrorism. Another study by Powell (2018) entitled Framing Islam/Creating Fear: An Analysis of U.S. Media Coverage of Terrorism from 2011–2016 says Muslim terrorists are framed in on way and non-Muslim are another way.

To investigate into the placement of militancy news a study was conducted in Nigeria. In that study Amenaghawon (2018) said that most of the militant stories are placed on the inside pages, instead of the cover or

back pages. It also says that the media absorbed on instant incidences in the Niger Delta, rather than publishing detailed information.

Regarding war and terrorism, some studies have been carried out. Hussain and Munawar (2017) explored Pakistani media are more vulnerable to conflict journalism framing than peace journalism framing in publishing information. Regarding the position of news stories, they stated that most of the information becomes published at the front page.

Based on Indian conflict, a study was published in 2017. Kumari and Kohli (2017) said Daily Excelsior, a Jammu centric highly circulated newspaper, narrates pro-state news. On the other hand, Greater Kashmir narrates pro-separatist news.

On Gaza crisis Firdous (2009) conducted a study on the contents of CNN and Al Jazeera. He found that these two media frame the incident in Gaza from two different angles.

Another study was conducted to unfold the sources of the conflict's news in Nigeria. Here Gever et al. (2018) said the privately owned media used sources from sociocultural and political groups, on the other hand government-owned media used mainly sources from the government in the news. Besides the economic frame was used by the private media and the conflict frame was promoted by the government-owned media.

To know the media influence on people Evans (2010) conducted a study. He said that the media affects policymakers both indirectly and indirectly. Indirectly is its influence on public opinion, and directly, is making perception of 'reality'.

Here we found that the newspapers give low importance to reporting on militancy. Muslim terrorists are framed in one way and non-Muslim are another way. Most of the militant stories are placed on the inside pages, instead of the cover or back pages. We also found different media frame the same incident in different angles. It is also found that private and public media take two different types of sources for militancy related news.

Numerous studies were conducted on militancy in different countries, but no study was conducted in Bangladesh on this issue. We think this study will contribute to know the militancy news coverage in Bangladesh.

Method and Materials

The Content Analysis Method has been administered in this research. A coding sheet was made to collect information. The data was collected from dailies and those were collated and analyzed in Microsoft Excel.

Population

All daily newspapers of Bangladesh are the sample of this study. These dailies are national and published from the capital of Bangladesh-Dhaka. There are 254 national dailies published from Dhaka ("Bangladesh Newspapers," 2023). All of these are the population of this study.

Sample

Purposive sampling technique is used in this study. A total of five national dailies are taken as samples in this study. Those are The Daily *Prothom Alo*, The Daily Star, The Daily *Ittefaq*, The Daily *Kaler Kantbo*, and The Daily *Janakantha*. Publications from 1st January 2019 to 31st December 2019 of these five dailies are included in this study. About 1800 issues of these five national dailies are used here as the sample.

Results

The key findings of the study are described here one by one.

Total news regarding militancy

Figure-1 shows the total number of militancy related news covered in five national dailies. These dailies covered 377 militancy related news in one year. About 1,62,000 pieces of news were published in five dailies in a year. Among them only 377 pieces were regarding militancy which is only 0.23% compared to other segments of news. The ratio of covering news of the five dailies was not the same. The Daily *Janakantha* published the highest news regarding this issue and the Daily Star published least news on this issue.

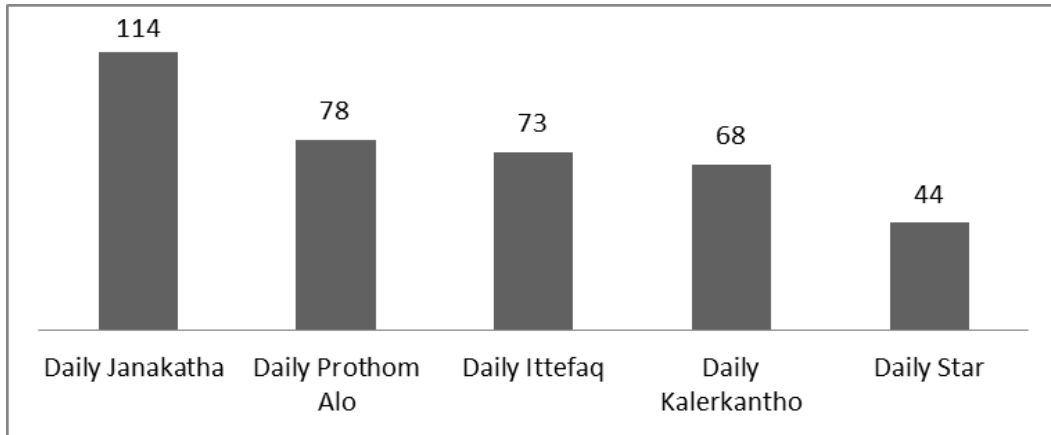


Figure 1. Numbers of news covered in the 5 dailies.

Column wise news coverage

All news of the five dailies was not published in the same way, same column, and same manner. There are varieties in presentation, especially in column. All news was between one column to five columns. Out of 377 pieces of news, the number of single columned news is 161, double columned 143, triple columned 42, four columned 16 and 15 news were five columned. There are also 12 special stories among 377 pieces of news.

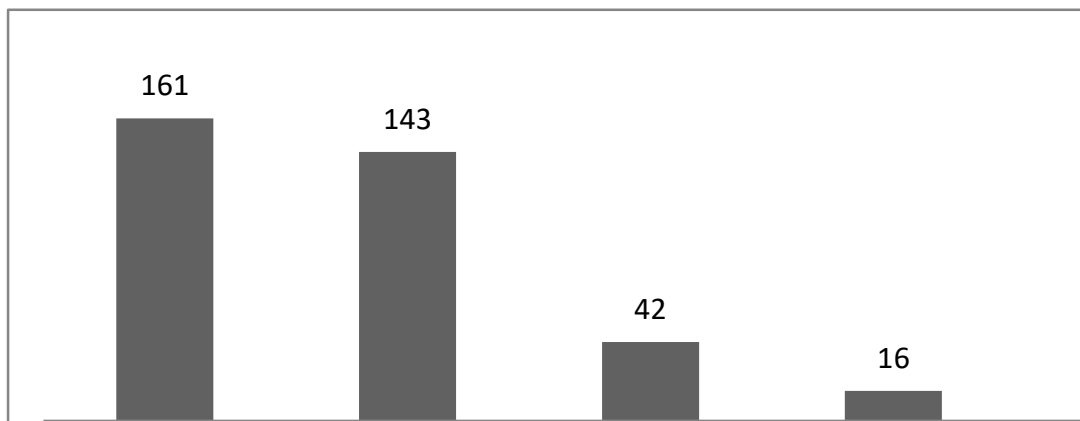


Figure 2. News treatment by positioning size.

Total Editorials and post editorials

Every newspaper covers different types of editorials. Basically, these editorials are written by the prominent personalities of the relevant field. Sociologists, academicians, human rights activists, veteran political person, prominent journalists, members of the editorial board of a house as well as victims pass their constructive opinion regarding militancy. Their writings are displayed with great importance in the newspapers. In the five dailies a total of 52 editorials were published in different times.

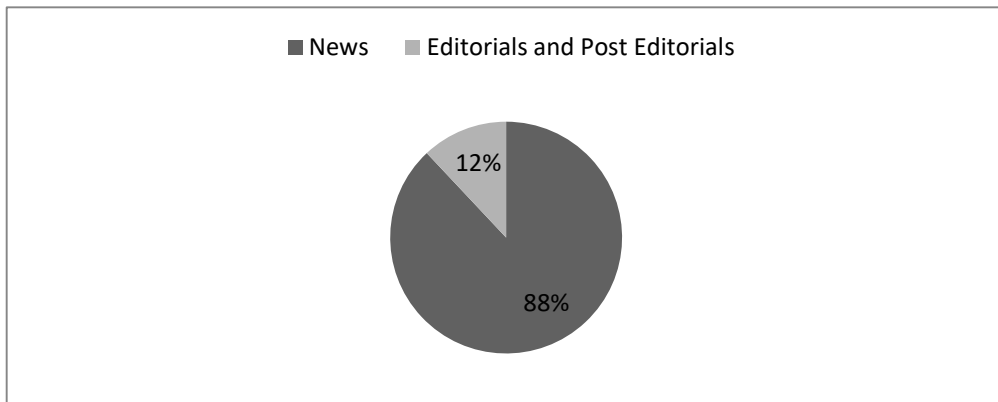


Figure 3. Comparative presentation between news and post editorials.

Photo used in the news

A photo is more powerful than thousands of words. It can enhance the attraction of news easily. This news also covers photos according to the needs. Relevant photos were used in 139 (36.88%) news and the rest 238 pieces of news (63.12%) were without photo. Among the photos some were colored, and some were not colored.

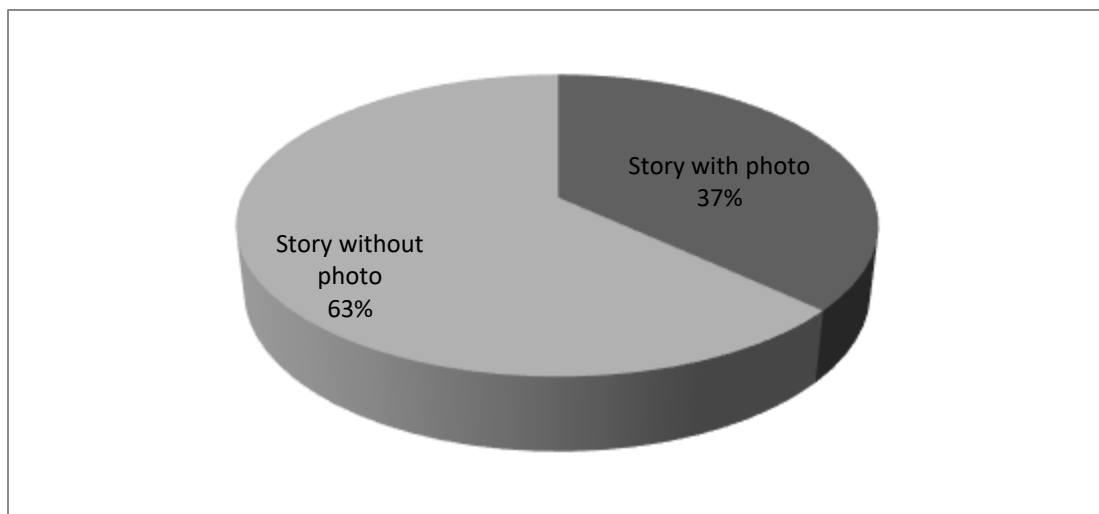


Figure 4. Photograph covering in the news story.

Position of the news

The position of the news denotes the importance of the story. All news was not published on the same page. A total of 377 pieces of news have been covered in different pages of the newspapers. Obviously the first page has another priority. In the first page, 144 (38.20%) news has been published. There is also extra priority of the main news which is known as lead story or lead news. Lead news is the most important news of a newspaper. Among 144 news, 17 news (11.81%) became lead story. In the last page 66 pieces of news were published and the rest 167 pieces of news were published in the inner pages.

Table 1. News treatment by positioning page

Position	Number	Percentage
First Pages	144	38.2%
Second Page	66	17.51%
Inner Pages	167	44.30%

Monthly news coverage of 5 dailies

Figure 5 shows the monthly coverage of militancy related news in the five dailies. Here November has the highest coverage of militancy news. Out of 377 pieces of news 59 (15.64%) news regarding militancy was published in this month. March has the second top coverage. In March 2019, 47 pieces of news were published. But August has the lowest coverage. Only 5.30% of news of militancy was published in this month. Again, June has the second lowest coverage.

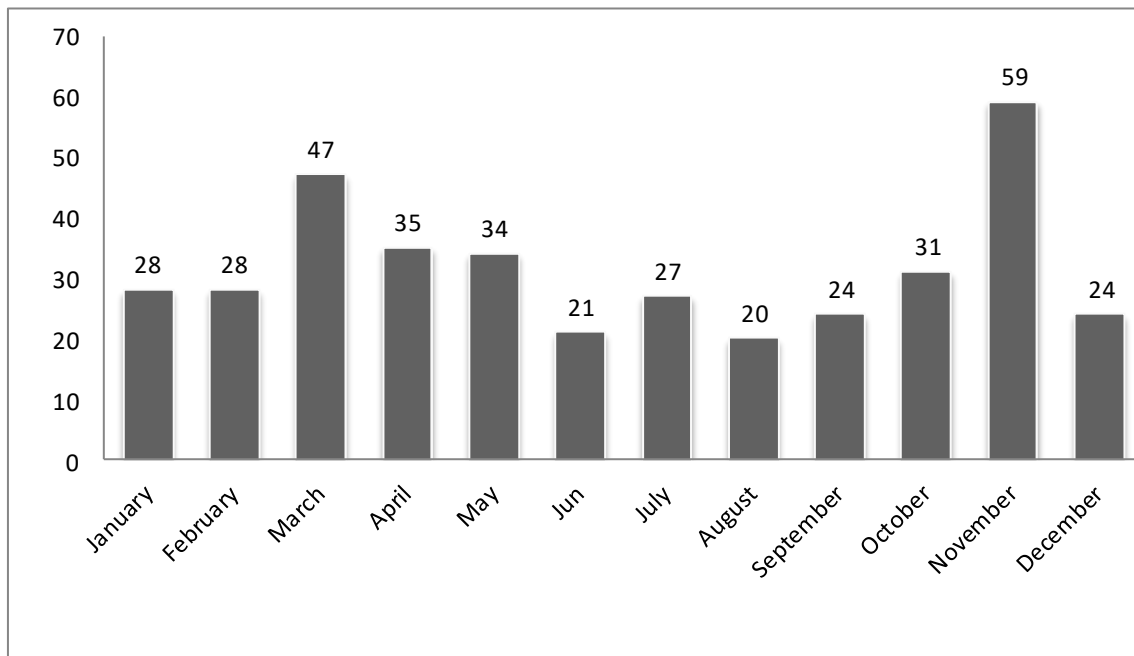


Figure 5. Militancy news presentation in the newspapers.

Sources of the news

Most of the news stories have proper sources. Victims, accused, law enforcers, government authority, non-government authority, specialists, mass people all have been used as sources. Despite these named sources, some stories used some unnamed sources.

Nature of the news

Different types of militancy news were published in these five dailies. Those are militant arrest, attack or death anniversary, case news, drive of law enforcers, militant attack, missing from home, leaving country, conference/seminar against militancy, human chain against terrorism, speech of PM against terrorism and militancy, court verdict, opinion of specialist etc. Hard, soft, special, follow up, interpretative, investigative news also covered in the five dailies.

Mostly used words in the news

Militancy, active militant, suicide, female, religion, JMB, susceptible, terrorism, extremist, court, police, arrest, remand, interrogation, capital punishment, imprisonment, chaotic, IS, explosive, terrorist, jihadi books these are mostly used words in militancy related 377 stories of these five dailies.

Coverage of the Daily *Prothom Alo*

Daily *Prothom Alo* published 78 militancy related news in the whole year. Among the five newspapers Daily *Prothom Alo*'s position is second and 21 percent. Among the news, 23 were published on the first page, 15 pieces of news was on the last page and 40 was published on the inner pages. There were 29 pictures with the news and the rest 49 news was without picture. There were 3 special stories and 12 editorials, and 2 lead stories based on militancy. The treatment of the news is not same. Here 35 pieces of news got a single column, 28 double columns, 9 three columns and 6 pieces of news get four columns treatment. But no news of Daily *Prothom Alo* regarding militancy got five columns.

Coverage of the Daily Star

Daily star is the top circulated English newspaper in Bangladesh. This newspaper covered 44 news articles on militancy in a year and it had the least coverage among the five dailies. All news was published on different pages. Daily Star published 23 pieces of news on the first page where 15 were published in last page and the rest 6 pieces of news were published in inner page. Lucrative photos with relevant captions were published with 13 pieces of news and the rest 31 news were without photo. Among 44 news stories 21 were single columned, 17 were double columned and 6 were triple columned. There was no news of four or five columns. There were also 3 special stories and two lead stories regarding militancy in a year.

Coverage of the Daily *Kaler Kantho*

The Daily *Kaler Kantho* has emphasized publishing militancy news. It published a total of 68 news reports on this issue in a year and captured 4th position among the five dailies. This daily covered 29 pieces of news in the first page and among them 7 were lead news. On the other hand, 20 in the last page and the rest 19 pieces of news were published in the inner pages. Among 68 news articles 25 were photo based while 43 pieces of news did not have any photo. Out of 68 pieces of news 4 was special story. We also found that there were 26 single columns and 29 pieces of double columned news on this issue in a year. There were also 8 pieces of third columned news and 3 pieces of fourth columned news. This newspaper also published 2 five columned news with great importance.

Coverage of the Daily *Janakantha*

It has the highest coverage of militancy news among these five dailies. On this issue the Daily *Janakantha* published 114 pieces of news. Among 114 pieces of news, relevant photos were attached in 43 pieces of news and the rest 71 pieces of news were without photo. In the first page 49 pieces of news were published and among them two became lead stories. In the back page 47 pieces of news were published while 18 were published in the inner page. It means Daily *Janakantha* emphasizes militancy news more. For this reason, it covered this issue on the first page more than any other daily newspaper. All news was in a different style and format. For this reason, we can see covering the story in different forms of column. There are 38 news articles which were one column. The Daily *Janakantha* published double columned news more and the number of news was 49. There were also some three and four column news, and the numbers were 8 and 6 respectively. It also covered 13 five columned news which is the highest among the five dailies.

Coverage of the Daily *Ittefaq*

The Daily *Ittefaq* is one of the oldest and prominent newspapers in Bangladesh. It also published militancy related news with great importance. It published 73 pieces of news on this issue and the position among these five dailies is third. Among the 73 news articles 29 had photos and captions and the others 44 pieces of news did not have any photos. These were covered on different pages. With great importance 25 pieces of news were published in the first page but there were no lead story from these. It covered 11 news articles on the last page and the greatest number of

news was published in the inner pages and its number was 37. There is also variation of treatment in the column. There were 41 single columned news, 20 double columned, 11 triple columned and only one fourth columned news regarding this event but there is no fifth column news on militancy in the Daily *Ittefaq* in that year.

Discussion

This study observes that most of the militancy related stories are presented fairly, systematically, and well balanced. Onyekosor (2015) found the similar scenario in the newspapers of Niger Delta. He said that Nigerian newspapers published militancy news in a fair, balanced, and responsible manner in the Niger Delta despite some flaws.

Here victims, accused, law enforcers, government authority, non-government authority, specialists, mass people are used as the sources. On the other hand, Gever et al. (2019) found the similar results in her study conducted in India occupied Kashmir where both government and non-government sources were used in the news.

This study also unearths that out of 377 pieces of news, 144 pieces of news (38.20%) were published in the first page and 66 (17.51%) were published in the last page and the rest 167 pieces of news (44.30%) were published in the inner pages. But the study Amenaghawon (2018) found different results in his study. He said that the Nigerian newspapers published most of the militant news on the inside pages, instead of the cover or back pages.

The current study also found that all five-newspaper published news giving lots of suggestions, tips, and techniques to prevent militancy in Bangladesh. Kaul and Saxena (2022) showed similar results. They said that media organizations have a habit to present the battle in nationalist frame. But we see a different scenario in Jammu Kashmir. The Jammu based Daily *Excelsior* reports pro-state stories and Kashmir based Greater Kashmir reports pro-separatist news against the state. Again, Hussain and Munawar (2017) said Pakistani media are prone more towards war journalism framing than peace journalism framing.

Most militancy stories are about militant arrest, attack or death anniversary, drive of law enforcers, militant attack, conference/seminar against militancy, human chain against terrorism, etc. where Kaul and Saxena (2022) found almost same thing in their study. Kashmir newspaper covers deaths connected with militancy, movements of stone palters and government's struggles to control the militancy.

Conclusion

The aim of this study was to explore the coverage of militancy news in the national dailies of Bangladesh. Finally, the study satisfies unearthing the militant news coverage investigating five prominent dailies of Bangladesh. This study finds a total of 377 militancy related news in the year of 2019. Among them the Daily *Janakantha* published the highest news, and the Daily *Star* published the least news on this issue. During 2019 militancy news was published most in the month of November but in August there was the least coverage.

We know, media are the fourth state of a nation. It could contribute to prevent militancy of a nation by different means. Militancy news coverage is very poor compared to other news. As militancy has become one of the biggest threats of Bangladesh, newspaper should increase militancy news coverage in a constructive way. Anyone can be victim to militancy if the news was not written properly as militancy is a sensitive issue. So, newspapers should be more alert during covering militancy. Youths are being targeted for militancy. Newspaper can publish different anti-militancy news to save the youth of Bangladesh from militancy. Finally, the findings from this research will contribute to future studies. We hope conducting more research and adopting proper measures on militancy news coverage will contribute to prevent militancy from Bangladesh.

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Conflict of Interest

The authors declare no conflict of interest.

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CITIZENS' ATTITUDE AND PERCEPTION TOWARD ROOFTOP GARDENING IN CITY AREA

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Abstract

Bangladesh, well known for its abundant green resources, has experienced rapid population growth and uncontrolled infrastructural development in cities, resulting in a loss of urban green spaces and environmental problem. Rooftop gardening has been proposed as a sustainable and affordable solution to mitigate these problems and create green spaces of cities in Bangladesh. This study assesses the social acceptance of rooftop gardens among city dwellers in Bangladesh. A descriptive quantitative study was conducted using convenient sampling methods. A total of 475 participants, including half of them male and another half female, were surveyed through an online Google form questionnaire in eight divisional cities and district areas across Bangladesh. Data were analyzed using SPSS and MS Excel, including descriptive statistics such as percentage distribution and chi-square test and inferential statistics such as correlation coefficient. The study found that approximately three quarter of respondents had positive attitude scores towards rooftop gardening, while almost a third had negative attitude scores indicating unwillingness. In terms of behavioral perceptions, nearly three quarter of respondents had positive scores, while almost a third had negative scores. The study also found associations between attitude, behavior, and socio-demographic factors such as sex ($p < 0.05$). Furthermore, a positive linear association was observed between respondents' attitudes and behavioral perceptions towards rooftop gardening, as determined by the correlation coefficient. However, the study revealed that one third of respondents still had negative attitudes and just over a third had negative behavioral perceptions towards rooftop gardening. Therefore, effective policy measures and joint initiatives from the government and city municipalities are necessary to enhance the acceptance of rooftop gardens among the respondents.

Keywords: Rooftop Garden, Greening strategy, Green city, Attitude, Behavioral perception

Introduction

Rapid urbanization and high population growth, creating carbon-neutral communities is one of the biggest issues facing urban residents globally (UN-HABITAT, 2022). At present, 55 percentages of the world's population are living in urban areas and the portion is expected to increase to 68 percentages by 2050 (UN, 2018). Meanwhile, worldwide urbanization has been bringing various challenges, for instance, increased environmental pollution; excessive demand for food; lack of green space for physical exercise and relaxation; inefficient household waste management; unexpected fluctuation of urban calamities; which forced city dwellers to endure additional mental stress along with city life pressure (Al-Zu bi & Mansour, 2017).

According to Chowdhury et al. (2020) and Safayet et al., (2017) Bangladesh is recognized as a survivor of the adverse effects of climate change as one of the vulnerable country in the world from the last couple of decades. Still now most of the cities in Bangladesh is characterized by highly rated urbanization which raised three major groups of problem for sustainable cities like; excessive food demand, the depletion of natural resources and atmospheric pollution (Siddiqy, 2017). Throughout today's rapidly growing population, the country's leading development issues included poverty alleviation, sustainable development and environmental management (Hossain et al., 2019; Islam et al., 2019). Cities in Bangladesh have resulted in a major loss of urban green space in the urban landscape, which is

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continuously changing for the urban environment in addition to rapid population increase and unplanned infrastructure development (Angelo, 2019). It consequently led to significant environmental issues such increased urban heat and a high demand for natural resources, particularly energy, water, and food (Rahman & Zhang, 2018).

Due to this reason its demand to create sustainable eco-city that progressively required the abatement of pollution, in addition to provide enough food and green space, sound environment, and basic services for all urban residents now and in the future will be a great challenge for the next generation (Roy et al., 2017). Actually, to create this type of green space of cities in Bangladesh rooftop gardening is a sustainable and affordable solution to mitigate many of the environmental problems and to make sustainable Eco- cities. Rooftop garden is strongly associated with achieving Sustainable Development Goal 11 (SDG 11), which aims to create cities comprehensive, safe, resilient and sustainable (Siddiqy, 2017; Rahman & Zhang, 2018).

Moreover, rooftop garden is an eco-friendly strategy for sustainable city development which create a great landscape in urban area and balance of the ecology cycle .Whereas Rooftop garden is one of the most important factors for Eco- city development, which can contribute towards good quality of life and sound environment (Hossain et al., 2019). Rooftop garden can play crucial role in conserving biodiversity into dense urban environment which supports urban agriculture both directly and indirectly (Bon et al., 2010). Rooftop garden ensured urban agriculture which generated the issue of urban food security (Chowdhury et al., 2020; Kalantari et al., 2016). In addition, RTG serve as a useful source of employment for both the low income people and urban poor by the production of food locally. These benefits are especially important in developing countries like Bangladesh where agriculture is a big part of culture (Wei & Jones, 2022). Compared to all other mega cities around the world where the concept of rooftop garden is highly considered as a way of sustainable development of city, in Bangladesh it is a less focused issue and a little initiative is observed in this regard. Moreover, some researchers in Bangladesh have examined the economic and recreational aspects of rooftop garden as well as people perception in designing and planning of green spaces where RTG contribution to sustainable eco- city is ignored .In this context, this study plans to fill in the gaps by analyzing residents 'social acceptance' level about the rooftop garden concepts and considered it is an innovative strategy with regards to personal, social, economic, environmental and sustainability implications for sustainable development of green cities in Bangladesh.

Materials and Method

Study Area

The study had collected the data from 8 divisional cities (Barisal, Chittagong, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpure and Sylhet) including 39 districts cities(Bagerhat, Barisal, Brahmanbaria, Chapainawabganj, Chittagong, Chuadanga, Dhaka, Dinajpur, Faridpur, Gaibandha, Gazipur, Gopalganj, Jamalpure, Jashore, Jhenaidah, Khulna, Kishoreganj, Kurigram, Kushtia, Magura, Manikganj, Meherpur, Mymensingh, Naogaon, Narail, Narayangonj, Nator, Nilphamari, Pabna, Panchagarh, Pirojpur, Rajbari, Rajshahi, Rangpur, Sariatpur, Satkhira, Tangail, Thakurgaon, Vhola) under this 8 divisional cities of Bangladesh.

Study Design

This study is descriptive in nature. This research method is designed to provide a picture of a situation as it naturally happens (Siedlecki, 2020). Quantitative and cross-sectional study method used to design the research paper. This study elicited the information of the respondents about their attitude, behavioral perception and challenges which has been measured in using statistical tools. Attitude and perception categorized applied weighted average mean and made categories like, 0=unwillingness, 1=willingness toward rooftop gardening.

Data Collection Tool and Technique

In this study, both primary data and secondary data collection method has been applied for collecting data. In order to collect the primary data from the respondents, a well-structured questionnaire was used which had close ended questions. All these were prearranged before collecting the data from online with Google form. For secondary data this study used different research website, articles, books, newspapers, report used through the literature reviews and find out the gap of the study.

Sampling procedures and Sample Size Determination

The methodology of the study focused on quantitative investigations and thus snow ball sampling has been followed for the survey part of the study. The inherent reason for choosing snow ball sampling was that outstanding way of attaining preliminary information regarding some research questions quickly and reasonably through online. This study targeted the participants whom live in city area in Bangladesh. The whole data was collected based on the study objectives and the total sample size 475. This study area has unknown population that's why the researcher applying Cochran's Formula given by (& Cochran, 1963) to get required sample size with 95% confidence level and 4.5% margin of error.

Here the formula:

$$n = \frac{Z^2 pq}{e^2}$$
$$n = \frac{(1.96)^2 * 0.5 * 0.5}{(0.045)^2}$$
$$n = 474.27$$
$$n = 475$$

Processing of Data

The required data for the study has been collected from respondents in the mentioned study area. To address ambiguities, illegal codes have been removed, logical inconsistencies have been reduced, outliers have been eliminated, and improbabilities have been dropped. Essential tools such as SPSS and MS Excel were used to process the data.

Analysis and Interpretation of Data

In this study data has been analyzed using a statistical package for social science (SPSS) versions 20 to enhance the accuracy of the result. This study has used 5.00 point scale to find out citizen attitude and behavioral perception about rooftop garden. Data has been analyzed by using descriptive statistics such as percentage distribution and inferential statistics such as chi-square, and co-relation.

Results

Figure 1 represents the findings of this study, data was collected from three distinct respondent groups. Notably, a majority of the total respondents were found to have experience with Rooftop Gardening.

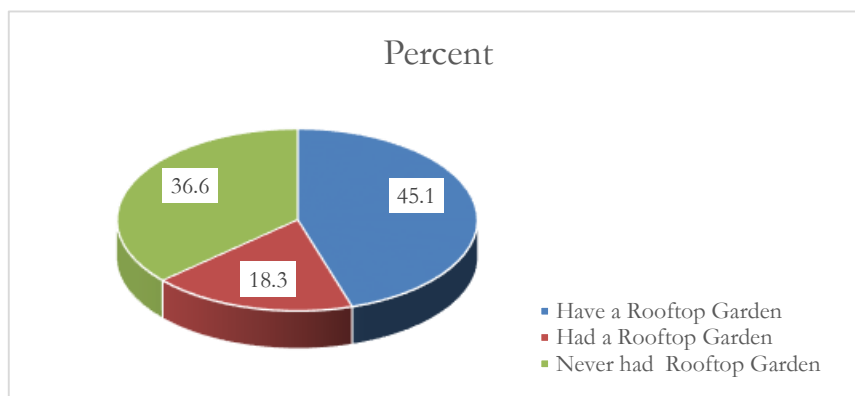


Figure 1. Type of respondents (Source: Field survey, 2021)

Specifically, almost one third percent of the respondents reported having no prior experience with rooftop gardening, while the remaining nearly fifth indicated that they had past experience in this area. These findings suggest that a significant portion of the study participants had engaged in rooftop gardening, highlighting the relevance of this practice within the surveyed population.

Table 1. Socio-economic Characteristics of the Respondents

Variable	Category	Frequency	Percentage (%)
Sex	Male	245	51.6
	Female	230	48.4
	Total	475	100
Age	Youth (18-35)	394	82.9
	Adult (36-65)	81	17.1
	Total	475	100
Family Types	Nuclear Family	264	55.6
	Extended Family	211	44.4
	Total	475	100
Type of Residence	Owner	289	60.8
	Renter	186	39.2
	Total	475	100
Level of Education	Primary	16	3.4
	Secondary	13	2.7
	Higher Secondary	37	7.8
	Undergraduate	283	59.6
	Postgraduate (Masters/Ph.D.)	126	26.5
	Total	475	100
Primary Occupation	Service	83	17.5
	Business	58	12.2
	Unemployed	334	70.3
	Total	475	100

(Source: Field survey, 2021)

Table 1 presents findings regarding the personal and socio-economic characteristics of the respondents. Firstly, it's notable that just over half of the respondents were males, while nearly half were females. When considering age groups, a significant portion fell into the youth category (aged 18 to 35), while nearly fifth were adults (36 to 65). In terms of family structure, almost half of the respondents lived in nuclear families, while just under half of the respondents lived in extended families. Regarding housing, the majority of respondents were house owners, while almost a third were renters. Looking at educational qualifications, most respondents had completed their high school education, followed by those with bachelor's degrees, while smaller percentages had completed primary, secondary, and higher secondary education (3.4%, 2.7%, and 7.8% respectively). Only a quarter of respondents had post-graduate qualifications. Finally, in terms of income status, a significant portion were unemployed, with nearly a fifth working in the service sector and almost one in ten engaged in business.

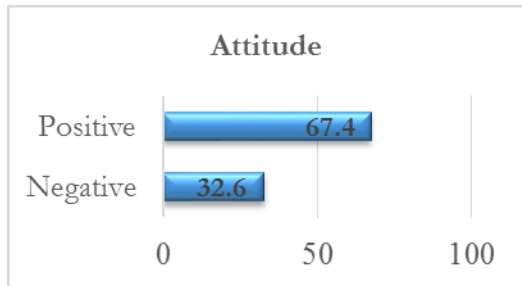


Figure 2. Attitude of Respondents

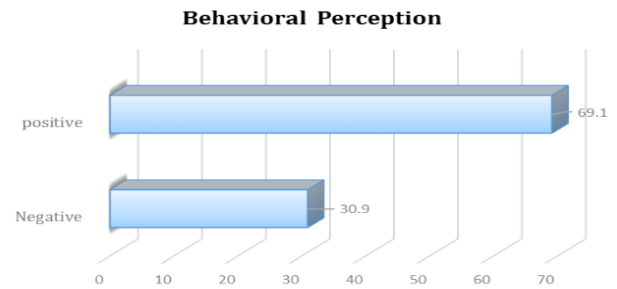


Figure 3. Behavioral Perception

Perception

Figure 2 and 3 represent that out of the respondents surveyed, majority of the respondents displayed a positive attitude, while the remaining just over a third proportion exhibited a negative attitude. Similarly, a significant proportion of respondents demonstrated positive behavioral perception, with the remaining a third proportion expressing negative behavioral perception.

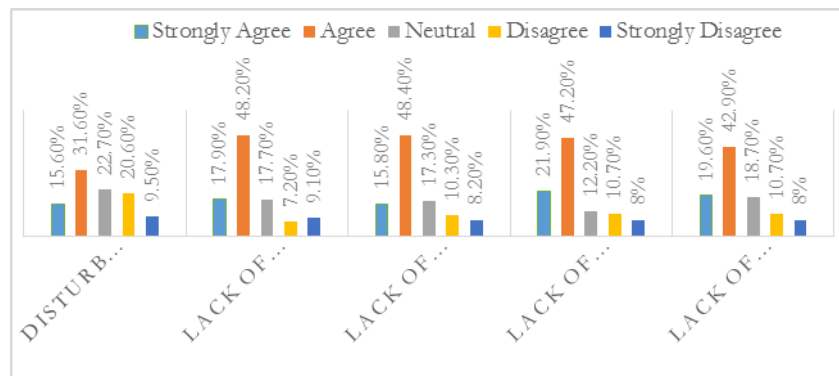


Figure 4. Challenges of Rooftop Gardening

The figure 4 presents the findings of a survey focused on understanding why people do not engage in rooftop gardening. Nearly half of the surveyed population reported insufficient training, expertise, and experience in rooftop gardening as a primary hindrance. A substantial portion mentioned a scarcity of leisure time and limited entertainment options as the main reason for their inability to effectively manage and maintain a rooftop garden. They attributed this to their busy schedules and commitments. Similarly, just under half of participants identified inadequate space as a significant barrier preventing them from engaging in rooftop gardening. Rest one-quarter of survey participants disclosed that the absence of suitable concrete structures on their rooftops had led to a loss of interest in physical activities, discouraging them from pursuing rooftop gardening.

Table 2 shows the association between two demographic factors and attitude. To investigate the connection between attitude and gender, a chi-square test for independence was conducted with a significance level of 0.05. The results showed that the chi-square test was statistically significant: $\chi^2 (1, N=474) = 6.53, p = 0.011$ (which is less than 0.05), and the Phi coefficient was 0.117. These findings suggest that there is only a weak link between gender and attitude. Likewise, a chi-square test for independence was employed to explore the relationship between attitude and the level of education, also using a significance level of $\alpha = 0.05$. The results revealed statistical significance: $\chi^2 (4, N=474) = 11.458, p = 0.022$ (which is less than 0.05), and the Phi coefficient was 0.155. This indicates that there is only a moderate connection between the level of education and attitude.

Table 2. The Association between Attitude & Socio-Demographic Variable

Variables	Attitude		Test Statistics	p- Value	Effect Size
	Unwillingness (%)	Willingness (%)			
	Sex				
Male	93 (38.0)	152 (62.0)	6.533	0.011**	0.117
Female	62 (27.0)	168 (73.0)			
	Level of Education				
Primary	9(56.2)	7(43.8)	11.458	0.022**	0.175
Secondary	7 (53.8)	6(46.2)			
Higher Secondary	10 (27.0)	27 (73.0)			
Undergraduate	98 (34.6)	185(65.4)			
Postgraduate	32 (24.6)	95 (75.4)			

Table 3. The Association between Perception & Socio-Demographic Variable

Variables	Perception		Test Statistics	p - Value	Effect Size
	Negative Perception (%)	Positive Perception (%)			
	Gender				
Male	93 (38.0)	152 (62.0)	11.641	0.001**	0.157
Female	54 (23.5)	176 (76.5)			
	Type of Residence				
Owner	79 (27.3)	210 (72.7)	4.505	0.034**	-0.097
Renter	68 (36.6)	118 (63.4)			
	Attitude				
Unwillingness	114(73.5)	41(26.5)	195.39	0.000**	0.641
Willingness	33(10.3)	287(89.7)			

Table 3 displays the relationship between demographic variables and perception. To determine whether behavior is associated with gender, a chi-square test for independence was conducted at a significance level $\alpha = 0.05$. The results indicated statistical significance: $\chi^2 (1, N=474) = 11.641, p = 0.001$ (which is less than 0.05), with a Phi coefficient of 0.157. These findings suggest a weak connection between gender and perception. Similarly, a chi-square test for independence was employed to examine the relationship between perception and the type of residence, using $\alpha = 0.05$. The test revealed statistical significance: $\chi^2 (1, N=474) = 4.505, p = 0.034$ (which is less than 0.05), with a Phi coefficient of 0.097. This indicates a very slight association between types of residence and perception. Additionally, a chi-square test for independence was used to assess whether perception is linked to attitude. The results showed strong statistical significance: $\chi^2 (1, N=474) = 195.39, p = 0.000$ (which is less than 0.05), with a Phi coefficient of 0.641. These findings highlight a robust relationship between perception and attitude.

Table 4 examines the relationship between demographic variables and challenges faced in rooftop gardening. To determine if these challenges are associated with gender, a chi-square test for independence with a significance level (α) of 0.05 was employed. The results indicated statistical significance: $\chi^2 (1, N=474) = 6.427, p = 0.011$ (which is less than 0.05), with a Phi coefficient of 0.116. This suggests a weak association between gender and gardening challenges, revealing that males encounter more challenges in gardening compared to females. Likewise, a chi-square test for independence was used to assess the relationship between challenges and the type of residence, using $\alpha = 0.05$. The test revealed statistical significance: $\chi^2 (1, N=474) = 4.456, p = 0.035$ (which is less than 0.05), with a Phi coefficient of -0.097. This indicates a very slight connection between types of residence and gardening challenges, suggesting that household owners face more challenges than renters. Furthermore, a chi-square test for independence was conducted to investigate whether these challenges are linked to attitude. The results showed strong statistical significance: $\chi^2 (1, N=474) = 41.772, p = 0.000$ (which is less than 0.05), with a Phi coefficient of 0.297. This points to a moderate relationship between challenges and attitude. Additionally, another chi-square test for independence was used to determine if behavior is associated with these challenges. The test also revealed strong

statistical significance: $\chi^2 (1, N=474) = 64.190, p = 0.000$ (which is less than 0.05), with a Phi coefficient of 0.368. This indicates a strong relationship between challenges and behavior.

Table 4. The Association between Socio -Demographic Variable and Challenges

Variables	Challenges		Test Statistics	p- Value	Effect Size
	Low (%)	High (%)			
Gender					
Male	111 (45.3)	134 (54.7)			
Female	78 (33.9)	152 (46.8)	6.427	0.011**	0.116
Type of Residence					
Owner	104(36.0)	185(64.0)	4.456	0.035**	-0.097
Renter	85(45.7)	101(54.3)			
Attitude					
Unwillingness	94(60.6)	61(39.4)	41.772	0.001**	0.297
Willingness	95(29.7)	225(70.3)			
Perception					
Negative Perception	98(66.7)	49(33.3)	64.190	0.001**	0.368
Positive Perception	91(27.7)	237(72.3)			

Table 5. Pearson correlation matrix between Attitude and Perception

	Attitude	Behavior
Attitude	1	0.895**
perception	0.895**	1

*** Correlation is significant at the 0.01 level (2-tailed).*

In Table 5, the Pearson's correlation coefficient is reported as 0.895, indicating a robust and positive linear correlation. This study's findings, denoted as ($r=0.895, p<0.001$), highlight an exceptionally high level of statistical significance. This result unequivocally rejects the null hypothesis, demonstrating a highly significant and positive relationship between attitude and behavior. This signifies a strong positive social acceptance of rooftop gardening among the residents of urban areas in Bangladesh.

Discussion

The main aim of this study is to explore the social acceptance of city dwellers toward rooftop gardening in urban areas of Bangladesh. This study focuses on the attitudes and behavioral perceptions of city dwellers to understand the social acceptance of rooftop gardening. Similarly, Kosorić et al. (2019) focused solely on attitudes toward rooftop gardening with a productive facades system among people in Singapore. In this study, researchers examined the associations among behavioral perceptions, attitudes, and demographic variables such as sex, age, family types, type of residence, level of education, and primary occupation. Similar results were found in the research articles by Wei & Jones (2022) and Kosorić et al. (2019). Coefficient of correlation was used to explore the relationship between attitude and behavior, similar to the approach taken in Wei & Jones, 2022 research. On the other hand, this study identified a strong relationship between attitude and behavior, which aligns with the findings of previous literature (Kronenberg et al., 2020). This study also revealed a significant relationship between gender and challenges, indicating that males faced more challenges than females in gardening. Another significant relationship was found between the type of residence and challenges. While previous literature (Kosorić et al., 2019) suggested that renters faced more problems than owners, this study found that owners encountered more challenges than tenants. Additionally, this study found a significant relationship among attitude, behavior, and challenges. In essence, challenges moderate the attitudes and behavioral perceptions of rooftop gardening.

Conclusion

The growth rate of the urban population, the demand for food and air pollution is increasing exponentially. However, resources are scarce as agricultural land is being converted to residential, commercial, or industrial land uses. Rooftop gardening can help meet the food demand by providing fresh and hygienic food products, reducing

household expenditure, creating a healthier atmosphere by improving air quality and absorbing carbon from the air, and mitigating the impact of climate change. The study revealed that 32.6% of respondents still had negative attitudes, and 30.9% had negative behavioral perceptions towards rooftop gardening. Implementing this on a large scale is not possible without government intervention. Therefore, to ensure sustainable green cities, both the government and city dwellers should take initiatives and cooperate with NGOs and municipalities to promote rooftop gardening on a large scale in urban areas of Bangladesh.

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Conflict of Interest

The authors declare no conflict of interest.

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ANALYSIS OF VIEWERS' COMMENTS ON A VIRAL VIDEO ON YOUTUBE

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Abstract

YouTube is a medium for two-way communication, where a variety of videos are shared on social media every day. Viewers are making various videos viral by sharing on social media and those videos are also becoming the focus of discussion at the national and international levels. In this study, the comments on YouTube have been investigated to understand the viewer's opinion, ideology and their thinking. Active audience theory has been used as the theoretical framework of the study. The study has been conducted by the discourse analysis method. As a sample of the qualitative research, a viral video is selected by purposive sampling from YouTube and all comments (N=365) of the viewers have been analyzed from the YouTube comment box. The results of the study show that viewers have responded extensively to the viral video and the issues. Some comments are very informative which create a huge meaning for thinking and learning and show many unknown and hidden issues which are not directly available in the video. In the comment box, viewers post some data visual evidence to prove their argument and sometimes share an information source. Most of the comments are in Bangla, but there are also comments in English sentences using English words. There are memes, photos, data visual, screenshots, other video links, and Emoji which shows emotion like anger, and sarcasm in the comments. The average word count of the comment is one to three words. But the word count of the meaningful comment is 10-20 words. Viewers provide comments on the entire video, focus on specific parts and related issues, or sometimes even comment on irrelevant matters using slang and meaningless words; considering those issues, commenters are divided into three categories. Below the video, the light and deep natures of comments have been found in the comment box. It is essential to understand the natures of comments and viewers in order to prevent disinformation and misinformation. Recently, social media has witnessed an increase in rumors, hatred, and bullying through comments, and such comments should be minimized to promote a decent and more positive society.

Keywords: Comment analysis, Youtube video, Viral, Social media

Introduction

Many prevailing notions of the mass media have changed with the advancement of social media. Social media is used by 2.4 billion people around the world and has fast become one of the defining technologies of recent times (Ortiz-Ospina & Roser, 2023). Social media has evolved over the last decade to become an important driver for acquiring and spreading information in different domains, such as business, entertainment, science, crisis management, and politics (Stieglitz et al., 2018). At present, the audience has a big role to play in creating the content of the media, and its significance. Many times these videos or discussions of the viewers on social media have a huge positive or negative impact on society. The impact of a viral video and its accompanying comments can be significant in both a global and local context. The popularity of a viral video can make it a topic of discussion at the national and international levels, bringing attention to the issues it raises.

In recent years, Bangladesh has witnessed the proliferation of viral videos, drawing viewers to the comment section. These comments represent a new social phenomenon that offers insights into society. While mainstream media had limited opportunities to engage with their audience, social media's two-way communication system has exposed a unique aspect (Chaffee & Metzger, 2001).

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In recent times, several cases of social media comments in Bangladesh have come into national discussion through newspapers. In this study, comments analysis is to understand the nature of viewers responding to the video through social media as well as to know what issues have come up in the discussion of social media viewers and know about the nature of social media viewers. Recently, rumors, misinformation, disinformation, cyber bullying, and cybercrime have been highly noticeable in social media.

In this study, comment analysis emphasizes the importance of comments as they are not a trivial matter. This encourages users to use them with awareness, while also prompting other stakeholders to pay attention to them. Social media literacy is recommended for the proper use of comments and that should be added to the education system. A campaign should start when good people post good comments and bad people post bad comments. This study helps to build a good society because many anomalous activities have been noticed in social media including comment boxes. Users share a variety of topics in the comment box, and they include both good and bad information. By analyzing these comments, user patterns and characteristics were explored. The purpose of this study is to analyze the comment and to find patterns of comments as well as to check the information and explanations. As comment analysis is a new trend in research, so this study will play an important role in communication research

Various negative comments on Social Media

The rise of YouTube and other video-sharing platforms has created a new landscape of online communication, where users can share their thoughts and opinions on a variety of topics. YouTube is the second most-used website in the world (Szmuda et al., 2020) and Google is number one. One of the different content on YouTube is viewer comments. There has been a lot of research on the analysis of audience comments on social media. Alhabash and his colleagues demonstrated that viewers tended to watch and comment more on provocative videos, while they engaged less with videos that were less provocative (Alhabash et al., 2015). Thelwall found that YouTube had successfully identified patterns related to gender and sentiment through comment analysis. However, he also pointed out generic limitations in social media analysis (Thelwall, 2017). In many instances, users do not maintain a neutral stance; they are inclined to leave both negative and positive comments.

Diverse behavior of users

Chung (2015) demonstrated that anti-smoking videos can be evaluated by analyzing comments, likes, and views. In their study, (Rauchfleisch & Kaiser, 2020) examined the behavior of YouTube users and the diversity of topics they discussed, revealing shifts toward conservatism in certain communities. Edgerly et al. (2013) conducted a content analysis of a campaign video, emphasizing its impact on audience comments. Social media serves as a powerful tool for promotion. (Marcon & Caulfield, 2017) conducted research on a medical-related video and analyzed the comments it generated. These comments unveiled various aspects of user behavior and provided insights into their personalities. Comments, indeed, serve as a window into user behavior and personality traits.

Users on New Media offer different opinions

Viewers provide different opinions through comments. There are various debates in the comments and users share information about the health sector in the comments box of various health-related videos (Marcon & Caulfield, 2017). Hough showed that the mainstream media creates discourses for those in power. New media, on the other hand, challenges these discourses. As a result, the role of the two types of media in creating discourse is different here. Audiences are expressing their views in web-based new media which is challenging the discourses of traditional media (Hough, 2015). Although there are different types of research on YouTube comments in many parts of the world, there are more research opportunities with YouTube comments. Commenters share a variety of opinions with and without information.

Theoretical Framework

Active Audience theory has been used as the theoretical framework for the study. Although the theory of mass communication was initially thought to be inactive in audiences, later research has raised the issue of audience activism (Ross & Nightingale, 2003). Readers and viewers show different reactions verbally and non-verbally when

they see and read different media content. On social media, viewers and readers reacted differently through comments in the comment box. Active Audience theory states that the audience actively selects, sees, and interprets any content in the media (Steensen et al., 2020). The theory helps to explain the audience's comments by the audience activation theory. This theory is helpful in understanding and explaining what kind of attitudes, thoughts, or discussions they are actively making about the report. While this study shares methodological and theoretical structural similarities with other studies, it specifically focuses on the analysis of YouTube comments. Many users post their comments and it is an interesting and new phenomenon in media research. In this study, the commenters' texts were analyzed for genre and meaning.

Materials and Methods

In this qualitative study, textual analysis is used as a research method to study the linguistic and communicative aspects of written or spoken language in a particular context (Barton, 2003). The objective of this method is to uncover the underlying meaning and the relationships between text, context, and discourse participants. To carry out the analysis, the researcher uses the qualitative method. Materials used in textual analysis typically include written or spoken texts, such as books, articles, interviews, transcripts, or social media posts and comments. As part of a qualitative research study, a viral video which name is 'I am GPA 5' that is published in 2017 *Maasranga TV* channel and later upload to *Redwan Rony channel*, is purposively selected from YouTube and the URL is "<https://www.youtube.com/watch?v=rkwiEWm43X8&list=1>" and it was one of the viral videos in Bangladesh, according to some features of a viral video. The video was uploaded on May 30, 2016, and the data collected spans from that date until May 30, 2021. YouTube personality Kevin Nalty set some criteria for being a viral video which are the number of views, offline-online discussion, parody, and longevity (Cantina & Alvarico, 2022). This sample video satisfies those criteria. When the video is published, many media in Bangladesh report it as a viral video, this video is one of the most discussed viral videos in Bangladesh on that time (Report, 2016) and the comments below the video are very discussed and important, so the comments of this video are taken as a research sample.

From May 30, 2016 to May 30, 2021, during this period, all comments posted below the video were sampled for research and subjected to textual analysis. Different types of comments and elements of comments have been analyzed.

Results

The results indicate that the majority of the comments were either written in Bengali using Bengali characters or transliterated into English letters.

Table 1. Various categories of comments

Various categories of comments based on linguistic characteristics.	
Bengali comments by Bengali letter	96
Bengali comments by English letter	204
English comments by English letter	63
Bengali and English mixed letter	16
Comments by picture and cartoon	3
Total	365
Various categories of comments based on word length	
One word comment	26
One line comment	94
Two line comment	116
Three-four line comment	60
Five-six line comment	56
Seven-nine line comment	12
Ten lines or more line comment	4
Comments by pictures and cartoons	3
Total	365

A smaller number of comments were made in English letters, and a few comments used a combination of Bengali and English characters. In terms of comment size, the majority of comments were one or two sentences,

with a smaller number of comments ranging from three to ten sentences or more. The research findings provide insights into the nature and patterns of viewers who share their comments on viral videos on YouTube.

Three types of commenters

After analyzing 365 comments, it was observed that viewers' comments can be categorized into three types. These three categories encompass a wide range of comments made by the viewers.

First type commenter: Viewers of this section have commented on the specific information in the video. Many viewers have highlighted a specific part of the video. Some viewers used the quotes or answers of the students interviewed in the report as comments. Many viewers have highlighted specific parts and added their own comments to it. But one thing in common with this type of comment is that everyone here uses sarcastic expressions or exclamation marks. Instance for: "I am GPA of 5.", "Neptune is the capital of Nepal." "Pythagoras is a novelist."

Second type commenter: Viewers of this section have commented on the report. Many viewers are saying the report is good. Many have again criticized the report. In this section, viewers have made both positive and negative comments about the report. They have tried to interpret the report critically. The video has various comments on various good or bad aspects. Such as: "the report is sorted." "The report has been good." "It was not right to make the appearance of the students clear." Those are noticed in these types of comments.

Third type commenter: The viewers of this section have made various critical comments on various issues or topics in the report. They have commented on the reasons and problems responsible for the current condition of the students rather than the statement or structure of the report. At the center of the report, viewers of this section have commented on many complex issues. This section of the audience criticized the students and commented on the education system and the quality of education. Besides, parents, teachers, government, politics, and other issues have been blamed for the deterioration of the education system. Example "The education system of the country is responsible for this condition of the students." "Now, GPA-5 is available by getting questions the night before the exam." "The government is increasing the pass rate and GPA-5 to make the people happy."

Two types of comments in nature perspective

Analyzing all comments, it is found that two types of comments are noticed from a nature perspective. Viewers have written a variety of comments on their critical points of view.

Light nature comments

Most of the light-type comments were one or two words. However, some of the light-hearted comments were one or two lines, but they were centered on the wrong answers given by the students. Some of the comments were light in nature. Students have been ridiculed in comments of a light nature. Besides, jokes were made about wrong answers to various questions given to the students in the interview. These comments are said to be light because there is no detailed information in such comments. For example: "Too funny", "THAT JUST MADE MY DAY....." "I am GPA 5", "Speechless "

There are four common patterns found in light-type comments: comments lacking information and explanation, the use of obscene or vulgar language, comments related to entertainment, and comments that are in fewer words. Comments without information and explanation often contain clichéd phrases like "Best funny video ever," "I am also GPA 5 :)," "LMAO," and "Students! Wow." "The use of obscene or vulgar words includes indecent language such as "Broiler generation" and "What the fuck." "Comments related to entertainment often feature phrases that reflect amusement, like "Stop, please, I am laughing," "Give them a Nobel prize," and "Doya kore eder abar class 1 theke poran" (please admit them back to class 1), or "Hayre Allah bachayse ami I AM GPA-5 pai nai" (God saved me, I didn't get GPA-5). Comments in fewer words are typically very concise, with examples like "Darun?" (Nice), "Hababa," "Moja paici" (Having fun), and "lol."

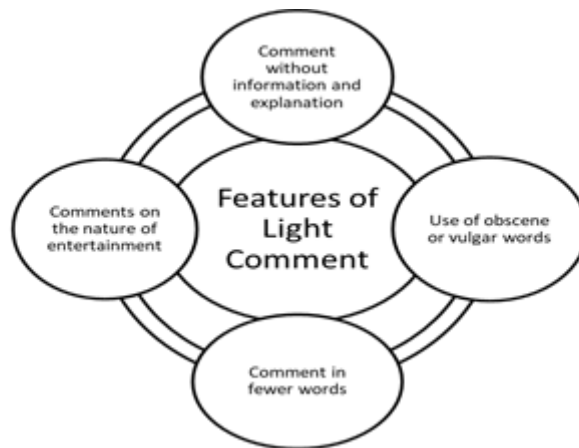


Figure 1. Features of light comment

Deep nature comments

Many of the comments from the audience were deep in nature. Comments of a deeper nature were two or more sentences. The in-depth comments contained explanations, information, and arguments. Such comments were full of critical thinking. Students faced to criticize in deeper nature comments. But there were information, explanations, and arguments. Journalists and media have also been criticized for focusing on the report. However, some have praised the report, citing problems. The deep-seated remarks criticized the country's education system and the quality of education. This kind of comment criticizes parents, teachers, and the government.



Figure 2. Features of deep comment

There are four common patterns found in deep-type comments:

Constructive criticism in the comments

In this type of comment, users criticize the education system and share information about issues related to videos. For example, *"Everyone needs basic knowledge, especially those who receive A+ grade"*. *"We applaud the reporter for shedding light on the current state of our education system. While this report is facing criticism, we all recognize the grim reality. I wholeheartedly thank the reporter"*. *To my dear students, I want to convey, "This is just a glimpse of the challenges awaiting you, akin to various forms of harassment. The reporter is your true ally; he unveils your future"*. *"In our country, a majority of students now receive A+ grades. But are they truly deserve of such scores?"*

Criticism of related stakeholders

In comments of this nature, users share criticism aimed at teachers, parents, and the government. For example, *"Guardians often instruct students to focus solely on achieving good results. Mrs. Guardians, can you tell us what our future holds if we lack broader knowledge?"* *"Teachers also bear a share of the responsibility alongside students."*

Critical thought-related comments

In this category, users discuss education politics, history, and business. For instance, *"The government is undoubtedly responsible for our current predicament. The emphasis on the core curriculum leaves little room for exploring supplementary materials".* *"Let's not blame the students; let's hold the education system accountable".* *"It's disheartening. In the past, people attended school to acquire knowledge. However, times have changed. Insecurity is so rampant in our country that people prioritize jobs over knowledge."*

Comments with misinformation and disinformation

These comments provide information about issues related to the report. For instance, *"Perhaps this is an instance of yellow journalism".* *"In 2009, the passing rate was 40-50%, but after 2009, it surged to 85-95%, which is quite unusual."* Various types of misinformation and disinformation have been found in such comments. For instance, user "mamunroshid7159" shared false information about individuals within the education system in Bangladesh, claiming that *Hindus are among the top 17 posts related to education in Bangladesh*. However, upon rechecking the information, it is evident that this assertion is not accurate. Furthermore, these comments contain religiously hateful information and explanations, as well as various rumors and misconceptions. For example, some commenters suggest that *exam questions will be available before the actual test*, rendering studying unnecessary. The government is introducing *Hindu-centric education by excluding Muslim writers and Islamic writings in the education system*. Additionally, some individuals propagate the belief that *all jobs are solely for monetary gain and not based on educational qualifications*. These comments not only disseminate a wide range of information and explanations but also include disinformation, misinformation, and instances of bullying.

Upon analyzing the comments on the video, it's evident that there were both light-hearted and profound remarks. However, the prevalence of deep comments outweighed the light-hearted ones. Light comments predominantly served as a source of entertainment and sarcasm, whereas the deeper comments centered on discussions and critiques. Within the deep comments, several significant dialogues emerged, shedding light on crucial societal issues and concerns. Notably, these comments underscored various problems within the country's education system. Viewers critically examined the report, reflecting their deep-seated concerns. The audience placed blame on the education system for the poor condition of students, leading them to highlight and criticize multiple issues within this system. Additionally, questions regarding media ethics and construction were raised. While the comments lacked an in-depth exploration of these issues, they nevertheless brought critical concerns to the forefront.

The comments from YouTube viewers contained substantial depth. These comments exhibited characteristics of intense critique, criticism, and entertainment, which were prevalent in the lighter comments. Many viewers made humorous remarks and used various comedic elements when discussing the report and the students. While some serious issues were addressed in the light comments, they were presented in a light manner, lacking in-depth analysis. Consequently, a sense of levity permeated many viewers' comments, with one group providing a more casual analysis of the report. Viewer discussions extended beyond the report's content to its construction, with many expressing criticism. Some viewers believed that the report failed to adhere to journalistic ethics, while others suspected premeditation in its creation. As a result, the discussion among YouTube viewers expanded beyond the report's topic to include its overall structure.

Discussion

This study analyzed the comments on a viral video discussing the education system in Bangladesh. Upon analyzing the comments, it was observed that the commenters shared a wide range of views on various genres and topics. The comments encompassed both positive and negative sentiments, as well as constructive and critical thinking comments. Commenters in this study often expressed their opinions about specific information presented in the video, sometimes reiterating the information, additionally, Madden and others noted that commenters (Madden et

al., 2013), played a role in presenting certain information related to the video. Ethical considerations regarding the use of footage in the video and the privacy of the interviewees who provided information were prominent themes in the comments section, with a substantial number of comments and commenters engaging in discussions on these topics. Furthermore, Marwick's research suggests that audiences frequently critique the various principles of videography and photography in social media within the comment section (Marwick, 2015).

In this study, two distinct types of commenters were identified, each holding different opinions about the entire video and its associated issues. This finding aligns with Lee and colleagues' discovery that there is considerable diversity within the comment section, although a majority of commenters expressed similar views regarding the educational video (Lee et al., 2017). Additionally, it was observed that, as described by Madden and others, most comments were directly related to the video's content and the issues it raised (Madden et al., 2013). However, it's important to note that commenters did not solely focus on the video's issues and information; they also shared a multitude of irrelevant topics and information in the comment section. These unrelated comments were frequently noticed throughout the study.

Conclusion

The role of viewers on social media is pivotal for nurturing two-way communication, as their comments frequently initiate crucial discussions on various topics such as politics, economics, and society. To combat disinformation and misinformation while promoting the positive utilization of social media, it is imperative to scrutinize the nature of these comments and the individuals who post them. Recent incidents involving rumors, hate speech, and bullying in social media comments underscore the necessity of reducing such adverse interactions and constructing a more constructive online community.

Researchers propose several recommendations for analyzing research data. Firstly, social media literacy should be incorporated into the education systems of every country, enabling individuals to learn how to use social media responsibly and exhibit appropriate behavior. Secondly, governments should establish guidelines for social media usage, especially considering that people of all age groups use it without a structured framework. Additionally, a global campaign should be launched, emphasizing that good people contribute positive comments while bad people tend to produce negative ones. Lastly, user awareness regarding the responsible use of social media is imperative and can be achieved through systemic measures.

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Conflict of Interests

The author declares no conflict of interest.

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HOUSEHOLDS' WILLINGNESS TO PAY FOR NATURAL HAZARD INSURANCE IN THE SOUTHWESTERN COASTAL REGION OF BANGLADESH

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Abstract

The southwestern coastal region of Bangladesh is enormously susceptible to natural hazards due to global environmental change, triggering economic instability in coastal households. Hazard microinsurance might be a decent option for them to build financial resilience. Accordingly, this research attempted to estimate households' willingness to pay (WTP) for natural hazard insurance (NHI) in Bagerhat Sadar and Rampal *upazilas* of Bagerhat district in southwestern coastal Bangladesh. The contingent valuation method's double-bounded dichotomous choice (DBDC) technique was exerted on the 120 randomly interviewed households' dataset to estimate the WTP for NHI considering three experimental bid values, BDT 300, 500, and 200 per month as initial, maximum, and lower bids respectively. The assessment revealed that, on average, 73 percent of the coastal households experienced yearly financial losses (i.e., damage to crops, fish-shrimp enclosures, integrated farms, and houses) due to natural hazards. Almost two-thirds of the total samples were interested in taking alternative financial support after a massive coastal hazard, and the mean WTP was approximately BDT 284. Amongst the interviewed households, more than 80 percent were willing to pay for the initial bid value of BDT 300. Non-parametric correlation coefficient estimation results indicate that the initial and maximum bids are highly associated, while the lower bid is moderately associated with the WTP for NHI. Such findings provide inputs for policymakers, development agencies, and the government to explore implementing microinsurance schemes as post-hazard economic facilitation for coastal victims

Keywords: Microinsurance, Willingness to pay, Natural hazard insurance, Economic resilience, Coastal Bangladesh

Introduction

Global warming affects weather events and ultimately leads to natural hazards. Natural hazards are catastrophic events of geological and hydrological origins (i.e., tidal surges, thunderstorms) that initiate monetary losses, property losses, and social-environmental disruptions. Consistent with the Intergovernmental Panel on Climate Change (IPCC, 2007), climate change triggers global warming, persistent natural hazards, rising sea levels and groundwater salinization (Parry et al., 2007, Islam et al., 2019).

Due to salinity and the upsurge in the sea level, there is a problem of reduced production in maximum rice-rabi (hybrid irrigation) crop fields and fish-shrimp enclosures of coastal areas. Numerous hazards occur in coastal areas every year, including floods and river bank erosion. Consequent to the Ecological Threat Report (ETR), 2021, about 30 countries, including Bangladesh, face the highest level of environmental threats, home to 1.26 billion folks. They have low socio-economic resilience and high disastrous ecological threats (IEP, 2021). The People's Republic of Bangladesh is a country in South Asia. According to the Global Climate Risk Index, 2010, Bangladesh seemed the most vulnerable to climate change and tiered as the 7th terrific country which is frequently affected by natural hazards (Harmeling, 2010). As per the World Risk Index, 2016, in less than a decade, Bangladesh ranked 5th among the world's top 171 countries exposed to natural hazards (Garschagen et al., 2016).

The 19 prime districts of the coastal region of Bangladesh are- Khulna, Bagerhat, Satkhira, Jashore, Narail, Pirojpur, Patuakhali, Barguna, Jhalokathi, Barishal, Gopalganj, Laxmipur, Noakhali, Shariatpur, Feni, Bhola, Chandpur, Chattogram, and Cox's Bazar (Khan et al., 2011; Ahmad, 2019). Precisely, the southwestern coastal part

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of Bangladesh is an excessively hazard-prone area. Cyclones, coastal floods, and saline intrusion are all common hazards in Bangladesh's southwestern areas (Ahmed et al., 2016). The primary sources of income of the people in the area are agriculture, aquaculture, fishing from the Bay of Bengal, and resource exploitation from the Sundarbans. During 1998-2017, Bangladesh experienced 190 dangerous climate events, resulting in over 2.4 million USD in damages and 636 deaths yearly (Vinck et al., 2020).

Natural hazards such as floods, water shortages, and earthquakes could affect more than 80 percent, while tropical storms affect more than 70 percent of the population. Intense floods occur every 4-5 years, covering an average of 60 percent of the total land area (World Bank, 2018). Bangladesh's most remarkable and devastating floods which occurred between 1974 and 2007, were highly damaging and seriously threatened lives and the economy (Choudhury, 2009; Rahman et al., 2017). Analyzing a cyclone report by GoB (2008), a category-4 cyclone named SIDR hit southwestern coastal Bangladesh in 2007 and the estimated loss from SIDR was at around BDT 115.6 billion (USD 1.7 billion). In 2009, cyclone Aila also caused significant damages across the southern part of Bangladesh; the total damages were estimated at approximately BDT 18.8 billion (USD 270 million). With limited resources, it is challenging for Bangladesh and its people to cope with natural hazards, including the effects of climate change (Khan and Nahar, 2014). Meanwhile, the southwestern coastal Bangladesh faces growing threats due to the changing climate day by day, coastal communities need to build resilience to be financially secure against the after-effects of massive natural hazards (Vinck et al., 2020). In this case, insurance coverage might be a financial resilience builder.

Insurance coverage is the monetary support of risk or liability covered for an individual or unit through insurance services (Chen, 2021). In this case, an agreement is made between the policyholder and the insurance company and attractive insurance packages are set up with various benefits depending on the risk category. General insurance categories include dental health, hazard, home, motor vehicles, property, profitmaking and business insurance (The Economics Times, 2023). Insurance also consents for loss reduction, economic stability, and the promotion of trade and commercial processes, which results in sustainable socio-economic development and growth.

Sadharan Bima (General Insurance) Corporation's (SBC) services include protecting public and private property threats; providing claim insurance coverage; reinsurance of hazard by non-life policy (NPL) holders; risk improvement services; industrialization across equity investments; and human resource development for the insurance sector (ICA, 2019; SBC, 2021). According to SBC, all insurance corporations in Bangladesh are governed by the Insurance Development and Regulatory Authority (IDRA), Bangladesh. IDRA have been operating since 2010 to regulate and develop the insurance sector of Bangladesh. IDRA aims to defend the interest of insurance consumers and beneficiaries while ensuring the stability of insurance agencies (IDRA, 2013). However, the majority in Bangladesh do not participate in any insurance schemes as willingly as in the developed world. Although, the microinsurance market has experienced substantial expansion in recent years, the average annual growth rate is around 10 percent (Lloyd's and Microinsurance Centre, 2009).

According to Lloyd's global underinsurance report, 2012, Bangladesh seemed the most prominent insurance disparity (around 2.1 percent) in the gross domestic product (GDP), equivalent to USD 6 billion, and leading to significant yearly natural hazard damages. Bangladesh's insurance cost remained less than USD 3 per capita, which is 0.51 percent of the country's GDP in 2007 and had grown to almost USD 7 per capita by 2012. It still comprised only 0.94 percent of the country's GDP (Sultana and Kaiser, 2021).

Natural hazard insurance (NHI) is a microinsurance scheme, often mentioned as a practical risk-coping mechanism to get monetary assistance after massive natural hazards. Several developing countries are adapting risk insurance support to help marginalized people to cope with the growing risks of natural hazards (Botzen and van den Bergh, 2008; Akter and Fatema, 2011; Segal, 2021).

Despite the extreme consequences of natural and other hazards, people in third-world nations, including Bangladesh, are not sufficiently encouraged to practice hazard insurance to get post-hazard financial coverage. Only one-third of worldwide financial hazards are insured on average, with the residue falling into the protection gap (Siddiqui, 2019). In developing countries, a few schemes offer microinsurance coverage against natural hazards or are in the initial stages of putting them into practice (Mechler et al., 2006). However, numerous research findings indicate that intended participation in any insurance scheme is lower than expected by its supporters (Akter and Fatema, 2011). Hence, this study's purpose was to estimate coastal households' willingness to pay (WTP) for natural hazard insurance (NHI) in southwestern coastal Bangladesh.

Nevertheless, the authors supposed community-centered financing can be a convenient solution to build resilience for after-hazard financial security with a complete package of insurance facilities according to consumers'

chosen microinsurance premium(s). Considering the assorted consumers' preferences is vital for policy scheming of a hazard insurance. Therefore, this research scrutinized the southwestern households with a hypothetical natural hazard insurance proposal in line with developed countries to help them cope with monetary losses after natural hazards.

Materials and Methods

The tools and methods adopted in the study are illustrated in this section. It represents the analytical explanation of the mentioned research's objective and outlines methodological steps for estimating households WTP for NHI, fixing experimental bid values, focusing on picking a valuation approach, and econometric specifications.

Study's Nature and Areas' Rationale

This WTP study has been conducted based on a primary dataset collected from three (03) villages (i.e., *Kbanpur*, *Jhanjhan*, and *Gabbuniya*) of Bagerhat Sadar and Rampal *upazilas* (sub-districts) of Bagerhat district, which are highly hazard-prone southwestern coastal areas and very close to the Pasur River and Mongla seaport. Bagerhat Sadar *upazila* spans a total area of 272.73 km² and has 45,527 households [i]. The leading income sources of the people of Bagerhat Sadar *upazila* include agriculture (42.01 percent), commerce (21.31 percent), service (10.61 percent), transportation (4.55 percent), non-agricultural labor (7.41 percent), and the rest 14.11 percent others (Banglapedia, 2021a; BBS, 2012). Rampal *upazila* covers a total area of 335.46 km² and has 33,119 households [ii]. Prime income sources of the people of Rampal *upazila* include agriculture (52.4 percent), non-agricultural labor (7.7 percent), industry (0.8 percent), commerce (20.7 percent), transportation and communication (3.64 percent), service (5.3 percent), construction (1.3 percent), religious services (0.24 percent), rent and remittances (0.16 percent), and the rest 7.8% others (BBS, 2012; Banglapedia, 2021b). Selected villages are considered the primary sampling unit of this study. Mentioned areas of Bagerhat district have been purposively selected as these are on the brink of Mongla seaport; undergo natural hazards which cause great damage to natives' life and living; the main occupations are informal sector jobs (i.e., agriculture, aquaculture, fishing, day-labor, and so on). Thus, these areas were considered precise to meet the study's objective and were considered as the representative units of the entire southwestern coastal Bangladesh.

Sampling Technique

Households were selected through a simple random sampling technique. The authors randomly sampled a total of 120 households by picking 40 households from each of the three (03) primary sampling units, i.e. three villages. A structured interview schedule was used to administer the interview to the nominated respondents. Three experimental bid values [i.e., an initial bid of BDT 300 [USD 2.91), a maximum bid of BDT 500 (USD 4.85), and a lower bid of BDT 200 (USD 1.95)] were considered to be chosen as NHI premiums per month (exchange rate during the interview period was 1 USD = 103 BDT). The interview schedule addressed issues allied to sources, problems, choices, coping activities, alternative compensations, choices of hypothetical bid values, willingness to pay, and amount of paying. To maintain data safety and accuracy, this data was collected with Kobo Toolbox (ODK Based Software) during August, 2022.

Theoretical Framework

When dealing with non-market goods, public goods or services, the contingent valuation (CV) method is widely applied for concerned studies. The hypothetical market can be modeled on non-market goods where survey-based methods, like contingent valuation (CV), can be applied to estimate consumer participation, preferences, and willingness to pay for targeted services. The CV method's simple data collection processes, supervision system, and computational advantages compared to the choice experiment (CE) method are some reasons behind choosing this method to estimate WTP for NHI (Mitchell and Carson, 1993; Banerjee and Sarkhel, 2012; Moorthy et al., 1997, Doherty et al., 2021).

The WTP regulation is an ultimate concept in economics and finance castoff to measure the value of a product or service to a consumer [iv]. It is constructed on the belief that the consumer is willing to pay for a product or service up to the point where the marginal benefit of consuming the product or service is equivalent to the marginal cost of generating that. As per WTP's regulation, consumers will only pay if they rely on a product or service that is worth it. Over the last decade, WTP experiments have been conducted in southwestern coastal Bangladesh focusing on various concerns. A combined analysis of WTP literatures' (i.e., Islam et al., 2019; Islam et al., 2018) results exhibited that coastal people expressed their willingness to pay a portion of their monthly income

that varied approximately from 1.5 to 4 percent (individually) depending on their income ranges. The source of income and socio-economic status of the coastal folks varies from household to household. The mentioned areas of Bagerhat district's main occupations are informal sector jobs and their monthly mean income is around BDT 14,358 (USD 133.90) only. Hence, the authors shadowed the WTP regulation to determine the optimal price point of NHI for this research and fixed three experimental bid values considering 1.5 to 3.5 percent of mean households' income, i.e., an initial bid of BDT 300 (USD 2.91), a maximum bid of BDT 500 (USD 4.85), and a lower bid of BDT 200 (USD 1.95). Therefore, we presented BDT 300 (USD 2.91) as the initial bid value, which was approximately 2.2 percent of households' mean income per month. Furthermore, coastal communities' experiences of coastal hazards in former years, their occupation, income disparity, their history of being paid in various forms of local microloan schemes with high-interest rates, the extent of their economic damages, prior willingness to invest in any kind of non-market goods or services were considered to fix these experimental bids of NHI.

This study estimated households' preferences for scheme features and costs, as well as their willingness to pay where a household could decide whether willing to pay or not for NHI. Under the CV method, there are several approaches to measure WTP. Among them, the contingent valuation method's double-bounded dichotomous choice (DBDC) technique was exerted to the dataset (a total of 120 households) to estimate the WTP for NHI, characteristically similar to a choice test where the study's outcome depends on the respondents' opinions. The WTP of setting insurance protection against hazard has been explored by inquiring each respondent about a set of double-bounded questions; the second question (s) depend on the response to the first to persuade respondents to reveal their opinions (Adams et al., 2015; Bhattarai et al., 2017; Bhattarai, 2019; Islam et al., 2019).

The whole part of methodology was designed based on relevant literatures, econometric specifications, and the authors' several compilations based on their very recent household interview. Using the double bounded dichotomous choice (DBDC) technique of the CV method, we asked each household whether they were willing to pay or not for NHI along with three experimental bid values. When they answered with 'Yes (= 1)', the authors considered them for the next queries for bidding and answered with 'No (= 0)' were considered as rejected bids.

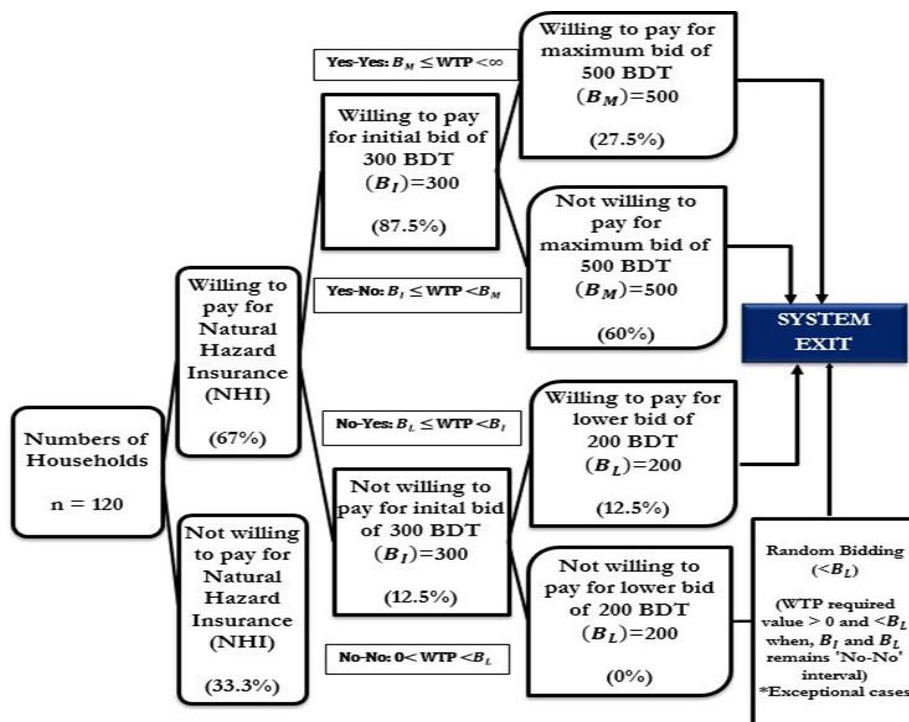


Figure 1. Systematic Computational Loop of DBDC Questions for Each Respondent (Source: Authors' compilation based on Adams et al., 2015; Seifouri et al., 2018; Islam et al., 2019; Paopid et al., 2020; Bhattarai, 2019)

The core computational mechanism of this research is highlighted through the flow chart of Figure. 1. We presented BDT 300 (USD 2.91) as the initial bid value (B_I). Once they were willing to pay for $B_I =$ BDT 300 as a monthly NHI premium, they said 'Yes (=1)' and proceeded to the next bid. An initial bid value (B_I) and a maximum bid value (B_M) = BDT 500 (USD 4.85) were fixed to pick as NHI premiums per month with "Yes-Yes" and "Yes-No" choices and maximum bid value (B_M) was only asked when they primarily accepted initial bid value (B_I).

Thus, the WTPs' percentage for both premium bids "Yes-Yes" was evaluated; these consumers agreed to invest their maximum as per our hypothetical NHI payment plan and were also willing to pay higher than the maximum bid offered. On the contrary, the acceptors of B_I who rejected B_M were indicated as "Yes-No" interval, denoting that respondents' WTP within the initial and higher bid offered.

While they declined the initial bid value (B_I), the opportunity of picking the maximum bid value (B_M) is automatically escaped, however, they could choose at least the lower bid value (B_L) = BDT 200 (USD 1.95) to pay a least monthly amount for NHI. If they consent lower bid value (B_L), then the relationship is signified as "No-Yes" term and denotes their WTP within the initial bid and lower bid offered. Conversely, rejecters of an initial bid (B_I) who also rejected the lower bid (B_L) were coded as "No-No" interval, denoting that their WTP is positive but less than the proposed lower bid (B_L).

Systematically, once a respondent approves to pay, the respondent's $WTP > 0$. We prioritize households' opinions. Therefore, we merged a random bidding ($< B_L$) option to offer in the DBDC computational loop (Figure 1) of this research to remove hypothetical biases from this non-market CV design. Thus, the respondents who discard both the initial and lower bids (No-No), would get an open bidding opportunity or express their ability to participate in the NHI payment plan. In point of fact, "No-No" relationship often generates some haziness and controversies, which are particular concerns of DBDC valuation. Thus, all categories of controversies are lopped off for this research. Whereas, in our sample, all were willing to pay for at least the lower bid value (B_L) = BDT 200 (USD 1.95), who said that they were willing to participate (80 of 120) for NHI (Adams et al., 2015; Banerjee and Sarkhel, 2012; Halstead et al., 1992; Islam et al., 2019; Seifouri et al., 2018).

Econometric Specifications

Equation 1 presents the contingent valuation model of this research (Islam et al., 2019; Bhattarai, 2019; Paopid et al., 2020).

$$WTP_{(i)} = \beta_i X_i + \varepsilon_i \dots \dots \dots (1)$$

Where, β = coefficient, ε_i = standard error.

By elaborating equation (1) with multiple explanatory variables, we assumed a linear relationship between predictor variables and log odds ($WTP_{i=1,0}$) [iii]. The linear relationship extended to the case of multiple explanatory variables:

$$WTP = \beta_0 + \beta_1 Gender_i + \beta_2 occup_i + \beta_3 hhminc_i + \beta_4 hhmexp_i + \beta_5 finloss_i + \beta_6 damasset_i + \beta_7 damassetp_i + \beta_8 damvalue_i + \varepsilon_i \dots \dots \dots (2)$$

The mean WTP has been estimated by using the binary logit (BL) model [iii] as follows:

$$mWTP = \frac{\beta_0 + (\sum \beta_{ni} X_{ni})}{-\beta_1} \dots \dots \dots (3)$$

Here, β_0 = estimated constant, β_n = parameters of the coefficients, X_n = the mean values of explanatory variables, and β_1 = co-efficient of the bid amount.

Table 1. Explanatory Variable(s)

Name of Variable	Description of the Variable	Related Literature
Willingness to pay (<i>WTP</i>)	Households' willingness to pay for natural hazard insurance can take only two values: 1 if the household wants to pay and 0 if the household is not willing to pay. [Dependent variable]	Paopid et al., 2020; Islam et al., 2019, and Seifouri et al., 2018
Gender of respondent (<i>gen</i>)	Gender of household head, either male or female. [Explanatory variable]	–
Respondents' occupation (<i>occup</i>)	Occupation of household head included farmer, fisherman, integrated farmer, labor and other in category. [Explanatory variable]	Paopid et al., 2020; Adams et al., 2015
Household monthly income (<i>hbminc</i>)	Total (Primary/Secondary income of household considering all earning members) monthly income of the household, measured in BDT. [Explanatory variable]	Paopid et al., 2020; Islam et al., 2019; Song et al., 2019 and Seifouri et al., 2018; Adams et al., 2015
Household monthly expenditure (<i>hbmexp</i>)	Total monthly expenditure (considering all members of household). [Explanatory variable]	Paopid et al. (2020)
Households' Financial Losses (<i>finloss</i>)	Households facing financial losses due to natural hazards every year; 1 if Yes, 0 if No. [Dependent variable]	–
Claimed damaged asset (<i>damasset</i>)	Households would like to claim hazard insurance to recover damage of assets. [Explanatory variable]	–
Damage asset/s value (<i>damassetp</i>)	Damaged asset market price/value according to study area, in BDT. [Explanatory variable]	Paopid et al. (2020)
Damage value (<i>damvalue</i>)	Value of damages (except asset price) in BDT. [Explanatory variable]	Paopid et al. (2020)
ϵ_i	Error estimation. Zero-mean error term	Islam et al. (2019); Paopid et al. (2020); Seifouri et al. (2018)

Source: Authors' Compilation

A logit analysis (i.e., binary logit) was performed to identify households' WTP's probability and maximum likelihood. Logit regression is an appropriate analysis (Paopid et al., 2020; Seifouri et al., 2018), when the variables are dichotomous (1 = Yes, 0 = No). Logit regression labels data and simplifies the association between one dependent variable (binary) and one or more nominal, ordinal, or ratio-level explanatory variables (Seifouri et al., 2018). Willingness to pay is a dependent variable; which proceeds with dichotomous values (Yes/ No). For figuring WTP for NHI, agreed households were asked to respond with an initial bid (B_I). When respondents answered 'yes' to the initial bid, they were offered a maximum bid (B_M). If the initial response was 'no', a lower bid (B_L) was offered. Hence, $B_L < B_I < B_M$. (Islam et al., 2019; Paopid et al., 2020; Seifouri et al., 2018; Bhattarai, 2019). Households' responses have been categorized into the following four conditional intervals:

WTP (Yes-Yes): When households answer "yes" to both B_I and B_M , $B_M \leq WTP < \infty$.

WTP (Yes-No): When households answer "yes" to B_I and "no" to B_M , $B_I \leq WTP < B_M$.

WTP (No-Yes): When households answer "no" to B_I and "yes" to B_L , $B_L \leq WTP < B_I$.

WTP (No-No): When households answer "no" to both B_I and B_L , $0 < WTP < B_L$.

Here, B_I = Initial bid value [BDT 300]; B_M = Maximum bid value [BDT 500]; B_L = Lower bid value [BDT 200]; Pr = Probabilities' of adopting bid value.

Therefore, we uniformed the following four probability (Pr) equations as per the above-mentioned intervals, which estimated the maximum likelihood of this study. Here, α , β , and γ are parameters, and Z points towards the socio-economic characteristics of respondents:

$$Pr_{(yes,yes)} = 1 - F(B_M) = 1 - \frac{1}{1 + e^{(\alpha + \beta B_M + \sum \gamma Z_n)}} \dots \dots \dots (4)$$

$$Pr_{(yes,no)} = F(B_M) - F(B_I) = \frac{1}{1 + e^{(\alpha + \beta B_M + \sum \gamma Z_n)}} - \frac{1}{1 + e^{(\alpha + \beta B_I + \sum \gamma Z_n)}} \dots \dots \dots (5)$$

$$Pr_{(no,yes)} = F(B_L) - F(B_I) = \frac{1}{1 + e^{(\alpha + \beta B_I + \sum \gamma Z_n)}} - \frac{1}{1 + e^{(\alpha + \beta B_L + \sum \gamma Z_n)}} \dots \dots \dots (6)$$

$$Pr_{(no,no)} = F(B_L) = \frac{1}{1 + e^{(\alpha + \beta B_L + \sum \gamma Z_n)}} \dots \dots \dots (7)$$

their willingness to get on average 73 percent (70 percent minimum and a maximum of 85 percent damage coverage) financial coverage by hazard insurance; where the coefficient of variance value is estimated at 0.04 (<1).

Table 2. Descriptive Statistics of Explanatory Variables and Symmetric Measures

Name of Variables	Max	Min	Mean (μ)	Mean S.E(ϵ_i)	S.D. (σ)	Var.	C _v
Willingness to pay (WTP)* 1= Yes, 0= No	1	0	0.67 (67%)	0.04	0.47	0.22	0.7
Gender of respondent(gen) 1=Women; 2=Men	2	1	2	0.02	0.23	0.05	0.1
Household's occupation (occup)*	1	3	2.48	0.07	0.72	0.52	0.2
Household monthly income (hhminc)	25,000	7,500	14,358	298.9	3274.02	-	0.2
Household monthly expenditure (hhmexp)	22,500	8,000	13,349	264.8	2,901.02	-	0.2
Households' Financial Losses (finloss)	1	0	0.73 (73%)	0.04	0.44	0.19	0.6
Claimed damaged asset (damasset)*	7	1	4.2	0.20	2.3	5.26	0.5
Damaged asset market price/ value (damassetp)	200,000	0	93,916	3,824	41,886	-	0.4
Damage value (damvalue)	60,000	0	20,491	946	10,368	-	0.5
Initial bid [BDT 300 (USD 2.90)] for WTP (initial_bid)	1	0	0.58 (58%)	0.05	0.5	0.25	0.8
Maximum bid [BDT 500 (USD 4.85)] for WTP (max_bid)	1	0	0.18 (18%)	0.04	0.4	0.15	2.1
Lower bid [BDT 200 (USD 1.90)] for WTP (low_bid)	1	0	0.08 (8%)	0.03	0.3	0.08	3.5
Households preferred percentages of insurance coverage (hhpcovg %)	85	70	73	0.32	3.6	12.60	0.04
Valid Observations (N)							120

*Dependent Variable: WTP

S.E. = Standard Error, Var. = Variance, CV= Coefficient of Variance; Occupation (1=Farmer, 2=Fisherman, 3=Day-Laborer, 4=Homemaker, 5=Integrated Farmer, 99=Others); Claimed damaged asset (1=House, 2=Fish and shrimp farm, 3=Crops, 4=Fishing accessories, 5=Trees, 6=Livestock, 7=Integrated Farm, 99=Others)

Source: Authors' Compilation

Households' Willingness to Pay for NHI (Bidding with DBDC Strategy)

The DBDC strategy estimated that almost 67 percent (80 out of 120) of the total households agreed to take such alternative financial support after a massive coastal hazard. Amongst these households, 87.5 percent (n =70) were willing to pay for the initial bid value (BDT 300/ USD 2.91), of whom 27.5 percent (n = 22) were willing to pay both the initial bid and the maximum bid value (BDT 500/ USD 4.85). The remaining, 12.5 percent (n =10) were willing to take only the lower bid value (BDT 200/ USD 1.90) as the monthly premium of NHI. DBDC also estimated the percentage (33.3) of protest bidders who were unwilling to pay for NHI, just chose the 'No' option for accepting NHI, but through attending the interview sessions, they answered all other sections of the interview schedule, and shared their experience of former natural hazards. The study omitted their worthless responses to avoid biases in WTP. Among them, people have chosen self-funding, micro-loans, and reliefs as their main sources of monetary support (Seifouri et al., 2018; Islam et al., 2019; Halstead et al., 1992). Consistent with the dichotomous test data of bidding price, Figure 2, has been plotted to show the accepting and rejecting probabilities. This dichotomous test supported the probability equations mentioned in the section of the econometrical analysis section of this research.

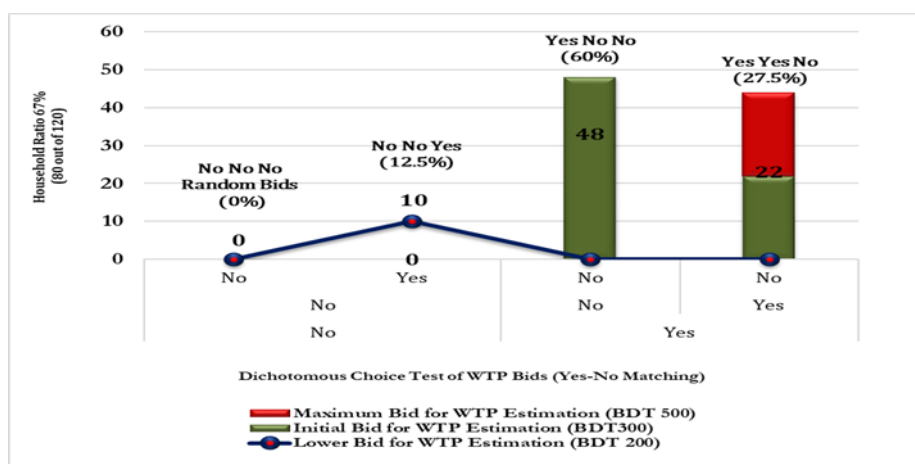


Figure 2. Households' Willingness to Pay for NHI (Dichotomous choice of WTP bids) (Source: Authors' compilation)

Households' Willingness to Pay for NHI (Logit Analysis and Pearson Goodness of Fit Test)

Logit model is also a parametric method that can analyze binary data. It allows dependent variables in the class variable formula (Calderon et al., 2008). **Table 3**, estimated parameters with logit analysis.

Table 3. Parameter Estimation with Logit Analysis

LOGIT*	Parameter	Estimated Value	Std. Error	Z	Sig.
*Logit model:	occup	-0.11	0.26	-0.40	0.6
Log (p/ (1-p)) = Intercept + BX	hhminc	0	0	0.24	0.8
**Statistics based on individual cases differ from statistics based on aggregated cases.	hhmexp	0	0	-0.28	0.7
Variable(s) entered: Occupation (occup), Household monthly income (hhminc), Household monthly expenditure (hhmexp), Financial loss due to hazard (finloss), Claimed damages asset (damasset), Market value of damaged asset (damassetp), Value of damage (damvalue), Initial bid of 300 BDT (initial_bid), Maximum bid of 500 BDT (max_bid), Lower bid of 200 BDT (low_bid), Household preferred coverage percentages (hhpcovg %), Preferred duration of contract (durcntrct(y)), Sig. = Significance, Std. Error= Standard Error.	dasset	0.03	0.46	0.06	0.9
	damassetp	0.02	0.16	0.14	0.8
	damvalue	0	0	0.29	0.7
	initial_bid	0	0	-0.06	0.9
	max_bid	3.98	1.05	3.81	0
	low_bid	-0.07	0.38	-0.18	0.8
	hhpcovg%	4.02	1.12	3.60	0
	Intercept	-0.03	0.06	-0.56	0.5
		-1.36	4.62	-0.29	0.7
	Average of Expected Responses:				0.67 (67%)
	Average of Residual				-0.01
	Average of Probability (any of three bids)				0.35 (35%)
	Pearson's Goodness of Fit Test		Chi-Square Sig.		5.29**
	Mean WTP (BDT [in USD])				**p<0.01 283.60 (2.75)

Source: Authors' Compilation.

The average probability of accepting any of the three proposed bid values was estimated at 35 percent of the total households. The Pearson goodness-of-fit test estimated a chi-square value of 5.29, which was statistically significant at a **p-value of < 0.01. The mean willingness to pay (mWTP) was approximately BDT 283.60 ≈ BDT 284 (USD 2.75), which was approximately 1.98 ≈ 2% of households' mean income per month and close to the initial bid value of BDT 300 [USD 2.91]. Mean WTP was estimated with an interval of BDT 266 [USD 2.58] to BDT 304 [USD 2.95] at 95 percent (%) confidence level, with variables in equations estimated values (**Table 2, 3**).

Households' Willingness to Pay for NHI (Kendall's Tau_b Correlation Coefficient Analysis)

The non-parametric approach is a significant way of estimating the willingness to pay tactic of the contingent valuation method. This relates to utility theory as the probability of a yes/ no (dichotomous) test which only

depends on the size of the bids (Calderon et al., 2008). Kendall's Tau has been used here to understand the strength of the relationship (correlation coefficient) between two variables. It could be nominal to nominal and ordinal to ordinal. Calculating the accurate mean of a categorical variable is quite impossible in a WTP study. So, this section adjusted Tables 4 and 5 to show the result of Kendall's test.

Table 4 displayed the correlation coefficient estimation and significance level between WTP and three experimental bid values [i.e., an initial bid of BDT 300 USD 2.91), a maximum bid of BDT 500 (USD 4.85), and a lower bid of BDT 200 (USD 1.95)]. When Kendall's tau values are less than (<) 0.20, it indicates that both of the estimated variables are associated very weakly with each other. If the calculated value is more than (>) 0.25, then these seem moderate, and if the values are above 0.35, then it indicates that both variables are highly associated with each other. This research tests several matches of Kendall's correlation coefficients (Matching 1, 2). By plotting Table 4, in a scatter plot, we got Figure 3.

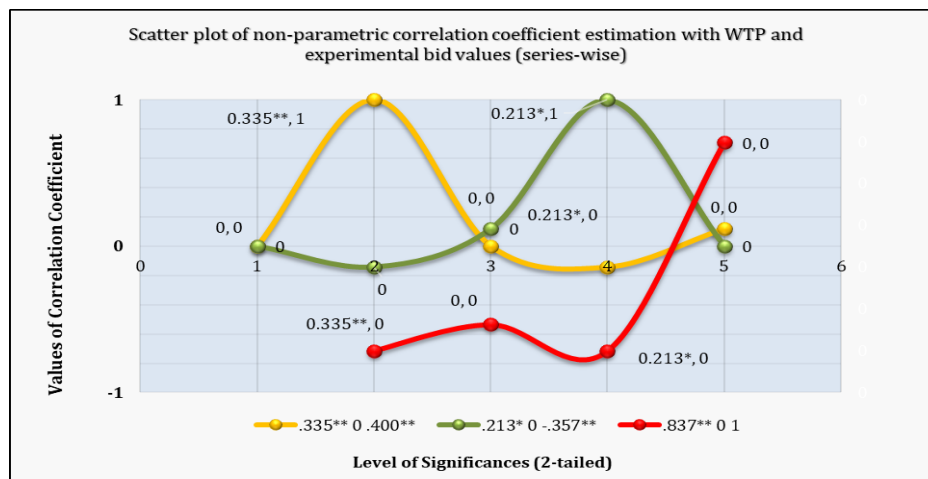
Table 4. Non-parametric Correlations Coefficient Estimation (Matching-1)

Observations		C ^c and Sig.	WTP	initial_bid	max_bid	low_bid
Kendall's tau-b (τ_b)	WTP	Correlation Coefficient	1	0.837**	.335**	0.213*
		Sig. (2-tailed)	-	0	0	0.020
	initial_bid	Correlation Coefficient	0.837**	1	0.4**	-0.357**
		Sig. (2-tailed)	0	-	0	0
	max_bid	Correlation Coefficient	0.335**	0.4**	1	-0.143
		Sig. (2-tailed)	0	.000	-	0.11
	low_bid	Correlation Coefficient	0.213*	-0.357**	-0.14	1
		Sig. (2-tailed)	0.020	0	0.12	-

* Correlation is significant at the 0.05 level (2-tailed). *p<0.05; ** Correlation is significant at the 0.01 level (2-tailed). **p<0.01; sig. = level of significance; C^c = Correlation coefficient

Source: Authors' Compilation.

Figure 3 plotted non-parametric correlation coefficient estimation of experimental bids [i.e., an initial bid of BDT 300 [USD 2.91), a maximum bid of BDT 500 (USD 4.85), and a lower bid of BDT 200 (USD 1.90)] and willingness to pay for NHI. Initial bid (BDT 300) is highly correlated with WTP, the dependent variable of this study. The maximum bid (BDT 500) showed its correlation coefficient 0.335**; **p<0.01 with WTP, which indicates that WTP and the maximum bid (BDT 500) were highly associated with each other. The lower bid (BDT 200) has its correlation coefficient value with WTP at 0.213*, *p<0.05, which was moderately associated with WTP for NHI, according to Kendall's correlation-coefficient rules of estimation.

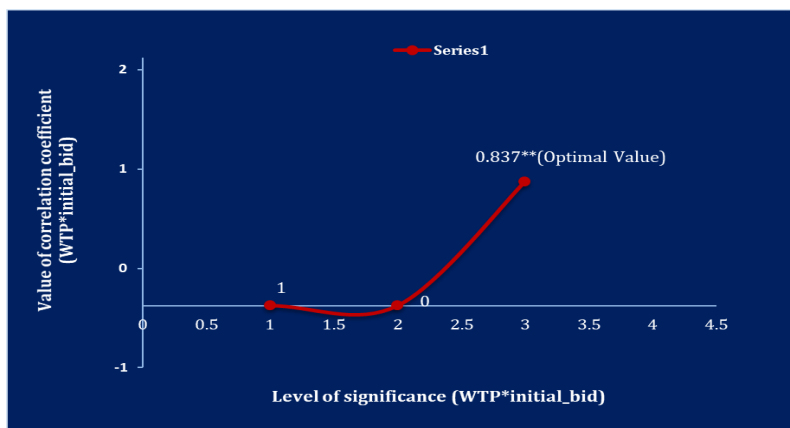


Source: Authors' Compilation (based on Table 4); **Correlation is significant at the 0.01 level (**p<0.01; 2-tailed); *Correlation is significant at the 0.05 level (*p<0.05; 2-tailed).

Figure 3. Non-parametric Correlation Coefficients' Scatter-Plot (series plotting)

Based on the estimated values of Table 4, Figure 4 displayed a highlighted plot (series 1) of Figure 3; the highest correlation coefficient value (0.837**) and level of significance (**p<0.01) were obtained from Kendall's tau-

b test, indicated that the initial bid value (BDT 300) and households' WTP were strongly associated and optimum value of this research. Via plotting Table 4, this research unveiled the households' maximum likelihood and maximum willingness to pay for an initial bid of BDT 300 (USD 2.91) per month (optimal value).



Source: Authors' Compilation (based on Table 4); **p<0.01; **Correlation is significant at the 0.01 level (**p<0.01; 2-tailed)

Figure 4. Highlighted Scatter-plot of Non-parametric Correlation Coefficient Estimations (Series 1)

Kendall's Tau_b (τ_b) trial was an outstanding non-parametric evaluation and highly statistically significant. Moreover, Table 5 displayed, a household's financial losses (0.21; *p<0.05), and damaged asset values (0.24; **p<0.01) are other explanatory variables that were significantly associated with willingness to pay for NHI. Besides, financial losses and damaged assets' values were significantly associated (0.22; **p<0.01) with each other.

Table 5. Non-parametric Correlations Coefficient Estimation (Matching-2)

Observations		C^c and Sig.	WTP	finloss	dasset	damassetp	damvalue
WTP	Correlation Coefficient		1	0.21*	-0.75**	0.14	0.24**
	Sig. (2-tailed)		-	0.02	.000	.065	0.002
finloss	Correlation Coefficient		0.21*	1	-0.242**	0.216**	0.379**
	Sig. (2-tailed)		0.02	.	.003	0.005	0
Kendall's tau-b (τ_b)	Correlation Coefficient		-0.75**	-0.242**	1	0.013	-0.140*
	Sig. (2-tailed)		0	0.003	-	0.9	0.046
dasset	Correlation Coefficient		0.14	0.22**	0.01	1	0.600**
	Sig. (2-tailed)		0.07	0.005	0.85	-	0
damassetp	Correlation Coefficient		0.24**	0.379**	-0.14*	0.6**	1
	Sig. (2-tailed)		0.002	0	0.05	0.00	-

* Correlation is significant at the 0.05 level (2-tailed). *p<0.05; ** Correlation is significant at the 0.01 level (2-tailed). **p<0.01; sig. = level of significance; ; C^c = Correlation-coefficient

Source: Authors' Compilation.

Future Policy (s) and Research Options

According to study findings, households demanded an average of 73 percent coverage against their insurance, where their average damage level was estimated at around 22 percent. Considering their cases, all unintended damages are not the same; determining the good coverage level of service package(s) during policy elaboration will ensure consistency between the policyholders and consumers.

Most of the respondents' affordability to finance is deliberated as demand side optimal premium's level. Considering social and economic optimality, generating a minimal tariff rate will make people more interested to pay for such hazard microinsurance program. Otherwise, insurance companies' tariff obligations might eliminate some population from service bundles.

In addition, this study discusses the benefits and the cooperation of insurance sector to the country's GDP. A huge portion of Bangladesh's corporate tax sector is related to the insurance and banking sectors. If evaluated properly, such microinsurance would be able to create a massive stir in Bangladesh's economy. If policies would be designed with an optimal tariff and tax rate, and average financial support according to coastal community demands

and losses, insurance holders are expected to increase rapidly. Hence, such hazard microinsurance in the market will sustain at optimum premium rates, normalizing the density of microinsurance with high interests, if the transparency of Bangladesh's insurance system is restored.

This research's optimum value was the initial bid of BDT 300 [USD 2.91] and mean WTP was BDT 283.60 [USD 2.75]. When we compared them, the mean WTP carries the closest value to the initial premium bid of this research. Meanwhile, individually and collectively 58.4 percent respondents of research were positively willing to pay BDT 300 per month for this hypothetical natural hazard insurance in the southwestern coastal region of Bangladesh. They are keen to bring themselves under strong financial support as a safeguard against recurring natural hazards. Hence, the policy recommendations with optimal and mean WTP will not undergo externalities.

Besides, this research's overall scrutinizes have attempted to stretch to policymakers a vivid understanding of households' behavior in adopting such microinsurance. This research recommends government and development agencies to implement such a microinsurance scheme as post-hazard economic support for coastal victims. As a result, significant welfare might be achieved in the economy of southwestern coastal Bangladesh. WTP's estimation with contingent valuation (CV) approach may diverge the experimental strategy. Integrating further respondents from the southwestern coastal areas of Bangladesh, diversity of the overall demand(s), payment plan, bidding and participation for NHI scheme would be enthusiastic. Furthermore, by scrutinizing the demand side and valuating supply side effects, NHI scheme might be assimilated to develop the sustainable natural hazard insurance (NHI) market place in Bangladesh as well as pertinent countries. Since, this study did not cover a comparatively gigantic sample size, further analysis might administer a comprehensive assessment wrapping more households in adjacent hazard-prone areas to ensure the robustness of the study's findings.

Conclusion

Furthermost, coastal households are not financially well-off; they need financial support to cope with the post-hazard damages. The government and NGOs provide relief funds to mitigate post-hazard losses, which detected far less than the damages. It has been observed that relief funds are provided by listing the poor households based on *upazila*/union or that some people deprived of hazards are given the facility of house restoration. Being economically unstable, coastal communities take high-interest loans from several organizations or mortgage lands to cover hazard damages. However, they would not get the chance to save for paying off the credit throughout the year to cover these losses.

Natural hazard insurance (NHI) is somewhat unfamiliar in selected areas of southwestern coastal Bangladesh. NHI is a hypothetical hazard insurance scheme in Bangladesh's panorama where consumers would be able to pay for getting financial security after a range of categorical natural hazards (i.e., floods, thunderstorms, cyclones, river erosions). People in the southwestern areas are getting help through micro-loans with high-interest rates and reliefs. Hence, at the time of collecting data a primary idea of this hypothetical hazard insurance, approximate pros and cons was shared with coastal households along with their queries; *Bangabandhu Suraksha Bima* (*Bangabandhu* Safety Insurance) was used as an example in the meantime. In that case, no influence was attempted on the respondent households to increase 'Yes' percentages and create biases. Therefore, we kept a random bidding option to offer in the computational system of this research to remove unintentional hypothetical bias from our non-market CV strategy. Thus, the respondents who discard the experimental payment plan would get an open bidding opportunity or express their net ability to participate in NHI.

The financial benefits of hazard insurance are of course dependent on the insurance premiums' value. It can be assumed that, they lead a marginal life where post-hazard expenditure is indeed an unwanted hassle for them. Therefore, they categorically need NHI coverage to lead a relaxed life span and to deal with unwanted risk-related expenses.

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Conflict of Interest

The authors declare no conflict of interest.

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THE STATE OF INVESTIGATIVE JOURNALISM DURING COVID-19: A STUDY ON PRINT MEDIA OF BANGLADESH

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Abstract

This study seeks to find out how investigative reporting was portrayed in Bangladeshi print media during the early stages of the coronavirus pandemic. This study applied the content analysis method to examine the investigative reports (N=58), followed by a quantitative and thematic approach to assess the state of investigative journalism practice in Bangladesh. The findings of this study revealed that the theme of crime and health-related issues has received the highest attention in investigative reports. Some investigation reports focused primarily on COVID-19 related issues, with medical equipment and hospital safety settings being the most often reported subjects. The study also found some notable discourse stating that government officials have mostly been cited as the primary source in investigative journalism. In addition, a substantial number of unnamed sources were also found in these reports. However, future studies can assess the quality of the investigative reports through textual analysis carried out over a longer period.

Keywords: Investigative journalism, COVID-19, Print media, News coverage, Bangladesh

Introduction

COVID-19 was declared a public health emergency of international concern on January 30, 2020, and since then, it has continued to be a persistent and pressing global health challenge. As of July 26, 2023, the total number of confirmed COVID-19 cases worldwide has reached 768,560,727, including 6,952,522 deaths (World Health Organization, 2023). In Bangladesh, as of May 2, 2023, there have been 29,446 reported deaths attributed to the novel coronavirus (Statista, 2023), besides Bangladesh has experienced almost thirty epidemics in the last 20 years. Major epidemics in this country include Dengue, Chikungunya, Diphtheria, Avian Influenza, Nipah virus, Acute Neurological Syndrome and COVID-19 which has broken all pandemic records (Institute of Epidemiology, Disease Control and Research, 2020).

In general, journalism is essential during a disease outbreak or pandemic to disseminate vital information that impacts public safety (Choi & McKeever, 2019). During times of emergency crises like the COVID-19 pandemic, there has been a notable shift in democratic governments taking on more authoritarian roles. Journalism holds significant importance in a democracy (Bhushan, 2023; Sommer & Rappel-Kroyzer, 2022), particularly investigative journalism, which plays a vital role in such challenging situations in exposing COVID-19 corruption (Mututwa & Ufuoma, 2022). But investigative journalism worldwide is encountering challenges in fulfilling its role as the watchdog of society. These challenges encompass various aspects, such as the influence of advertisers' interests, interference from politicians (Gerli et al., 2018), and secret services (Gerli et al., 2018; Marciano & Yadlin, 2022).

Furthermore, in Bangladesh, investigative journalism is currently experiencing fear of distinction for the Digital Security Act 2018 (Rahman, 2014). Moreover, fear of a lawsuit, the Press Council's limited jurisdiction, muscle power, the administration's unwillingness to cooperate, and a trend toward syndicate and desk reporting hinder investigative journalism in Bangladesh (Robaet et al., 2014). According to Reporters Without Borders, also known as Reporters Sans Frontières or RSF, Bangladesh is presently ranked 162 out of 180 nations in terms of press freedom ("Bangladesh Drops", 2022).

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The media has sometimes not fulfilled its role as expected. It encounters hurdles when covering a health crisis. During Avian flu, Leask et al. (2010) demonstrated that Australian journalists struggled to reconcile several, sometimes opposed aims while functioning under substantial operational constraints. Moreover, Klemm et al. (2016) focused on content analysis to see how the media dramatized H1N1 flu globally, while research on U.S. and South African newspapers found that published stories on a pandemic were episodic, lacking self-efficacy and sensational (Dudo et al., 2007; Wasserman et al., 2021).

Literature Review

Previous research examined newspaper content focusing on COVID-19 news coverage, agenda setting and framing of different themes and news sources using content analysis, critical discourse technique and other methods (Marciano & Yadlin, 2022; Mututwa & Ufuoma, 2022).

Chinedu-Okeke et al. (2021) studied Nigerian newspapers and found that most COVID-19 coverage and reports were hard news, features, and editorials. The study indicated that whereas newspapers supplied substantial coverage of COVID-19 issues, they do not give the COVID-19 pandemic notable significance. Zafri et al. (2021) analysed 7,209 media articles covering the COVID-19 pandemic from January 1, 2020, to October 31, 2020. The study identified twelve key topics: origin and outbreak of COVID-19, healthcare system response, economic impact, govt. assistance, lifestyle impact, regular updates, pharmaceutical measures, expert opinions, non-pharmaceutical measures, vaccine updates, local unusual system activities, and testing facilities. Basch et al. (2020) analyzed 5,285 articles, and they revealed the top five themes in U.S. newspapers including financial impact of COVID-19, tales of afflicted persons, the death and mortality rates, and public precaution advice. Chen et al. (2020) studied 499 Chinese newspaper articles on tourism and nine themes were identified, including COVID-19's impact on tourism, and post-crisis tourism products. In Finland, the initial months of the intensive phase of the COVID-19 epidemic were marked by a significant, but not unusual, decline in climate coverage from the previous high (Lyytimäki et al., 2020). A linear growing tendency was found in press coverage on migrant labourers' difficulties during the three lockdowns in India (Raj et al., 2021). Jordanian newspapers were interested in publicizing cyberbullying subjects during the pandemic (Tahat et al., 2020).

Some researchers tried to investigate health news trends around this outbreak. Itheme et al. (2022) observed that Nigerian newspapers predominantly featured COVID-19 information in the form of statistics/case updates, reports on food/palliative distribution, and the repercussions of COVID-19 on the economy and other sectors. Gupta et al. (2022) conducted a content analysis focusing on media coverage of COVID-19 health information in India. Their findings revealed that most articles were in line with the WHO COVID-19 updates, providing accurate information on topics such as symptoms, risk factors for severe symptoms, transmission, and prevention. However, a concerning aspect was that 40% of the media coverage regarding treatment options contained misleading information, including claims that treatments like plasma therapy or chloroquine were effective.

However, in-depth reporting was lacking regarding health and nutrition-related COVID-19 awareness. Basch et al. (2020) assessed Wall Street Journal and New York Times and found reports on infection rates, ventilator use, mortality, economic losses, and the pandemic's environment. Also, epidemic, economic effects, and societal implications were major media frames (Hubner, 2021).

Mach et al. (2021) examined 1,331 news published in U.K. and North American newspapers. The study found that populist-right newspapers have the moderate scientific quality and little sensationalism. Fox (2021) studied 330 editorials and found that although newspapers were reluctant to admit the spread, their earliest editorials were threatening. Additionally, they uncovered that China and Taiwan politicized the outbreak whereas Hong Kong editors stayed neutral to avoid politicization. On the other hand, the pandemic brought financial benefits for Korean editors. Hart et al. (2020) looked at U.S. newspapers and television news coverage and discovered that it was extremely contentious and highly politicized. Early news coverage of COVID-19 may have contributed to its politicization in the U.S. (Hubner, 2021).

Apuke and Omar (2021) found that Nigerian state-controlled media networks attributed government leaders as the primary news source more frequently compared to commercial media. Private media channels were negative and used graphics often. On the other hand, Hubner (2021) evaluated 1,034 news from The New York Times and The Washington Post and found that individuals, interest group members, and politicians were the most quoted

sources in early media coverage. Nielsen et al. (2020) revealed that the UK government (38%) and individual politicians (37%) were the most commonly identified sources responsible for potentially false or misleading information about the coronavirus. Examining 2,979 news articles from four West Yorkshire newspapers, O'Neill and O'Connor (2008) observed a growing dependence of journalists on their audience as a source for news. However, the study highlighted that relying solely on single-source information lacks comprehensive perspective. Nielsen et al. (2020) conducted a study on the public perception of news coverage and revealed that 35% of respondents felt that media reporting had worsened the coronavirus situation in the UK. On the other hand, a majority of 56% of respondents recognized the positive role played by news media in helping them understand the pandemic better. During the COVID-19 outbreak, few studies have been done on newspaper coverage in Bangladesh. Sultana et al. (2020) identified the different news content of COVID-19 coverage in the major national dailies of Bangladesh during the pre-lockdown to the end of the lockdown period. The study showed that COVID-19 related prevention, impacts, mitigation, preparedness, and world concern were the major themes in the newspapers. Regarding news sources, Dutta et al. (2020) showed that The Daily Kalerkantho relied more on experts, The Daily Ittefaq utilized international sources regularly, while The Daily Star relied substantially more on govt. personnel. Mamun and Sheikh (2020) also found an undue reliance on govt. official sources in news stories. This study also revealed an absence of investigative and follow-up reports during COVID-19.

Regarding investigative journalism, there has been minimal substantial research in this field conducted in Bangladesh, except for a study carried out in 1994. Riaz and Chowdhury (1994) found 58 investigative reports in Bangladeshi newspapers. Among them, 40 news reported on national concerns while 18 reported on local matters, whereas English newspapers ignored rural life. Also, 77% of investigation reports were about business, economy, crime, law enforcement, social services, and health. Many publications were based on govt. information and many investigative pieces had unidentified and unreliable sources (Khan & Raji, 1996).

Investigative journalism is essential as it reveals local and national corruption, irregularities, illegal conduct and more (Coronel, 2009; Rahman, 2014; Robaet et al., 2014). During the COVID-19 period, some exceptional pieces of investigative news exposed Bangladesh's failing health system. These studies indicate that this sector is prevalent with corruption. In addition to these, numerous additional crimes were committed. As there was no previous research on this subject in this particular COVID19 context, this study will therefore try to examine how investigative journalism was portrayed in Bangladeshi print media during the Coronavirus epidemic to evaluate which facts were revealed and how they were presented. This study aims to answer the following research questions:

RQ1: How much coverage and treatment of investigative news has been given during the pandemic?

RQ2: What are the themes of investigative news, especially related to COVID-19?

RQ3: What are the focuses of investigative news?

RQ4: What types and categories of sources are used in investigative news?

Materials and Method

This study conducted a content analysis method to examine the coverage, thematic meaning and message of the investigative reports published in the selected Bangladeshi newspaper during the COVID-19 pandemic. This method was formerly utilized in numerous domains, including climate change and global warming research, environmental difficulties, and ecological analysis (Chandelier et al., 2018; Bhatia et al., 2013; Billett, 2009; Jacobson et al., 2011), political analysis (Bauer et al., 2016), education sciences (Blei, 2012), and tourist crisis (Chen et al., 2020). In this research, content analysis was selected due to its capacity to analyze huge volumes of data and identify broad trends (Deacon et al., 1999). This method permits the formulation of subjects independently by evaluating newspaper content (Roberts et al., 2013). In addition, studying the diversity of newspaper content using structural topic modelling (content analysis) might help to gain a deeper understanding of the dynamic features of pandemics, including their social, political, and economical ramifications (Westgate et al., 2015).

Data were collected from The Daily Star, Prothom Alo, and Samakal and the criterion used in this instance is the newspaper's readership in the language category. According to the country's Ministry of Information and Broadcasting, readership numbers for the year 2019 show that all three are among the top 10 widely read newspapers ("Eight Newspapers", 2020). The Daily Star has 0.2 million readers and holds the first position among

English-language daily newspapers. Prothom Alo and Samakal have 0.044 million and 0.04 million readers, respectively and have ranked among the top 10 Bengali-language daily newspapers.

This study examined one month of published news stories during the very beginning of the COVID-19 outbreak in Bangladesh as crises are more newsworthy at their early stages (An & Gower, 2009). Coronavirus made its first appearance in Bangladesh on March 8, 2020 (Islam et al., 2020). Bangladeshi newspapers covered the pandemic more after its announcement (Dutta et al., 2020). Therefore, March 2020 was considered an appropriate month for the research. All the investigative reports published in these newspapers during this period were selected for analysis. The selection of news adhered to a process of purposive sampling. This approach consists of subjects picked based on particular features or qualities and excludes those who do not fulfil these standards (Wimmer & Dominick, 2022). News articles (N = 58) concerned with investigative journalism were collected from the selected newspapers inspired by a similar study conducted by Riaz and Chowdhury (1995), Crude Reading and Direct Enquiry methods were used. These two sorts of techniques were selected in response to two major criticisms of conventional content analysis. First, without manifest meaning, content analysis cannot disclose the latent meaning of the data. Second, it emphasizes the quantitative aspect. The way of crude reading helps to circumvent these constraints, particularly the second one. In addition to the quantity, it is believed that the features of the newspapers will not be transparent. The data gathered in this method can reveal information that would not be discernible through content analysis (Berelson, 1952).

Since this study is concerned with investigative journalism, only investigative reports were evaluated. To find investigative news this study followed the definition of investigative journalism. Investigative journalism is the process of (i) revealing confidential information through (ii) in-depth research and (iii) planned investigations over (iv) a long period. Any good investigative news should consist of at least four of these basic characteristics. Also, there could be a few other factors such as risk, accountability, public interest, impact on policy, etc. However, depending on the story and various reasons, some characteristics could be missing or receive less importance in an investigative article (Robaet et al., 2014; Coronel, 2009). Primarily, these characteristics were explored while reading the news stories. News that lacked any of the four basic criteria was excluded from the analysis.

Coding

To eliminate errors and biases, all articles were examined by two well-trained coders. Each coder independently coded the news articles. For the inter-coder reliability test, two coders independently coded 20 news collected from selected newspapers over two weeks. Using Holsti's method, the reliability between coders was 0.92. Holsti's inter-coder reliability refers to the level of agreement between two or more independent coders using the same coding method to evaluate the same sample units. Coders with scores of 0.9 or higher are regarded as very reliable (Mao, 2017). This method is valuable for evaluating inter-coder reliability.

Based on the preliminary reading of the news stories, relevant academic literature, and research questions, a coding system was developed. Some coding categories were derived from a report on a worldwide assessment of news coverage by the press, radio, and television in 29 nations sponsored by UNESCO/IAMCR (Sreberny-Mohammadi, 1984). Additionally, a few modifications have been made considering the societal context of Bangladesh (Riaz and Chowdhury, 1995). The pilot study of 20 news assisted in evaluating and adjusting the framework, resulting in a final coding framework of 12 categories.

These coding characteristics include (1) news coverage, which was categorized into urban-oriented and rural-oriented; (2) news treatment, which consists of lead news, series report, special day report, infographic, banner headlines, and the number of pictures. (3) news themes, which include crime and law enforcement agency (LEA), COVID-19, corruption, infrastructure, maladministration, politics, animal, education, agriculture, economy, and environment. Here, LEA consists of any law enforcement agency of the state and the crimes that are related to the news; (4) COVID-19-related news themes, which consist of equipment, hospital preparation and safety measurement, COVID test, vaccine, and medicine; (5) news focus, which includes different news topics such as land grab, illegal river occupy, etc.; (6) reporting sources, which was categorized into an unnamed person, LEA sources, observance, other research, users-generated, and press release; (7) source of pictures, which was classified into captured, unknown, and collected; (8) categories of sources, which was categorized into document source and human source; (9) commonly used document sources, which consists of govt. data, LEA records, and other data;

(10) commonly used human sources, which include govt. officials, locals, political persons, LEA officials, and others; (11) gender division of human sources, which were categorized into male, female, and unknown sources. These factors are essential components of news analysis (Sreberny-Mohammadi, 1984; Trevor Thrall, 2006). Google Form is used by the coders to input the data while coding the selected news reports. Microsoft Excel 2016 is used to improve the precision and speed of the analytic process (Zamawe, 2015).

Results

RQ1 asked about the news coverage and treatment of investigative news. As shown in table 1, most of the news regions were urbanized. The coverage of 50 news regions was urban-oriented, which is 86.2%. On the other hand, only 8 news coverage were rural-oriented, that is 13.8%. More than half (58.6%) of the news items were designated as the lead news. The analysis found that 18 articles—31% of the sample—were labelled as series reports. However, only 2 news—3.4% of the sample—were published on a special day. Infographic and banner headlines appeared on 1 news (1.7%) each. Overall, nearly half (41.4%) of the investigative news—in 24 of the articles—contained an image.

Table 1. Coverage and Treatment of Investigative News

Variables	Categories	Count	%
1. News Coverage (N = 58)	Urban-Oriented	50	86.2
	Rural-Oriented	8	13.8
	Total	58	100
2. News Treatment	Lead News	34	58.6
	Series Report	18	31
	Special Day Report	2	3.4
	Infographic	1	1.7
	Banner Headlines	1	1.7
	Number of Pictures	24	41.4

Note. Counts and percentages in News Treatment represent the presences of a treatment.

RQ2 inquired about the themes of investigative news, especially related to COVID-19. More than one-third (36.2%) of the article issues were related to LEA, precisely 21 news. Twelve articles, or 20.7% of the total sample, were focused on COVID-19 related theme. Themes related to corruption, infrastructure, and maladministration were found in 12 articles combined—20.7% of the sample. Moreover, stories about other themes were also found, including politics, animals, education, agriculture, economy, and the environment (figure 1). Of the twelve articles related to the COVID-19 theme, almost half of them (41.6%) were equipment based. Only 3 news were related to hospital preparation and safety measurement, accounting for 25% of the selected sample. Themes related to COVID test accounted for 16.7% of the total, and both vaccine and medicine-related themes combined also constituted 16.7% (figure 2). These reports are tabulated in table 2 concerning investigative news themes and COVID-19-related news themes.

Table 2. Themes of Investigative News & COVID-19-related News

Variables	Categories	Count (per)	Count	%
3. News Themes (N = 58)	Crime and Law Enforcement Agency (LEA)		21	36.2
	COVID-19		12	20.7
	Corruption; Infrastructure; Maladministration;	4	12	20.7
	Politics; Animal; Education; Agriculture	2	8	13.8
	Economy		3	5.2
	Environment		2	3.4
	Total		58	100
4. COVID-19-related News Themes (N = 12)	Equipment		5	41.6
	Hospital Preparation and Safety		3	25
	Measurement			
	COVID Test		2	16.7
	Vaccine; Medicine	1	2	16.7
Total			12	100

Discussion

This study finds that most of the investigative reports are related to LEA and COVID-19-related themes. In addition, land grabs, illegal river occupying, hills razed, and extortion are some of the common focuses of investigative news during COVID-19. Though, healthcare and economic impact were the most common themes during COVID-19 in the majority of the studies (Basch et al., 2020; Zafri et al., 2021; Itheme et al., 2022). Climate coverage, tourism, and migrant laborer's themes were also spotted in investigative reporting during the pandemic (Lyytimäki et al., 2020; Chen et al., 2020; Raj et al., 2021). In this study, health and nutrition, and the environment are the second most repetitive news themes. However, Riaz and Chowdhury (1995) discovered that 77% of investigative reports in Bangladeshi newspapers were about business, economy, crime, law enforcement, social services, and health.

A separate discursive analysis of the COVID-19-related news theme has been conducted. This study found only 12 news related to the COVID-19 theme. It shows that hospital equipment news is the most reported topic. Following that, hospital preparation and safety measurement-related discourse is also found. Similarly, in U.S. newspapers reports on the use of ventilator-related topics were found most reported topic (Basch et al., 2020).

This study found that more than half (58.9%) of the sources used in these reports are unnamed sources. LEA sources are also mentioned frequently. In terms of categories of sources, 80.4% of them are human sources. Among them, the most repeated human sources are govt. officials, and locals. In addition, political persons, and LEA officials are also used repeatedly. Likewise, U.S. newspapers and state-run media in Nigeria mentioned govt. leaders and politicians frequently. Similar results were found within the context of Bangladesh (Riaz and Chowdhury, 1995; Mamun and Sheikh, 2020). Dutta et al. (2020) discovered that The Daily Star used more govt. employees. However, The Daily Kalerkantho relied more on experts, whereas The Daily Ittefaq used foreign sources. In addition, interest group members, audience, and individuals were the most often referenced sources in U.S. and Nigeria (Hubner, 2021; Apuke & Omar, 2021). In this research, LEA records are most frequently used source in terms of both human and documental sources. Likewise, O'Neill and O'Connor (2008) found police among the top mentioned sources. However, many investigative reports used questionable sources (Riaz & Chowdhury, 1995; O'Neill & O'Connor, 2008). Similarly, this research found 99 unknown persons used as a source.

This research found that nearly half (41.4%) of the investigative news contained an image. Riaz and Chowdhury (1995) found only 3 pictures in 58 investigative news. Therefore, in both the past and the present, the use of photos in investigative reporting is unremarkable. Though the majority of the news are lead news in our findings indicating the significance of investigative reporting, Mamun & Sheik (2020) and Turkel et al. (2021) found the declining number of investigative reporting during COVID-19 which indicates the less important in this regard.

Moreover, this study discovered that investigative news is mostly focused on urban-oriented issues. Similarly, in the 1990s, monthly newspaper coverage featured 40 city-centric news articles and 18 rural-centric news stories (Riaz & Chowdhury, 1995). Moreover, Hart et al. (2020) found that newspaper coverage is extremely polarized.

Conclusion

Bangladesh is considered one of the most vulnerable countries in terms of both natural catastrophe and the press freedom index. Investigative reporting in Bangladesh is also facing difficulties because of severe draconian laws and pressure, where COVID-19 placed additional burdens. Thus, the focus of this study is on the status of investigative journalism in Bangladesh in this particular context. During times of emergency crises, the media has encountered difficulties in carrying out its essential role as the watchdog of society. Consequently, it becomes highly significant to thoroughly examine and evaluate the extent, focus, and sources of media reporting during these critical periods. This study, while valuable in assessing the current state of investigative journalism amid an emergency crisis, does have certain limitations. Specifically, it may not fully address the framing and tone of investigative news through textual analysis. Nevertheless, the insights obtained from this research can still serve as a guiding reference for the media to be more conscious of their responsibilities during these challenging times. Future study employing textual analysis can play a pivotal role in guiding media professionals to adopt a more thoughtful and considerate approach in their reporting. Further studies can be carried out about the quality of investigative reports.

Data Availability Statement

The data that support the findings of this study are openly available in The Daily Star; Prothom Alo; Samakal; at epaper.thedailystar.net; epaper.prothomalo.com; epaper.samakal.com

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Conflict of Interests

The authors declare no conflict of interest.

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MEALTIME CHALLENGES AND MATERNAL HEALTH HISTORY OF CHILDREN WITH AUTISM: A CROSS-SECTIONAL INVESTIGATION

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Abstract

Food behaviors in children with autism are poorly understood but tend to be more severe and long-lasting. However, there have been few studies on the subject in Asian countries. The main objective of this study was to identify the various mealtime issues (extensive choking, coughing, or gagging while eating, tantrums and meltdowns at mealtimes, swallowing problems, chewing problems, etc.) faced by children with autism. In addition, this study explores how factors like family history (parents' blood type incompatibility, inheritance), the length of the pregnancy, the mother's mental health, and her age at the time of conception may affect the baby's development and increase the risk of autism. Participants in this study were 120, including 58 children with autism and 62 children without autism. We survey parents with children aged 2–12 years. Children with autism were selected from two different autistic organizations. Data were analyzed through univariate methods, descriptive statistics, and Pearson's Chi-square (χ^2) test. Also, an unadjusted odds ratio with a 95% confidence interval (CI) was used to define the various predictors of mealtime challenges. In the autism group, approximately 60% of children have different types of mealtime challenges; around 77% of mothers experienced mental health issues (depression, anxiety) during pregnancy. Almost 32% of the children in the autism group had family members who also had autism spectrum disorder (ASD). Children with autism (OR=6.864, CI=2.924-16.112, $p < 0.001$) became more hyper when consuming carbohydrates compared to children without autism. Study results indicated that children with autism face noticeably greater difficulties during meals than children without autism.

Keywords: Autism spectrum disorder, South Asia, eating disorder, Bangladesh, Food behavior

Introduction

Since the early 1900s, autism has been used to describe various neuropsychological disorders. The concept of autism comes from the Greek word *autos*, which means 'self.' It indicates a scenario in which a person is disconnected from his or her social circle. For example, he may become an isolated onself. Eugen Bleuler, a Swiss psychiatrist, developed the word autism (Hampson & Blatt, 2015; O'Rourke, 2023). Around 1911, Eugen Bleuler began using it to describe a group of symptoms associated with schizophrenia. ASD often known as autism spectrum disorder is a complicated, progressive disease defined by constant complications in social engagement, speech, nonverbal communication, and limited or regular activities. Autism spectrum disorder is a neurobiological syndrome resulting from environmental and genetic factors that influence brain development. (Naznin et al., 2020). The understanding of the most plausible etiologic pathways for ASD is being expanded by recent studies. But, at present, there is not a single comprehensive explanation. According to some scientists, trusted sources of environmental factors, including as exposure to chemicals, play a part in the development of autism, while others believe that trusted sources of genetic variants are the cause. Recent research has shown that ASD risk is increased in infants with bigger birth weights and lengths (Niculae, 2020). Asperger's syndrome, autism, and severe developmental disability are the three subgroups of PDD-NOS mentioned by the Centers for Disease Control and Prevention (CDC). However, now they are referred to as autism spectrum disorders (ASD) (Hodges et al., 2020).

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According to the CDC, one out of every 54 (8-year-old) children is autistic (Knopf, 2020). This figure has risen from the earlier estimates of one in 59 prevalence (*Autism Research*, 2021). Boys are three to four times more likely than girls to have autism spectrum disorder, and many girls with ASD have less noticeable symptoms than boys (Wigdor et al., 2022). According to the CDC, ASD affects people of all races, ethnicities, and socioeconomic backgrounds (*Webmd*, 2023). Autism symptoms include abnormal social and communication behaviors. They also include particular interests and repetitive behaviors. (*AEIOU Foundation*). Autism most commonly reveals itself between the ages of one and two years. Some children express multiple symptoms of autism, whereas others exhibit only a few symptoms. Communication and emotional and social connections are typically challenging in the case of children struggling with ASD. The majority of the parents noticed the symptoms of autism at the age of 12-24 months of their children. Children with autism will have symptoms for the rest of their lives, but they may improve as they get older. In their early years, approximately 40% of children with ASD are unable to speak at all, whereas 25% to 30% do but slowly lose their ability to speak. Some children with autism do not speak until they are older (Pathak, 2021).

Autism spectrum disorder (ASD) affects one out of every 36 children, reported on the CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network. (Maenner et al., 2023). We have less information on the number of infants and adults affected by this horrible, lifelong developmental neurological disorder in many underdeveloped countries, including Bangladesh (*Global Autism Movement and Bangladesh*). The prevalence of all sorts of neurodevelopmental impairments is 7.1 percent, according to a recent 2013 pilot research in Bangladesh that involved community health workers. According to the survey, 0.15 percent of persons have autism, with 3% staying in Dhaka and 0.07% staying in the countryside. (*Global Autism Movement and Bangladesh*). Only 200 psychiatrists and a small number of other health professionals serve the country in the face of such a high disease burden. These, with a plethora of scientific and medical concerns, must be addressed as soon as possible (Mannan, 2017). The number of autistic children is increasing every day, and it is critical to figure out what causes autism.

Sensory difficulties are common among children with autism. They can be exceedingly sensitive to particular sensations or, on the other hand, extremely indifferent to specific experiences (Bandini et al., 2017). Food and eating appear to be one of the most frequent sensory difficulties. Other difficulties in the domain of Sensory processing may arise. They may only eat meals on specific menus if they have visual sensitivity. They may also be unable to eat meals in direct contact with one another on their plate. Children with autism may find it difficult to maintain long-term attention on a single task. A child could find it challenging to eat while seated. Compared to ordinarily developing children, children with Asperger's Syndrome tend to be fussier eaters and have less alternatives for what they like to eat (Bandini et al., 2013). In children with three Asperger's Syndrome, refusals to consume food are common due to a variety of factors, including texture, adherence, taste, smell, combinations, and form. (Hubbard et al., 2014). Other nutritional deficiencies have been linked to autism and its symptoms, like not getting enough methyl B12, not getting enough vitamin D, and folic acid deficiency. The incidence of eating troubles in children with ASD is estimated to be between 46% and 89%, as reported by (Ledford & Gast, 2006). These conditions may include peculiar eating patterns, dietary customs, and food preferences. Kids with autism can have strict and rigid eating habits that affect their eating (Sharp et al., 2013). Children with ASD may experience strict and rigid eating habits. Psychologist Melissa Olive, who specializes in the treatment of children with ASD with food-related issues in her New Haven, Connecticut office, has observed that some of these individuals limit their dietary intake to the extent that nutritional deficiencies are present, leading to weight loss, malnourishment, and stunted growth (Nath, 2014).

In terms of the diverse types of food consumed, sixty percent of people eat fewer than 20 different types of foods, and 53 percent have nutrient deficiencies. Almost 80% of the children in danger are under the age of five (Cornish, 1998). The biggest persistent concerns for children with ASD appear to be food/texture selectivity and a lack of variety (Bandini et al., 2010). Taste, smell, color, and texture sensitivity can all be present in people with autism (Hubbard et al., 2014). They might limit or completely avoid particular meals or even entire dietary groups including highly flavorful foods, fruits, and vegetables, as well as particular textures like foods that are slick or mushy (Schreck & Williams, 2006).

Food selectivity, commonly known as 'picky eating,' is a widespread issue among kids who have Autism Spectrum Disorder. This is particularly concerning as it has a negative impact on food consumption and family

meals (Jacobi et al., 2003). The selective eating patterns in children with ASD have been linked to inadequate dietary intake, an unwillingness to consume fruits and vegetables, difficulties with eating habits, and dietary habits (Bandini et al., 2010; Curtin et al., 2015; Hubbard et al., 2014; Postorino et al., 2015). According to Dr. Olive, ASD children learn to avoid certain foods because they cause digestive problems, such as bloating and abdominal pain. Some young children have trouble swallowing or consuming meals with a particular texture, fragrance, or color. These kids could be suffering from a feeding issue. Many children with autism symptoms are averse to trying new activities. This issue is called neophobia. Selectivity in food consumption in children with autism does not always lead to a decrease in body weight or physical development. In fact, certain eating patterns that prioritize carbohydrates and snack foods in adolescence and adulthood may be linked with an increased risk of becoming overweight, diabetic, and cardiovascular disease. Eating a small variety of meals may cause more immediate health issues, such as

- Poor bone growth
- Constipation
- Vitamin and mineral deficits

According to studies, children with autism consume less calcium and protein than other children, which may result in diseases that can be avoided by modifying the way one eats. However, successfully addressing feeding disorders can have far-reaching effects, such as better health, higher standard of living for children and their families, fewer mental health issues for children, and a reduced risk of long-term eating issues (Piazza & Addison, 2007).

The main objective of our study was to identify the various mealtime issues children with autism might have. Additionally, we explored the potential effects of a number of variables, such as pregnancy length, mother's mental health, age at conception, and family history (including parent's blood type compatibility and inheritance patterns), on child development and a possible increase in the risk of autism.

Materials and Method

- **Purposive Sampling in Dhaka City:** The study employed purposive sampling techniques to select participants from Dhaka City. This method involves intentionally selecting individuals who meet specific criteria relevant to the research objectives.
- **Information Sources:**
 - a. **Parents and Institutions:** Data was collected from both parents and relevant institutions involved in the care and support of autistic children.
 - b. **Organizations:** The study obtained data on autistic children from two specific organizations: Society for the Welfare of Autistic Children (SWAC) and the Angel Foundation for Children with Special Needs. These organizations likely specialize in providing services and support to autistic children and their families.
- **Data Collection:**
 - a. The researchers collected data on a total of 120 participants for the survey.
 - b. **Participant Criteria:** The participants consisted of parents with children aged 2 to 12 years.
 - c. **Children with Autism:** Out of the 120 participants, 58 children belonged to this group, which comprised children diagnosed with autism.
 - d. **Children without Autism:** The remaining 62 children from the participant pool formed this group, comprising children who did not have a diagnosis of ASD.

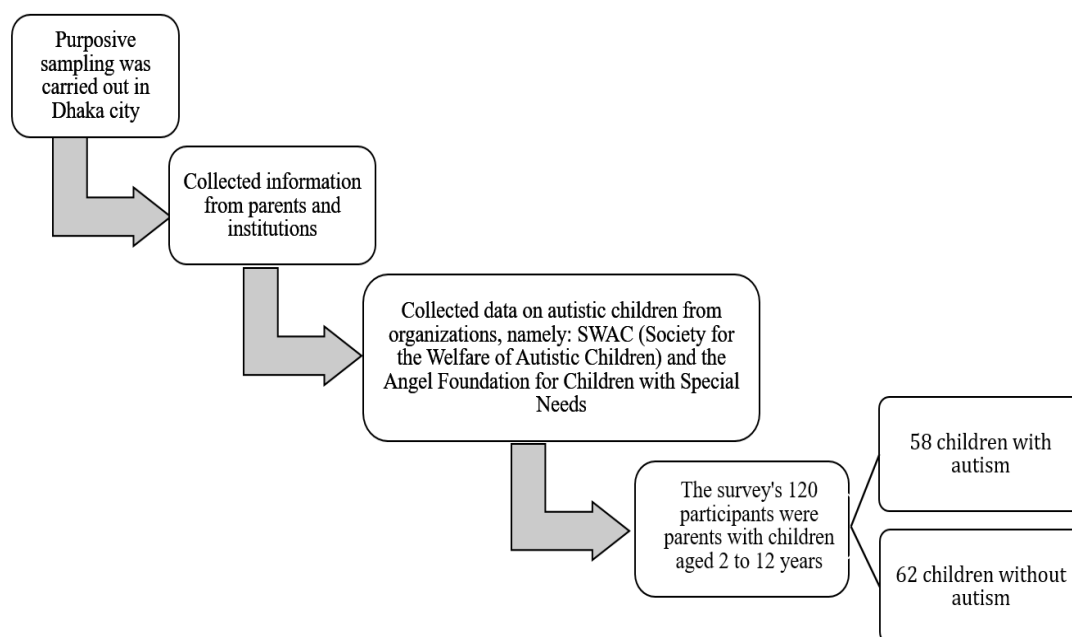


Figure 1. Sample selection flow chart

A face-to-face survey was conducted to collect information from the respondents. The survey questions included the child's age, food behavior, and family history. In this study, we exclusively gathered information about blood groups from mothers of children diagnosed with ASD. To identify the parent's blood type incompatibility of children with ASD groups, we asked whether the mother or her husband has different Rh blood types (the mother had a Rh-negative blood type while the father had a Rh-positive blood type, or vice versa). Furthermore, mothers were asked to provide information regarding their pregnancy period and mental health status. In order to understand more about the feeding difficulties that their children encountered, we also interviewed mothers of children with ASD and without ASD.

Data Processing and Analysis:

The required data after collection have been processed and analyzed to extract the findings of the study. For processing and analysis purposes, Statistical Package for Social Scientists (SPSS) software was utilized.

To compare frequencies and find out associated factors of ASD, we conducted a descriptive analysis, Pearson Chi-Square test. Additionally, based on reported exposures, within a 95% confidence interval, odds ratios (OR) are shown to indicate the risk factors of mealtime challenges.

Result

In Bangladesh, autism is a complex disorder, especially among children. In Dhaka city, 1.5/1000 (within a 7200-population) children are affected by ASD.

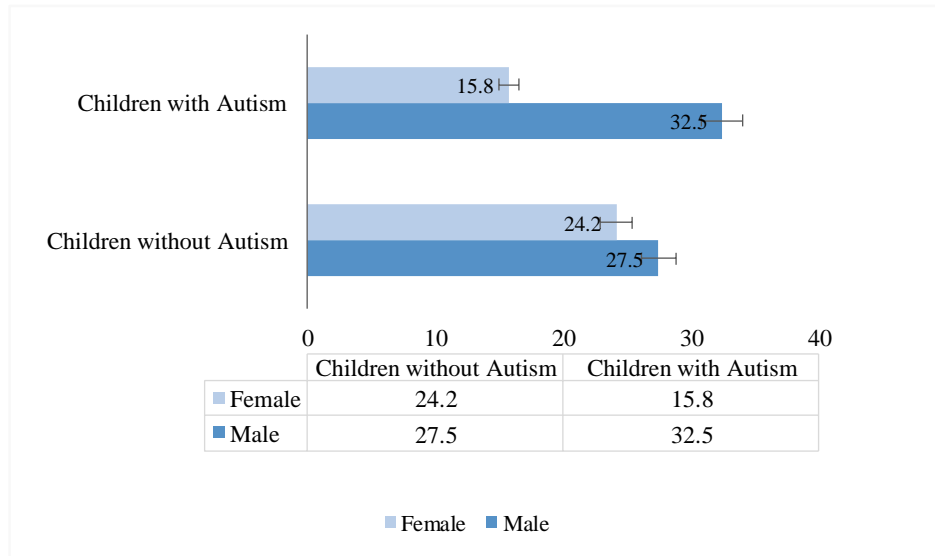


Figure 2. Bar diagram shows the percentage distribution of male and female children.

To obtain more detailed information on autism, divide 120 children into four age groups: $2 \leq \text{age} < 5$, $5 \leq \text{age} < 7$, $8 \leq \text{age} < 10$ and $10 < \text{age} \leq 12$. The mean age of autistic children is 8. From all of the food behavior, it was found that 60% of children have feeding disorders. The ages of children were between 2 and 12 years old. The mean age of children is 8. Among 120 children, 60% were male whereas 40% were female.

		Children without Autism	Children with Autism	Total
Gender	Male	33 27.5%	39 32.5%	72 60.0%
	Female	29 24.2%	19 15.8%	48 40.0%
Total		62 51.7%	58 48.3%	120 100.0%

Table 1 shows that 64.2% of autistic children had food allergies. Out of 64.2% of the children, 18.6% are between the ages of 2 and 5. Most of the children between the ages of 5 and 7 have allergies, which is 24.3%. Nine children between the ages of 8 and 10 have allergies. 5.5% of children between the ages of 10 and 12 were allergic to food. One hundred and twenty children were all vaccinated when they were young. Only 17.9% of parents of children with autism have a blood type that doesn't work well with their children. The rest of the parents don't have any problems.

From the table, it is clear that 15.9% of parents of autistic children were related to the child's other parent before they got married. None of the other parents had this problem. It's important to know that 74.9% of kids live in nuclear families and 25.1% live in joined families. Also, 32.0% of children have autism that runs in their families, while 68% don't have any of these problems. Table 2 shows that most of the children (32.5%) experienced the first symptom of this disease at age 25– 30 months. Autism started at 6-12 months in only 3.6% of children, whereas 14.2% have noticed the symptoms at 13–18 months.

Table 1. Distribution of Children with Autism group according to their medical and family history

Age group	Allergic to food		Parent's blood type incompatibility		Parents were relative before marriage		Children's family status		Autism problem in other family member	
	Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)	
	Yes	No	Yes	No	Yes	No	Nuclear family	Joined family	Yes	No
2 ≤ age <5	10 (18.6)	8 (12.4)	3 (6.2)	15 (24.8)	2 (5.2)	16 (25.8)	12 (22.6)	06 (8.4)	07 (9.4)	11 (21.6)
5 ≤ age ≤ 7	12 (24.3)	8 (9.2)	3 (6.1)	17 (28.4)	3 (6.1)	17 (28.4)	14 (25.9)	06 (8.6)	08 (12.2)	12 (22.3)
8 ≤ age ≤ 10	9 (15.8)	6 (10.1)	2 (4.1)	13 (21.8)	1 (3.1)	14 (22.8)	12 (20.6)	03 (5.3)	06 (8.9)	9 (17.0)
10 < age ≤ 12	3 (5.5)	2 (3.1)	1 (1.5)	4 (7.1)	1 (1.5)	4 (7.1)	3 (5.8)	2 (2.8)	01 (1.5)	4 (7.1)
Total	34 (64.2)	24 (34.8)	9 (17.9)	49 (82.1)	07 (15.9)	51 (84.1)	41 (74.9)	17 (25.1)	22 (32.0)	36 (68.0)

Table 2. Distribution of Children with Autism group according to children age during disease start

Age Group (Months)	Frequency (n)	Percentage (%)
6-12	2	3.6
13-18	7	14.2
19-24	14	20.8
25-30	19	32.5
31-36	13	20.8
37-41	3	8.1
Total	58	100

The disease started at 19-24 months in 20.8% of children. Children whose age is (31-36) months have the same percentage as children whose age is (19-24) months. Only 8.1% of children have noticed the symptoms at (37-41). Table 3 shows that most of the mothers of autistic children's ages were 24-27 during their pregnancy, and the percentage was 35.

Table 3. Distribution of Children with Autism group according to their mother's pregnancy history

Age Group (years)	Mother's age during pregnancy		Pregnancy Duration	Mother's pregnancy duration in weeks		Mother's mental health (depression, anxiety)	
	Frequency (%)			Frequency (%)		Yes	No
					Frequency (%)		Frequency (%)
20-23	7 (10.8)		36 weeks	8 (11.7)		6 (9.1)	1 (1.7)
24-27	20 (35)		37 weeks	6 (9.1)		15 (25.6)	5 (9.4)
28-31	18 (30)		38 weeks	3 (7.5)		15 (22.1)	3 (7.9)
32-35	12 (21.7)		39 weeks	28 (50)		10 (17.9)	2 (3.8)
35-40	1 (2.5)		40 weeks	13 (21.7)		1 (2.5)	0 (0)
Total	58 (100)		Total	58 (100)		47 (77.2)	11 (22.8)

Only 10.8% of a mother aged 20–23 during their pregnancy. In the 28–31 age range, mothers are 30%, while 21.7% are from the age of 32–35. The lowest number of mothers (2.5%) were between 35 and 40 years old. On the other hand, the majority of the mothers (50%) gave birth to their children at 39 weeks. 11.7% of mothers' pregnancy duration was 36 weeks, and 9.1% was 37 weeks. Only 7.5% of mothers gave birth to their children at 38 weeks, while 21.7% completed their full pregnancy weeks. On the other hand, 77.2% of mothers suffered from depression or anxiety, while 22.8% didn't. Table 4 gives information about some food behaviors of autistic children. Around 55% of children choke, cough, or gag while consuming their food, and the rest of the children can eat their food without any problems.

Table 4. Mealtime challenges in the Child as Risk Factors for the Autism group; as Numbers (Percentages) and Comparison between Children with Autism group and Children without Autism group.

Mealtime Challenges	Children with Autism (N=58)	Children without Autism (N=62)	Pearson Chi-square test		Odds Ratio
	% (N)	% (N)	χ^2	p-value	OR (95% CI)
Extensive choking, coughing, or gagging while eating					
Yes	55.2(32)	9.7(6)	28.664	<0.001	11.487(4.276-30.861)
No	44.8(26)	90.3(56)			
Chewing problem					
Yes	60.3(35)	9.7(6)	34.202	<0.001	14.203(5.263-38.330)
No	39.7(23)	90.3(56)			
Swallowing problem					
Yes	58.6(34)	8.1(5)	34.914	<0.001	16.150(5.635-46.288)
No	41.4(24)	91.1(57)			
Tantrums and meltdowns at mealtimes					
Yes	55.2(32)	12.98(8)	24.093	<0.001	8.308(3.361-20.537)
No	44.8(26)	87.1(54)			
Getting stressed over new food					
Yes	56.09(33)	17.7(11)	90.783	<0.001	6.120(2.659-14.083)
No	43.1(25)	82.3(51)			
Loss of appetite					
Yes	55.2(32)	25.8(16)	10.768	<0.001	3.538(1.640-7.635)
No	44.8(26)	74.2(46)			
Refusing to eat one or more food groups					
Yes	55.2(32)	19.4(12)	16.555	<0.001	5.128(2.269-11.589)
No	44.8(26)	80.6(50)			
Want food of a particular color					
Yes	58.6(34)	17.7(11)	21.366	<0.001	6.568(2.849-15.142)
No	41.4(24)	82.3(51)			
Getting sick due to carbohydrate intake					
Yes	57.0(33)	16.1(10)	21.661	<0.001	6.864(2.924-16.112)
No	43.0(25)	83.9(52)			
Feel hesitate if anyone is present in the room during eating					
Yes	31.0(18)	14.5(10)	4.689	0.030	2.650(1.078-6.513)
No	69.0(40)	85.5(53)			

Among 120 children, 60.3% have a chewing problem, whereas 39.7% never suffer from this problem. Meanwhile, almost 58.6% of respondents have swallowing problems, while 41.4% are problem-free. From the result of this analysis, it was found that 53.4% have breathing problems during the eating period, whereas 46.6% are like normal children. It is a characteristic of the children in the study group that 55.2% of autistic children have tantrums and meltdowns at mealtime, while 44.8% of children with autism don't have tantrums and meltdowns at mealtime. Among 120 children from the study group, 56.09% have different stressed behaviors, while 43.1% haven't. Furthermore, our research revealed that 65.5% of children get revolted by the smell of some foods, and 34.5% don't. In this study, it was found that 44.8% of autistic children don't have a loss of appetite and 55.2% of autistic children have. Table 4 shows that 55.2% of autistic children refuse to eat one or more food groups, and 44.8% of autistic children do not refuse to eat one or more food groups. This study showed that children with autism often refuse food because of a concern about a particular color. Most of the children preferred yellow and red-colored foods. In this study, 58.6% of respondents preferred to eat certain colored foods, while 41.4% had no particular color choice. Table 4 also shows that 57.0% of children got sick due to carbohydrate intake, and 43.0% didn't. So, from this study, it is clear that most children get sick due to carbohydrate (Sugar, Lactose) intake. Each child's experience of autism looks different. The personality of each one is unlike. In this study, 31% of children felt nervous if they met a person in the room, while 69% of children showed normal behavior.

Discussion

In our study, approximately 60% of children with ASD reported feeding issues. This is aligned with research showing that, despite the fact that children with ASD are five times more prone to having mealtime difficulties compared to their developing peers. Clinical concerns about feeding difficulties are frequently overlooked because these children continue to grow normally (*Marcus Autism Center*).

ASD is identified in females at a substantially lower rate than in males (Jasmin et al., 2009). In our paper among 120 children, 60% were male and 40% were female. Our research supports a recent study that found that men tend to be more likely than women to develop autism. (Barbaro & Freeman, 2021). Because of the underdeveloped gut mucosal immune system, young autistic children are more susceptible to sensitization to common food. Food allergies were more common in children under the age of five than in children aged five to seventeen. Food allergies were equally prevalent in both boys and girls. From a study, it was indicated that there were 8603 food allergies, 24,218 respiratory allergies, and 18,703 skin allergies among the 192,573 children aged 4 to 17 years old involved. Our study finds an alignment with some previous studies (Williams et al., 2011), (Youssef et al., 2021) that found the prevalence of food allergies was high (64.2%) among ASD Children.

The most crucial factor in the prevalence of autism is inheritance. Our study finds an alignment with some previous studies that found the total percentage of ASD that can be linked to genetic inheritance is estimated to be around 30–40% (Landrigan et al., 2012). Our study found that 32.0% of the autism prevalence is due to genetics. The number of premature deliveries (births occurring before 37 weeks of gestation) have been rising and now account for 15% of all births in the United States. (Angelidou et al., 2012). premature infants have a four times increased chance of being diagnosed with ASD and are also more susceptible to infections, While exposure to possible neurotoxins may be due to the delayed development of their gut-blood-brain barriers (Angelidou et al., 2012), maternal stress in the latter stages of pregnancy may affect the offspring's development neurologically. Numerous prospective studies have demonstrated that mother stress during pregnancy increases the risk of early behavioral, cognitive issues, mixed-handedness, and later behavioral and emotional issues (Abdelrazek & Rice, 2021; Ronald et al., 2011).

According to earlier research (Archer & Szatmari, 1991; Schreck et al., 2004; Vissoker et al., 2015) children with ASD experience 56% to 87% more mealtime problems than children with typical development. Due to their difficulties with chewing, autistic youngsters avoid eating meals that are challenging for them to swallow (Schreck et al., 2004). Mealtimes required extra care for children with ASDs since they frequently choked, coughed, or threw up (Nadon et al., 2011). Besides, children with autism are more prone to avoid and reject certain kinds of food than typically developing children. (Johnson et al., 2008; Martins et al., 2008; Schreck et al., 2004). Due to their sensitivity to the digestion of food due to carbohydrate intolerance, autistic kids may have some of gastrointestinal problems (Chidambaram et al., 2020; Sumathi et al., 2020).

Limitations

Despite the insightful findings, the research has some limitations. First of all some parents did not answer all of the questions and some women were hesitant about sharing information that could have had an impact on the outcomes. Parents may be convinced to complete the questionnaire if given more thorough explanations, which would increase the accuracy of the findings. Another factor is that we lacked comprehensive information on fathers due to a lack of time. Other variables, such as the parent's level of education, their level of stress, or their socioeconomic status, were not taken into consideration when we examined parental feeding style. Another fact is that we were unable to find information about maternal supplementation during pregnancy, which might have helped us learn more about the risk of autism in new offspring. Finally, as a result of a few restrictions, we were unable to visit various groups of individuals with autism, which reduced the sample size.

Conclusion

The study's findings emphasize the necessity of addressing mealtime issues in children with ASD, since these kids are more likely to struggle during mealtime than their peers in the same social setting. Revolt over unfamiliar food was the most common of the numerous eating and mealtime behaviors observed in children with ASD. This study tried to correlate a mother's prenatal history with ASD and found that PMH (perinatal mental health) and early delivery play a vital part in increasing a child's risk of having ASD. Since pregnancy is the most critical time for any woman, it is recommended that mental well-being, proper diagnostic care, and dietary supplements be utilized to maintain a progressive balance in the prenatal period to lower the risk of early delivery and developing ASD. In addition, autism should be diagnosed as soon as possible so that appropriate training (via promotion or prevention), a dietary regimen, and a healthy environment can be provided to the child at a young age to improve their quality of life.

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Conflict of interest

The authors have no conflicts of interest to declare.

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FACEBOOK AS A PLATFORM FOR LOCAL GOVERNMENT ELECTION CAMPAIGN: A STUDY ON NARAYANGANJ CITY CORPORATION ELECTION 2022

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Abstract

This study aims to determine how Facebook is utilized as a platform for election campaigns in the local government election. The study has followed both quantitative and qualitative approaches employing content analysis and Key Informant Interview (KII) methods for data collection. Content has been analyzed under four major codes including a thematic analysis conducted using NVivo-12 Plus. This study revealed that photo content constitutes the majority of posts on candidates' Facebook pages during election campaigns, while video content receives the highest number of shares from users. Additionally, the study reveals that approximately 90% of users' comments on the Facebook platform are positive. The most prevalent campaign category observed on candidates' Facebook pages is the field campaign. Key informant interviews also indicate that candidates' perceptions and attitudes about the Facebook campaign are quite optimistic. The interviewees believe that social media engages more people more rapidly and affordably than traditional methods of campaigning. Moreover, they emphasized the crucial role of social media platforms in persuading voters, attracting a large audience at a minimal cost.

Keyword: Facebook, Social media, New media, Political campaign, Election campaign

Introduction

Election is the essential process to choose the right person as a representative while communication is the most important element to influence the voters (Gibson & McAllister, 2008). So political parties provide a communication platform for people to participate in political discussions (Hong & Nadler, 2011).

The kind of political expression we have been accustomed to seeing for decades is called mainstream political communication but now the whole process is changing through the new media (Chadwick, 2006; Gil De Zúñiga et al., 2012) Thus, the widespread uses of social media are now challenging the methods used by traditional media for information dissemination and discussion on political issues.

It is now seen that politicians use different types of social media platforms in political communication focusing on the election campaign (Lerman & Ghosh, 2010). Election candidates can now use the latest technological advances to communicate their messages directly to the public, bypassing the press (Green & Hobolt, 2008). This paradigm shift from traditional media to new media has helped them greatly in reaching out to voters. Political parties and leaders are benefiting from the advancement of new media and communication (Arulchelvan, 2014).

As Facebook now has more than 2.93 billion monthly active users around the world (Statista, 2022), it permits voters and politicians to participate in political dialogues. Thus, politicians share political content publicly to exchange their political views with the citizens (Wattal et al., 2010). Bangladesh government adopted the initiative namely '*Digital Bangladesh*' to develop telecommunication infrastructures and connected to the internet through the submarine cable and mobile networking system which has expanded online traffic and shrunk connectivity costs leading to an expansion of new media in Bangladesh (Shoesmith & Mahmud, 2013). Moreover, 52.58 million people have an internet connection and Bangladesh's internet penetration rate stood at 31.5 percent of the total population at the start of 2022 while the majority of total internet users are connected to Facebook (DataReportal, 2021).

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New media has begun to influence the outcome of political events and practice in Bangladesh, as well as elsewhere in the world (Al-Zaman, 2020). Major political parties in Bangladesh have their websites, blogs, and social media accounts, such as Facebook pages, groups, etc. They update, watch, and read their social media content regularly to grab the user's attention. Sharma (2015) demonstrated that the significant adoption of social media in Bangladesh began during the 2013 Shahbag movement. However, preceding this, politicians had already begun exploring the potential of new media during the 9th national parliamentary election in 2008. In that election, candidates such as Maskawat Hasan from Rajshahi-04 employed Facebook, Hasan Mahmud from Chittagong-06 utilized a blog, and Nurul Islam BSP from Chittagong-08 ran a personal website as part of their political campaigns. Consequently, the trend of political candidates using social media continued during the 10th national election as well. Likewise, Harun and Salam (2018) examined the Facebook campaigns of 15 candidates during the 2018 national election in Bangladesh. They observed a total of 207 posts on the candidates' Facebook pages, encompassing various types of content such as photos, news, live videos, and written posts. Among these, videos were the most frequently posted content by the candidates. During their analysis, the researchers also measured the engagement on these posts, recording a total of 1663 reactions and 42 comments from the audience.

Social media platforms like Facebook and Twitter have been systematically adopted by election campaigns in Bangladesh and across the world for effective communication (Stromer, 2014). It is considered that during the 2000 US presidential campaign, social media were initially acknowledged as a tool in political elections (Lievrouw & Livingstone, 2016). Similarly, Yang and DeHart (2016) shows that the 2012 US presidential election was a significant turning point in the use of social media. During the 2010 federal election campaign, the study indicated the primary ways in which social media are being used in political communication. They revealed that approximately 75% of Australian federal politicians maintained a presence on Facebook, using a combination of 'profiles,' 'official pages,' and 'community pages.' The 'official pages' and 'community pages' allowed for public content display but did not permit 'friends' to join; visitors could only 'like' the pages. Many politicians used Facebook to post speeches, activities, policies, and election-related content, but the focus was more on one-way transmission of political messages rather than engaging with citizens or listening to the electorate (Macnamara & Kenning, 2011).

Stieglitz et al. (2012) conducted a comprehensive study to understand political communication through social media in Germany. They analyzed the social media presence of various German political parties on social media with content analysis method. Additionally, they surveyed members of the German parliament to gather information about their own use of social media. By combining these methods, they revealed that a majority of politicians report that they are planning to use social media for political communication more intensively. Many participants use social media to report political activities from their job, for self-presentation purposes, to keep in touch with their group members/fans/followers, and to inform those about current political events. Interestingly, many politicians by using social media also attempt to look for feedback, suggestions, and new ideas from their political peers as well as others for their political work. However, despite the limited use of new media in post-election, new media are improving political communication in Nigeria, particularly during elections and electioneering comprising the activity of trying to persuade people to vote for a particular political party. Additionally, it demonstrates that new media have enhanced political awareness and interaction (Olabamiji, 2014). To better comprehend how social media is utilized in contemporary political discourse, Gerodimos and Justinussen (2015) focuses on Barack Obama's Facebook campaign during the 2012 campaign. This analysis shows that the Obama's campaign used Facebook as a tool of top-down marketing concentrating on Obama's personality and as a method of strategically encouraging supporters to act.

Narasimhamurthy (2014) examined the correlation between the use of social media and its development as a tool in the context of political campaigning for parties in India. They found that social media has grown its importance as a campaigning tool in the Indian electoral system. Political parties and candidates can more quickly and efficiently reach a huge number of voters through social media. Social media, as opposed to traditional media, enables politicians to actively communicate with potential voters. However, Rossini et al. (2018) examines the connection between the use of social media during the 2016 US presidential campaign and the positions of candidates in polls of the general public, concentrating on the surfacing and primary phases of the campaign. The findings show that a candidate's polling success influences some communication tactics, including the employment of advocacy as well as the emphasis on a candidate's personal image on social media.

Over the past two decades, scholarly interest in political campaigns' use of digital technology has grown, although the majority of researchers have concentrated on assessing the use of digital platforms without taking contextual elements into account. This study considers the emerging development of social media usage in local government election campaign. As '*Digital Bangladesh*' is widely used terminology in technology sector of Bangladesh, it is needed to assess the use of digital technology and social media like Facebook in the election campaign of Bangladesh. In the global context, the use of social media as a tool for election campaigns has been studied since the early days of the 2004 US election. In contrast, there has been limited research conducted so far in the context of local government election in Bangladesh, especially with a comprehensive approach that combines both quantitative and qualitative methods. This study is definitely be able to demonstrate the new trend in political campaign.

RQ 1: To what extent do different content types prevail in content posting and user sharing on the mayoral candidate's Facebook page?

RQ 2: How do Facebook users express their reactions towards content, and what is the sentiment of users' comments?

RQ 3: What are the overarching campaign categories that characterize the activity of the mayoral candidates during their election campaign on Facebook platforms?

RQ 4: What are the factors that have led election candidates to use Facebook for election campaign?

Materials and Methods

The study followed both quantitative and qualitative approach. Data has been collected through the content analysis method and Key Informant Interview (KII). This study followed purposive sampling to analyze the three Facebook pages related to the city mayor of Narayanganj. These are i) Bangladesh Awami League, ii) Dr. Selina Hayat Ivy, iii) Dr. Selina Hayat Ivy Media Cell. The official Facebook page named "Bangladesh Awami League" represents the ruling political party and has been selected as a sample because it is dedicated to promoting their candidate, Dr. Selina Hayat Ivy, for the mayoral position. The page is officially recognized by Facebook, as indicated by the presence of a blue verification badge. Furthermore, there are two other official Facebook pages that function as campaign platforms for the ruling party's mayoral candidate, Dr. Selina Hayat Ivy. These pages have received confirmation and endorsement from Dr. Selina Hayat Ivy's media cell. No Facebook pages were found for the opposition party's candidate.

Content has been collected manually by scrolling the respective Facebook pages from 16th December 2021 to 15th January 2022 as 16th December was the announcing date of the election campaign and 15th January was the last date of the campaign. Content has been analyzed under four major coding — i. Content Genre (including text, photo, video, news link and Facebook live) ii. Content Reaction (including like, love, care, ha-ha, sad and angry reactions) iii. Users Comments (including positive, negative and neutral comments) and iv. Campaign Category (including field campaign, public speeches, public interaction, meeting, public gathering, road show, theme song and press conference) inspired by Alvarez et al. (2020); Jost et al. (2020); Macnamara & Kenning (2011); Wittenberg et al. (2021).

First two broader codes "Content Genre" and "Users' Reaction" have been developed with deductive coding approach. The coding process was conducted by two graduate students pursuing a major in mass communication. These coders participated in training workshops where they were familiarized with coding protocols and the specific definitions of each variable used in the study. They were guided through practice exercises, involving the coding of 30 Facebook posts to understand intercoder consensus and how to achieve the desired agreement on study variables. The initial categorization of data was then verified by the first author, while the second author reviewed the articles and cross-checked the categorization in parallel. Since both authors reached a consensus on the categorization, the results were considered reliable.

Third broader code 'Users Comments' analysis followed the subsequent procedures to categorize comments as positive, negative and neutral using NVivo-12 Plus inspired by Pudaruth et al. (2018). Initially, comments made by Facebook users were downloaded from the comments section of the respective Facebook pages. Subsequently, these comments were translated and transcribed into English. Since the data extraction was done manually, no adjustments were needed to be made for the metadata; only the authentic content of the comment field was utilized. This field sometimes included unnecessary elements like irrelevant image or memes, which were eliminated. Further,

words with similar roots, such as "explain," "explanation," and "explanatory," were stemmed to their root form, "explain," utilizing the Stemming function. Ultimately, comments were categorized into positive, negative, or neutral sentiments using the auto code feature in NVivo 12 Plus. This auto coder incorporates predefined lexicons for identifying positive and negative emotions. Positive words comprise terms like "happy," "smile," and "hope," while negative words encompass "sad," "fear," "hate," "shame," "regret," and "anger," among others. Words that lack clear positive or negative connotations are considered neutral.

Fourth code "Campaign Category" has been developed inductively. Facebook content was labeled into different campaign categories and inputted as child codes in NVivo. Subsequently, we merged these child codes into larger codes for analysis. After completing the coding process, we used various features in NVivo, such as the explore tab, frequency tab, run query tab, and word cloud tab to analyze the data further. Through this comprehensive process, we identified 12 broad categories that emerged from the analysis of the content, as presented with NVivo.

Among various social media platforms, we specifically chose Facebook pages for our study. Facebook has an extensive user base, with approximately 3.5 billion cumulative monthly users worldwide as of the third quarter of 2021. It is the most widely used social media platform globally (Statista, 2022). In Bangladesh, Facebook holds the top position among the most-used social media platforms, followed by Twitter and YouTube, with around 80% of the total internet users in the country connected to Facebook (StatCounter, 2023). Narayanganj City Corporation election campaign has been selected as the study area. There are 517,361 registered voters in the constituency, with 2,59,846 men and 2,57,511 women, and four third-gender voters ("Ivy Wins," 2022). Bangladesh Awami League, the ruling party of Bangladesh announces Dr. Selina Hayat Ivy as the mayor candidate in the 2022 election. Though the 'main' opposition Bangladesh Nationalist Party withdrew from the election, but a candidate, Taimur Alam Khandaker from this party decided to run as an independent candidate for mayor of Narayanganj City Corporation election ("Taimur Loses", 2022). On the other hand, this study includes Dr. Selina Hayat Ivy's Facebook campaign as she maintained the Facebook page for election campaign and finally won the election where Taimur Alam Khandaker has no official Facebook page, so his campaign has not been included in this study.

This study also used Key Informant Interview (KII). The researcher interviewed five key persons. They are i) Md. Abu Hossain, personal Assistant of Dr. Selina Hayat Ivy, ii) Zim Rahman, Assistant Press Secretary of Dr. Selina Hayat Ivy, iii) Azit Kumar Moholdar, Research Assistant, Media Wing, Bangladesh Awami League, iv) Sharifa Umma Shirina, Assistant Professor, Mass Communication and Journalism Department, University of Barishal, v) Nishat Tarannum, Assistant Professor, Mass Communication and Journalism Discipline, Khulna University.

Three individuals were interviewed as they were directly involved in Dr. Selina Hayat Ivy's election campaign and two experts were interviewed who possess specialized knowledge on social media and political communication. Then, first author conducted the interview and transcribed it and the second author finally analyze these interviews in sequential explanatory design. After reviewing the script, the findings of the content analysis have been shared with each participant. Through this process, we collected potential explanation of the findings observed in the quantitative analysis. The transcripts were then thematically analyzed, searching for common themes. Thus, the Key Informant Interview (KII) has been analyzed and presented this study.

Findings

Table 1 demonstrates the several types of content that candidates have posted on their respective Facebook pages, as well as the content shared by users from these Facebook pages during election campaign. These content types encompass photos, videos, Facebook Live, news links, and text content. Overall, photo content represents the largest portion of candidates' posts, comprising around 53% of the total, while video content is the most widely shared by users, constituting 47.22% of the shares.

The second most prevalent category of candidates' post is videos, comprising nearly 24% of the content. Additionally, news links represent a significant content category, making up 19% of the overall posts, followed by text content at 3.25%. Facebook Live post is the least frequent, accounting for only 0.75% of the total content posted by candidates during the election campaign.

Conversely, among the content shared by users of these Facebook pages, photo content is the second most popular, constituting 33% of the total shares. Surprisingly, Facebook Live posts did not receive any shares from

users during the campaign. Text posts received 435 shares, amounting to approximately 11% of the total shares, while news links received almost similar number of shares, accounting for roughly 9% of the total shares.

Table 1. Frequency of content genre posted by candidate and shared by Facebook users

Content Genre		Candidates' Post (n=133) %n	Users' Share (n=4028) %n
Text	Written content including Facebook status	04 (3.25%)	435 (10.80%)
Photo	Images with or without accompanying caption, diagrams, banners, posters and pamphlet	71 (53.00%)	1330 (33.02%)
Video	Recorded footage with or without accompanying caption, including YouTube video, Broadcast media content	32 (24.00%)	1902 (47.22%)
Facebook Live	Directly go to live streaming from Facebook page	01 (0.75%)	00 (0.0%)
News Link	Hyperlink or URL that leads to a news article published on a news website	25 (19.00%)	361 (8.96%)

Table 2 illustrates the Facebook reaction feature. The most common reaction, provided by 81.33% of users, is "Like," while "Sad," which is offered by 0.03% of users, is the least common. Facebook reactions including Love (15.31%), Care (2.65), Ha-Ha (0.45%), Wow (0.12%), and Angry (0.11%) indicate a variety of perspectives.

Table 2. Frequency of Users Reactions on Content

Content Reaction		(n=73621) %n
Like	The users' initial response to a post on Facebook	59879 (81.33%)
Love	The users absolutely adored someone's Facebook post	11268 (15.31%)
Care	This Reaction depicts a smiley face character hugging a heart	1948 (2.65%)
Ha-Ha	It was developed to enable users to express laughter at the content	334 (0.45%)
Wow	It expresses shock and surprise at the contents	90 (0.12%)
Sad	This reaction expresses users' compassionate feelings	19 (0.03%)
Angry	It expresses dislike and anger felt toward other users' posts	83 (0.11%)

Table 3 displays the sentiment analysis results derived from users' comments on the candidates' Facebook pages. It reveals a significant predominance of positive comments, comprising roughly 90% of the total. In contrast, negative comments are less frequent, representing only 6%. Interestingly, within the dataset of 3755 comments, there are 162 comments (accounting for approximately 4%) that are deemed irrelevant.

Table 3. Users Comments Tone

Users Comments		(n=3755) %n
Positive	Favorable users' comments including positive words like "happy," "smile," and "hope"	3391(90%)
Negative	Unfavorable users' comments including negative words like "sad," "fear," "hate," "shame," "regret," and "anger," towards candidate election campaign	202 (6%)
Irrelevant	No relevancy with election campaign including words that lack clear positive or negative connotations	162 (4%)

Table 4 illustrates an overview of the 12 campaign categories, which includes field campaigns, meetings, interactions, public opinions, theme songs, interviews, press conferences, voting tutorials, public speeches, road shows, and discussions. Field campaigns are the most frequently posted category, accounting for 17% of the total. The second

most commonly posted categories are Theme Songs and Interviews, both comprising 15% each. Public speeches follow thoroughly as the third most posted campaign category, which is 13% of the total. Road shows and discussions represent the least frequently posted campaign categories on the candidates' timelines, each comprising only 1% of the total.

Table 4. Frequency of Campaign Category based on Facebook Content

Campaign Category		(N=52) %n
Field Campaign	To engage directly with voters including canvassing, rallies, door knocking and leaflet distribution	09 (17%)
Meeting	To gather of individuals, such as political candidates, campaign staff, party members, community leaders, or constituents	03 (06%)
Interaction	To exchange of information, ideas, opinions, and influence between individuals, groups, or entities	04 (08%)
Public Opinion	To accumulate people's preferences, attitudes, and perspectives	02 (04%)
Theme Song	To establish a distinct and recognizable musical identity that captures the essence of a campaign's message, values, or the personality of a candidate	08 (15%)
Public Gathering	To engage with an organized event or assembly where a group of people, often constituents, supporters, activists, or members of the public, come together in a physical space	04 (08%)
Interview	To response the media personnel about political issues, policies and events	08 (15%)
Press Conference	To engage with the media and communicate messages directly to the public through journalistic coverage	03 (6%)
Voting Tutorial	To guide individuals through the process of voter registration and understanding the voting system	02 (4%)
Public Speaking	To deliver speeches, presentations, or addresses to an audience on political topics, policies, issues, or events	07 (13%)
Road Show	To connect with voters, engage the public, and promote their message across different geographic locations by road travelling	01 (2%)
Discussion	To the exchange of ideas, viewpoints, and opinions on political topics, policies, and issues among individuals, groups, or stakeholders	01 (2%)



Figure 1. Thematic analysis of campaign category on Facebook content with NVivo 12 Plus

KII Findings

Content selection: All the interviewee informed that political parties in Bangladesh use a variety of strategies to promote election campaigns on Facebook based on their ideologies. They broadly indicate four issues to select content that political parties usually frame during elections to boost election campaigns: i) Share informational content about current issues that might be influential and appealing to users. ii) Share appealing photos and videos that are linked to positive developments. iii) Share Bangabandhu Sheikh Mujibur Rahman and Sheikh Hasina's quotes related to the election context. iv) Share content about the liberation war to draw public compassion during the election period. Interviewee indicated that They generally shares photo content, video content, and news link

most of the time on their Facebook pages as they believe these contents get high response and views from the followers. This opinion was expressed as follows:

"We should emphasize the user's feedback and reactions while choosing the content for election campaign" [Interviewee 4]

Platform Priority: Interviewees believe that Facebook has evolved into a new tool and become the new paradigm of political communication. They can simply communicate and reach out to their users instantly. On the other hand, Traditional methods are slow to reach individuals and take a long time to gather audiences whereas social media like Facebook engages more people rapidly at a low cost. Additionally, traditional election campaigning tools, such as posters, banners, flyers and leaflets, loudspeakers, and so on, are much more expensive than social media election campaigning content. Even a simple written post can engage more people than traditional campaigning. Interviewee opined that social media content allows political leaders and parties, and voters to communicate directly with one another. As a result, political operations could become more transparent, and citizens could become more engaged in political decision-making, especially on election occasions. The quotes below represent the platform priority:

"We have a large number of followers on Facebook, Twitter, and other social media platforms. As Facebook is the most popular platform, we are very active and alert to share content in this platform." [Interviewee 3]

"We prefer new media as it is less expensive than traditional media. It also enables us to reach more people." [Interviewee 2]

Facebook as Election Campaign Tool: The interviewee told that Facebook is a very reliable and communication friendly platform to promote election-related information. Facebook has an abundant number of users in Bangladesh and most of the citizens and voters in Narayanganj city use Facebook. Furthermore, Facebook has various options and forms to communicate with its users and those options have equal for all users. So, they choose Facebook as a tool for election Campaigns. Candidates assume that meetings, public awareness activities, disseminating election posters, and organizing events are much easier with Facebook pages and groups. For Example:

"During the city election period, we arrange several monthly meeting about Narayanganj city election with different stakeholders through Facebook platform to promote the election campaign on behalf of our candidate Dr.Selina Hayat Iry." [Interviewee 3]

Target Users: Interviewees narrated that candidates and election campaigners are highly focused on their target audiences and on social media, election campaigners post content especially on Facebook campaigns to grab the attention of young users and, educated middle-class users. Since the interviewee believed that half of the Facebook users are between the ages of 18 and 25 and the other one-third are between the ages of 25 and 35, comprising eligible voters, they chose to supplement their traditional campaign by initiating a social media-driven campaign. Interviewee also added that they don't take any kind of sponsors or boosting service for promoting content within their target group. Social media experts believe that positive activities can easily be circulated by new media without boosting.

"Our primary target is the young generation as they are the mostly active in Facebook while middle-class educated people are the secondary target." [Interviewee 1]

"We do not accept sponsors for election-related content on our pages to promote campaigns" [Interviewee 2]

Perception of New Media Campaign: Interviewee stated that political leaders and parties understood the necessity of a new media campaign because of declining public interest from participation in traditional medium. So, they maintain Facebook profiles and update the Facebook timeline on a regular basis. They believe that Facebook is helping to close the gap between politicians and the general public. This is exemplified by the quote below:

"We don't prefer traditional media as it doesn't get enough attention from the public while new media is gaining the public's interest." [Interviewee 2]

Attitudes against Users Comments: Interviewee expressed that they usually don't respond and reply back to the comments. They believe that citizens frequently utilize these new public forums to express their feelings. Audiences may have different points of view, so the negative feedback should be ignored.

“Candidates should be very positive about audience feedback. They should not response the negative comment. It may discourage the audience and candidate.” [Interviewee 5]

Discussion

Table 1 of this study depicts the diverse categories of content that candidates have published on their Facebook pages, alongside the content disseminated by users from these pages throughout the election campaign. These content categories encompass photos, videos, Facebook Live sessions, news article link, and written text. In terms of content distribution by Facebook users, video content emerges as the most widely shared content category, accounting for 47.22% of the shares while photo content constitutes the most significant segment of candidates' posts, making up approximately 53% of the overall content posting. Overall, photos and videos are dominant in both content posting and user sharing, while written posts (text) have a smaller presence in comparison. Wittenberg et al. (2021) also stated that video is becoming a more prevalent means of political information. While it is commonly believed that video is significantly more persuasive than other communication forms like text, this notion has rarely been investigated in the political context. Through two extensive randomized experiments, they found that individuals are more inclined to believe that an event occurred when presented with information in video format compared to textual form. However, when it comes to persuasion, the advantage of video over text is notably less pronounced. Regarding Harun and Salam's (2018) study in Bangladesh context, they concentrated solely on exploring the various types of content posted by candidates on social media platforms. In contrast, our research delved into both perspectives, examining the different types of content posted by candidates and the content shared by users on candidates' pages (as shown in Table 1). This study explored the more comprehensive understanding of the dynamics of political communication on Facebook during the election campaign in Bangladesh.

Table 2 of this study presents the data on Facebook reactions, revealing a variety of perspectives expressed by users. The most prevalent reaction, "Like," is provided by 81.33% of users, while the least common reaction is "Sad," with only 0.03% of users using it. Additionally, other Facebook reactions, such as Love (15.31%), Care (2.65%), Ha-Ha (0.45%), Wow (0.12%), and Angry (0.11%), were also observed. Jost et al. (2020) conducted a manual content analysis of political parties and their top candidates' posts on Facebook during the 2017 German federal election campaign. The researchers specifically focused on Like, Angry and Love reactions. The results of the analysis showed that negative portrayals of political actors were associated with a higher number of Angry Reactions. On the other hand, depictions of ordinary citizens were linked to more Love reactions.

Table 3 provides insights into the sentiment of users' comments on Facebook. Approximately 90% of the comments are positive, while negative comments are much less common, accounting for only 6% of the total. Surprisingly, out of 3755 comments, around 4% were irrelevant. In another study by Alvarez et al. (2020), which examined Facebook ads during the 2016 election, a strategic variation in the use of positive and negative sentiment was observed. Before the election, sentiment ratings declined, but they rose after the election. The majority of the ad texts were positive, followed by negative, neutral ads. Ads with positive sentiment received more impressions and clicks compared to neutral and negative ones.

The findings of this study (as presented in Table 4) revealed that the mayoral candidate utilized the Facebook platforms to disseminate field campaign activities, theme songs, press conferences, public speeches, and interactions with the public, all of which were presented through Facebook posts. Similarly, Macnamara and Kenning (2011) examined the prevalent use of Facebook by Australian federal politicians, who employed the platform to share speeches, political activities, policy agendas, and content related to election campaigns. The current study and the research conducted by Macnamara and Kenning (2011) revealed the similar findings, demonstrating that Facebook has become a significant communication tool for political candidates across different geographical and political contexts. The platform offers an effective means for politicians to engage with the public, promote their campaign messages, and create an online presence.

Conclusion

Facebook has emerged as a significant tool for political communication in Bangladesh. Specifically, the study aims to assist political candidates in customizing content according to user preferences. Furthermore, it offers direction to policymakers, government officials, and politicians in effectively leveraging social media throughout election campaigns. However, the study's focus is limited to a specific political party, which implies that other parties are

refraining from employing social media for political campaigns. To illuminate this phenomenon, exploring the viewpoint of a candidate from a major opposing party could provide valuable insight. This potential addition could introduce new dimensions for future study by scrutinizing the reasons underlying the absence of specific political groups on social media.

Data Availability Statement: The data that support the findings of this study are openly available in [www.facebook.com/ Bangladesh Awami League](https://www.facebook.com/BangladeshAwamiLeague), [www.facebook.com/ Dr. Selina Hayat Ivy](https://www.facebook.com/Dr.SelinaHayatIvy), [www.facebook.com/ Dr. Selina Hayat Ivy Media Cell](https://www.facebook.com/Dr.SelinaHayatIvyMediaCell)

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Conflict of Interests

The authors declare no conflict of interest.

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COVERAGE OF EDITORIALS ON SUSTAINABLE DEVELOPMENT GOALS IN BANGLADESHI NEWSPAPERS

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Abstract

Bangladesh is one of the most promising nations towards attaining Sustainable Development Goals (SDGs). Since the SDGs were announced in September 2015, Bangladeshi print media have covered SDG-related issues. This study aims to examine the treatment, mode and theme of SDG-related editorials in Bangladeshi newspapers. Content analysis method has been applied to assess the coverage. Editorials (n=88) were collected from the two leading national newspapers in Bangladesh, *The Daily Prothom Alo* and *The Daily Star*, between April 1, 2022, and April 30, 2022, based on circulation and readership. A coding sheet has been developed to measure the coverage under 17 subcategories. These coding have been analyzed manually by two coders and NVivo-14 has been used for the thematic analysis of the editorials. The findings revealed that SDG goal 6: Clean water and sanitation has received the highest priority whereas SDG goals: Affordable energy, Gender equality and Life on land are the least covered area in the newspapers. It is also found that most of the entire editorials have been interpretatively written, while majority of them have adopted proactive approach. The most cited themes of these editorials are development, health and water. However, newspaper coverage has a significant impact on the adoption and implementation of public policies like SDGs. This study explored the extent to which the Sustainable Development Goals (SDGs) are reflected in Bangladeshi newspapers.

Keyword: Coverage, Development, SDGs, Editorial, Newspaper

Introduction

Bangladesh adopted the Sustainable Development Goals (SDGs) and promised to work towards attaining SDGs. It now ranks 109th out of 175 countries in the world in the SDGs index (United Nations Economic and Social Commission for Asia and the Pacific [UN ESCAP], 2022). Bangladesh's approach in achieving the SDGs is multi-stakeholder collaboration, which mostly includes the media (Tabassum, 2021).

Newspaper plays a critical role in making significant progress on policy and action agenda. It has now extended their coverage to a wide range of topics, including health, environment, education, economy etc. (Barkemeyer et. al., 2017). Therefore, news analysis identified the areas that receive attention and governmental policies and action plans to be labeled as sustainable development (Schafer, 2013). The role of the newspaper is significant in raising awareness, enhancing participation, and offering a greater perception of the Sustainable Development Goals agenda, along with continuing attempts to achieve Agenda 2030 (Martin et. al., 2003). In addition, global programs like the SDGs would struggle to meet their goals without the suitable tools of information transmission and awareness building. In this regard, newspapers continue to be an important source of information about development issues. It plays a crucial role in fostering a collective understanding of societal values regarding sustainability, promoting public involvement, and making contributions to sustainable development (Voci, 2022).

However, after the Millennium Development Goals (MDGs) expired in September 2015, Global leaders and major development institutions recognized the importance of new global partnership for development termed the Sustainable Development Goals (SDGs). This initiative aims to enhance people's standard of living by facilitating their access to beneficial resources (United Nations Economic and Social Council, 2021).

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The main objective of SDGs is to ensure peace and prosperity in the world. In order to implement this objective, 17 goals were set. These goals are: 1. No poverty, 2. Zero hunger, 3. Good health and well-being, 4. Quality education, 5. Gender equality, 6. Clean water and sanitation, 7. Affordable and clean energy, 8. Decent work and economic growth, 9. Industry, innovation and infrastructure, 10. Reduced inequality, 11. Sustainable cities and communities, 12. Responsible consumption and production, 13. Climate action, 14. Life below water, 15. Life on land, 16. Peace, justice, and strong institutions and 17. Partnerships for the goals (United Nations, 2022).

Bangladesh demonstrates significant potential in reaching the SDGs by 2030, which encompass initiatives to eradicate poverty, safeguard the environment, and promote overall well-being and prosperity for all individuals. (UN ESCAP, 2022).

According to the UNDP's 2018 report, the number of poor and extremely poor people in Bangladesh has decreased which supports Goal-1 and it has been included in the UNDP report's orange list. Goal-2, 5, 7, 8 and 10 are also listed in the orange category. Additionally, Goal-3, 6, 9, 11, 14, 15, 16 and 17 have included in the red list where Goal-4 has put on the yellow list, which indicates more work needs to be done to achieve this goal. Only Goal 12 and 13 are on the green list. The report suggests, Bangladesh has succeeded in achieving these two goals (United Nations Development Programme [UNDP], 2022).

Bangladesh has some challenges ahead in the full implementation of SDGs. All citizens, including governments, producers, entrepreneurs and the media, have to work less than one platform to implement sustainable development (Brundtland, 1987).

However, Titus (2017) suggested that print media should prioritize development stories, publish exclusive editorials, and provide extensive feature news to facilitate in-depth analysis and insight into SDG programs, aiming to engage the public more actively in achieving these goals. Similarly, Ekeanyanwu and Obianigwe (2012) emphasized the role of the media in the development of any country. Their study collected news from various sources worldwide, including print and online media, and revealed that only a small percentage (2.5%) of news content was related to the SDGs, even in countries considered to be highly SDG-sensitive.

Kayode (2012) analyzed how the media in Nigeria covered development issues, employing the Millennium Development Goals (MDGs) as specific instance. The study found a lack of MDG-related stories on the front and editorial pages, indicating that these organizations did not prioritize these issues as important to society. Therefore, Talabi and Adaja (2019) examined the portrayal of the SDGs campaign in Nigerian media and found that while the coverage was generally positive, the majority of the stories were placed on the inside pages, indicating a lack of significant importance given to the SDGs in Nigerian newspapers.

Pandit (2020) examined how SDGs were covered on the websites of four prominent news media. The findings revealed that CNN-18 was the only channel that extensively covered new ideas, initiatives, and strategies for improving economic conditions and meeting the 2030 vision. This channel also had the most comprehensive coverage of sustainability-related issues with implications at both national and global levels. In contrast, the other examined websites predominantly emphasized topics such as hunger, poverty, education, and to a limited extent, climate action, overlooking the broader range of goals encompassed by SDGs.

Another study conducted in Japan found a significant increase in the use of SDG term in newspapers. According to the data, about 69% of the respondents had heard of the term or seen its logos in newspapers. Among those respondents, about 25% reported that their behavior towards environmental, health, sanitation, and other issues had improved (Uehara & Sakurai, 2021).

Irwansyah (2018) examined how the media utilizes agenda-setting to disseminate information about the SDGs to a broader audience. The study analyzed the media's coverage of the Sustainable Development Goals based on agenda-setting theory. The findings indicated that not all SDGs received adequate coverage in the media, and only a few SDGs were framed within the context of public policy concerns.

Mefalopulos (2008) stated that readers often seek analysis and commentary alongside news coverage. Editorials play a significant role in informing readers about diverse perspectives on topics that may not have received extensive discussion elsewhere in the newspaper. However, we investigated the editorial coverage of the SDGs in this particular study in Bangladesh context. We analyzed how the newspapers in Bangladesh addressed the SDGs in their editorial content, which provides insights into the perspectives and opinions presented to the readership regarding the sustainable development goals.

- R1:** How frequently are Sustainable Development Goals (SDGs) addressed in newspaper editorials?
R2: What categories of editorials are covered and how much?
R3: Which editorial modes and to what extent are emphasized?
R4: What themes are prevalent in SDGs editorials?

Materials and Method

This study has followed the quantitative approaches. Content Analysis method has been applied to assess the different aspects of the news coverage which is systematic quantitative approach to assess the content or meaning of communicative messages. Both inductive and deductive coding methods have been applied. The two leading national newspapers namely *The Daily Prothom Alo* and *The Daily Star* are selected on the basis of their circulation, quality and popularity with convenient sampling approach. These two newspapers rank among the top ten in terms of newspaper circulation (Department of Films and Publications, 2023). We included only editorials and a total of 120 editorials have been found from 01 April, 2022 to 30 April 2022. Then, we excluded the 32 editorials which are not directly connected with SDGs goals and targets. Finally, we analyzed (n=88) editorials.

We analyzed the SDGs editorials under three major codes (Goals, Mode and Types) which are predefined set of codes. Firstly, we categorized the goals of editorials on the basis 17 SDG goals set by United Nations. In this study, these 17 Goals broadly defined by 169 targets outlined by the United Nations (UNDP, 2022), are as follows: 1. No poverty (Eradicating extreme poverty, reducing poverty, implementing social protections, ensuring equal rights to ownership, building resilience to economic and social disasters, creating gender-sensitive policies.) 2. Zero hunger (Ensuring access to safe and nutritious food, eliminating all forms of malnutrition, maintaining genetic diversity, improving rural infrastructure, investing in agricultural research and technology, preventing agricultural trade restrictions and subsidies, ensuring stable food commodity markets.) 3. Good health (Reducing maternal mortality, preventing deaths of children under 5 years old, combating communicable diseases, promoting mental health, preventing substance abuse, reducing road injuries and fatalities, providing universal access to reproductive care, achieving universal health coverage, establishing frameworks for tobacco control, ensuring access to affordable vaccines and medicines, increasing health financing, implementing warning systems for global health risks.) 4. Quality education (Providing free primary and secondary education, ensuring quality pre-primary education, promoting technical and higher education, eliminating all forms of discrimination in education, promoting literacy and numeracy, integrating education for sustainable development, building safe schools, expanding higher education scholarships, ensuring an adequate supply of qualified teachers.) 5. Gender equality (Ending discrimination against women, eliminating all forms of exploitation of women, eradicating forced marriages, valuing unpaid care work, ensuring full participation in decision-making processes, ensuring reproductive health and rights, guaranteeing equal rights to property and financial services, promoting women's empowerment in technology, enforcing legislation for gender equality.) 6. Clean water and sanitation (Providing safe drinking water, ensuring adequate sanitation and hygiene, minimizing hazardous chemicals and materials in water, addressing water scarcity, involving local communities in water and sanitation management.) 7. Affordable and clean energy (Ensuring access to modern energy, increasing the global percentage of renewable energy, promoting energy efficiency, technology, and clean energy infrastructure.) 8. Economic growth (Promoting sustainable economic growth, diversifying economic productivity, creating jobs and enterprises, improving resource efficiency, achieving full employment with equal pay, providing youth training, eradicating modern slavery and child trafficking, ensuring safe working environments, fostering beneficial tourism.) 9. Industry, innovation, and infrastructure (Developing sustainable infrastructure, promoting sustainable industrialization, increasing small-scale industries and enterprises, facilitating infrastructure development, supporting domestic technology development, ensuring access to information technology.) 10. Reduced inequalities (Decreasing income inequalities, promoting social, economic, and political inclusion, ensuring equal opportunities, implementing well-managed migration policies, providing special treatment for developing countries, offering development assistance to least developed countries, reducing transaction costs for migrant remittances.) 11. Sustainable communities (Providing safe and affordable housing, establishing sustainable transport systems, encouraging inclusive urbanization, protecting cultural and natural heritage, mitigating the effects of natural disasters, reducing the impact of cities on the environment) 12. Responsible consumption and production (Implementing programs for sustainable consumption, managing natural resources responsibly, reducing food waste,

minimizing the environmental impact of chemicals, promoting waste reduction through recycling, encouraging companies to adopt sustainable practices, raising awareness about sustainable lifestyles, enhancing scientific and technological capacities.) 13. Climate action (Strengthening adaptive capacity to climate hazards, raising awareness, implementing commitments by developed countries, managing climate change-related issues in least developed countries.) 14. Life below water (Combating marine pollution, preserving marine and coastal ecosystems, addressing the impacts of ocean acidification, regulating and ending overfishing, conserving coastal and marine areas, increasing benefits for small island nations.) 15. Life on land (Conserving wetlands, mountains, and drylands, halting deforestation, combating drought, floods, and river erosion, preserving mountain ecosystems, addressing the impact of invasive alien species, integrating national planning efforts, increasing financial resources for biodiversity conservation, promoting sustainable forest management, providing global support to combat species trafficking.) 16. Peace, justice, and strong institutions (Reducing violence and death rates, ending abuse and trafficking of children, ensuring justice for all, combating organized crime, reducing corruption and bribery, developing accountable institutions, promoting participatory decision-making, providing legal identity for all, including birth registration, ensuring public access to information and protecting fundamental freedoms, strengthening institutions to combat crime.) 17. Partnerships for the SDGs (Mobilizing financial resources, transferring marine and ecosystem-friendly technologies, building capacity through training and education, encouraging multi-stakeholder partnerships, enhancing data monitoring and accountability.)

Secondly, we analyzed the editorials into four types developed by Neal (1921), which are: I. Editorial of information (immediately serves all necessary information about a particular issue), II. Editorial of interpretation (an approach to covering a sensitive or controversial topic), III. Editorial of criticism (constructively criticize actions, decisions or situations) and IV. Editorial of commendation (appreciate, tribute or commend policymakers, people and organizations).

Thirdly, we divided the mode of the editorials into three codes inspired by Sarker (2012) who describes the three modes or styles of editorial which are I. Pro-active approach where actions are taken before a minor difficulty turns into an issue or a problem. II. Opposing viewpoint where contrary viewpoint about an issue is presented and III. Solution-based where practical solutions are provided for SDGs related problems.

Finally, each editorial has been coded inductively where codes are identified by crude reading the data extracted from editorials. These codes are presented thematically with NVivo-14.

Results

Table 1 demonstrate that clean water and sanitation are mostly covered goals which is 13.64%. On the contrary, there has no editorial coverage on climate action and life below water. However, three SDGs goals which are gender equality, affordable energy, consumption and production goals has received equal and poor coverage accounting for 2.27%. Additionally, two SDGs goals economic growth and sustainable communities get equal and comparatively large coverage which is approximately 11.36%.

Table 2 indicates that interpretative editorials received the highest coverage which is 37.50% of the total published editorials on SDGs. On the other hand, editorial of commendation got the lower treatment which is 12.50%. The number of editorials of criticism was 26, which is 29.55% and the rest of the editorials are editorial of information, which is nearly 20.45%.

Table 3 shows that editorials on pro-active approach prioritized the most which is 52.27%, while solution-based editorials received the minimum coverage which is 20.46%. Opposing viewpoints got the moderate coverage which is almost 27.27%.

Table 4 demonstrate the top ten cited themes while development is the mostly cited theme which is 16.50%. Health and water are the second most cited themes which is 11.65%. Additionally, figure 1 presented the prevalent themes of the editorials including development, health, water, economy, project, policy, marginalized infrastructure, initiatives, accountability, actions, food, agriculture and urbanization.

Table 1. Coverage of 17 SDGs Goals in Editorials

SDGs in Editorials	(n=88) %n
Poverty	04 (4.55%)
Zero hunger	08 (9.09%)
Good Health	07 (7.95%)
Quality Education	06 (6.82%)
Gender Equality	02 (2.27%)
Clean Water and Sanitation	12 (13.64%)
Affordable energy	02 (2.27%)
Economic Growth	10 (11.36%)
Industry, Innovation and Infrastructure	06 (6.82%)
Reduce Inequality	04 (4.55%)
Sustainable Communities	10 (11.36%)
Consumption and Production	02 (2.27%)
Climate Action	00 (0.00%)
Life below Water	00 (0.00%)
Life on Land	03 (3.41%)
Peace and Justice	09 (10.23%)
Partnerships On SDGs	03 (3.41%)

Table 2. Coverage of Different Type of Editorials

Type of Editorials	(n=88) %n
Editorial of Information	18 (20.45%)
Editorial of Interpretation	33 (37.50%)
Editorial of Criticism	26 (29.55%)
Editorial of Commendation	11 (12.50%)

Table 3. Coverage of Different Mode of Editorials

Mode of Editorials	(n=88) %n
Pro-active approach	46 (52.27%)
Opposing viewpoint	24 (27.27%)
Solution-based	18 (20.46%)

Table 4. Top 10 Cited Themes on SDGs Editorials

Themes	(N=101) %n
Development	17 (16.50%)
Health	12 (11.65%)
Water	12 (11.65%)
Economy	10 (9.71%)
Project	10 (9.71%)
Policy	09 (8.74%)
Marginalized	08 (7.77%)
Infrastructure	08 (7.77%)
Initiative	08 (7.77%)
Accountability	07 (6.80%)



Figure 1. Thematic Analysis of the Major Cited Themes of SDGs Editorials with NVivo-14

Discussion

This study revealed that zero hunger (7.95%), good health (7.95%) and quality education (6.82%) have received comparatively good coverage among 17 goals of SDGs which indicates the emphasis on basic rights issues. Similarly, Ekeanyanwu and Obianigwe (2012) found that the media in developing countries have provided significant coverage to editorials and stories related to achieving SDGs, particularly with regards to basic rights issues.

However, this study indicates that among 120 editorials, 88 editorials are on SDGs goals which show an increasing ratio of SDGs editorial in the selected newspapers. The outcome of this study is aligned with Bhattacharya and Khan (2020) study that Bangladeshi newspapers have played a prominent role in advocating for and promoting the SDGs within the country. They explored the year-wise coverage of the SDGs by Bangladeshi newspapers. The findings indicated that during the initial years of SDGs implementation (2015 to 2016), there was minimal media assistance in localizing the SDGs in Bangladesh. However, the study revealed a significant increase in the prevalence of SDGs-related news articles across different sections of newspapers in the subsequent years (2017 to 2018). These findings are also aligned with the perspective presented by Titus (2017) that print media should place a greater emphasis on development stories and publish extensive editorials that provide insight into SDGs programs.

Neal (1921) introduced the four types of editorials including editorial of information, editorial of interpretation, editorial of criticism, and editorial of commendation. In the context of this study, the editorial of interpretation is utilized to explain how the newspaper covered sensitive or controversial subjects. On the other hand, the editorial of criticism aims to constructively criticize actions, decisions, or situations while providing potential solutions, with the immediate purpose of drawing readers' attention to the problem rather than focusing on the solution. The editorial of information serves to provide essential information about a particular issue, while the editorial of commendation, appreciation, or tribute recognizes and praises policymakers, individuals, or organizations for their noteworthy achievements.

In this study, the results indicate that interpretative editorials received the highest coverage, accounting for 37.50% of the total published editorials on SDGs. On the other hand, the editorial of commendation received the least attention, comprising only 12.50% of the total. The number of editorials of criticism amounted to 26, representing 29.55% of the total, while the remaining editorials fell under the category of Editorial of Information, making up nearly 20.00% of the total.

Baran and Davis (2011) argue that the media development theory, as postulated by McQuail in 2010, suggests that the way information is disseminated in newspaper editorials influences the interpretation given to the message by the audience. The findings of this study align with this theory, as interpretative editorials received the highest coverage, indicating their potential impact on shaping readers' understanding and perception of the SDGs.

Additionally, Sarker (2012) describes three modes or practices of editorial writing that have been applied in the sampled editorials: the pro-active approach, where actions are taken before a small difficulty escalates into a larger issue or problem; the opposing viewpoint, which presents contrary perspectives on an issue; and solution-based editorial writing, where practical solutions for SDGs-related problems are proposed. In this study, the pro-active approach received the highest coverage, accounting for 52.27% of the total published editorials on SDGs. On the other hand, solution-based editorials received the lowest coverage, comprising only 20.46% of the total.

Opposing viewpoints, which present contrary perspectives on an issue, received moderate coverage, accounting for almost 27.27% of the total. The findings suggest that while the pro-active approach was prioritized and opposing viewpoints were given moderate attention, there was a relatively lower focus on presenting solution-based editorials.

Conclusion

The print media, particularly in developing countries like Bangladesh, has a significant impact on the development of organizations, communities, and countries. It determines what issues are given attention and how they are presented to the public. Editorial pieces in newspapers are particularly influential in implementing government development policies as they are widely used to communicate information to the masses. In addition, newspaper editorials provide a platform for public discourse and debate on sustainable development issues, enabling individuals and organizations to express their opinions and concerns. This can result in increased public engagement, which can drive policy change and reform. The print media also guide the governments and policy makers towards achieving sustainable development by educating individuals and society and raising awareness about sustainable development.

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Data Availability Statement: The data supporting the findings of this study can be openly accessed from The Daily Star and The Daily Prothom Alo through their respective websites, namely epaper.thedailystar.net and epaper.prothomalo.com.

Conflict of Interest

The authors declare no conflict of interest.

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**FACTORS ASSOCIATED WITH UNDERGRADUATE STUDENTS' SUBJECT SELECTION
IN BANGLADESH**

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Abstract

Subject selection is a critical decision for undergraduate students as it has a significant impact on their personal development and future careers. A mixed method approach was used to investigate the decision-making process and the factors that influence subject selection of undergraduate students at Khulna University. Quantitative data were collected from 300 participants using an online survey questionnaire, and qualitative data was gathered from four focus group discussions. The study found that in selecting academic subjects, students typically go through nine steps: identifying desire subjects; anxiety about desired subjects; seeking information from sources; assessing the influence of sources; comparing and depending on sources; understanding own motivations; comparison between subjects; making a decision; and conducting post-decision evaluations. The quantitative results show that family members and teachers were the most influential factors in choosing academic subjects. Additionally, students mentioned that they relied on a variety of human and electronic sources to gather information during their decision-making process. They relied on human sources like senior students and friends for better understanding regarding future career of a subject. They also used electronic sources like Google search, social media, and university websites in enhancing their information-gathering process. The qualitative findings suggest that in the process of selecting major students often experience mental stress due to a lack of information about desired subjects, challenges in getting preferred subject, and the pressure from families to take their preferred subject. The study offers a systematic understanding of the factors and decision-makers that shape the subject selection process of undergraduate students.

Keywords: Decision-making, Influencer, Education, Subject selection, Mixed method

Introduction

Education at the undergraduate level plays an important role in shaping students' careers and future prospects (Watts, 2018). It gives them the confidence, logical reasoning and necessary skills to tackle challenges and make informed decisions (Pascarella & Terenzini, 2016). However, a significant portion of undergraduate students lose their interest in their chosen major during their time at university (Bennett & Penney, 2018). Students may lose interest in a subject for various reasons, such as a mismatch between expectations and the curriculum, a lack of engagement with the subject matter, growing interests in other subjects, etc. (Drewes & Michael, 2006). Therefore, making an informed decision about selecting an undergraduate major is crucial.

When selecting a major, students go through a great deal of concern and uncertainty (Galotti, 1999). They are influenced by various factors such as their interests and abilities (Beggs et al., 2008; Zhang, 2006) and the career opportunities of the subject (Malgwi et al., 2005). Othman et al. (2019) stated that making a decision is more complex than it appears as individuals' decisions may lead to either success or failure in life. Students may have inadequate information about the multipole subject options available to them (Chaturapruek et al., 2021). They sometimes need some kind of resource to make a decision (Ryan et al., 2001). Students use different sources of information (e.g., peers, family, friends, and current or former university students) in their decision-making process (Slack et al., 2012). Students who want to be admitted to private university valued reputation, selectivity, personal interaction, facilities, and cost, while public university students valued programs, athletics, reputation, cost, housing, and location (Joseph et al., 2012). International students consider university brochures and websites,

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recommendations of former students, and information from the international office as important factors in their university of choice, while national students consider recommendations from former students or friends, university websites, and visits by university representatives (Calitz et al., 2020).

Most of the studies regarding students' decision-making focus on either university selection or a particular course selection. However, the process of choosing a subject or major receives less attention even if it significantly impacts students. Therefore, it is essential to understand the selection process for the undergraduate major. This understanding will not only benefit students but also educators and administrators, helping them in planning, informed decision-making, and managing the complexities associated with subject selection. To investigate the decision-making process of a student, this study aims to focus on the following research questions:

RQ1. What are the steps that students typically go through when making a decision to select an undergraduate subject?

RQ2. What are the key factors that facilitate the decision-making process for students when selecting their subject?

RQ3. Which factors have a significant impact on the student's decision-making process to select an undergraduate subject?

Literature Review

The decision-making process has drawn the attention of researchers from a diverse of fields, including psychology, marketing, and education. Jonassen (2012) stated that there are different types of decisions e.g., making choices, accepting options, evaluating possibilities, etc. and it is an important skill for dealing with complex problems. Similarly, Malakooti (2012) identified four key steps in the consumer decision-making process: information gathering, searching for alternatives, evaluation, and making a decision. These steps play an important role in guiding individuals to reach a final decision. In addition, Gupta and Mehta (2021) stated that individuals go through various cognitive and behavioral steps, such as problem recognition, information search, alternative evaluation, and choice selection, in the decision-making process. Lemon and Verhoef (2016) developed a conceptual model in a similar way that includes five stages of the decision-making process of an individual, which include problem recognition, information search, evaluation, decision, and post-purchase evaluation. Additionally, Kahneman and Tversky (2000) found that personal biases, emotions, and the social environment have an impact on a person's decision-making. However, the decision-making process might differ greatly between people even when faced with similar conditions, (Galotti et al., 2014). Policymakers use a formal technique called 'multicriteria thinking' to make informed decisions (Saaty, 1994). On the other hand, strategic leaders employ quantitative techniques to select an action or solution from a set of options which enable them to reduce uncertainty in their decision-making process (Rector, 1997).

While there aren't many studies specifically focusing on the decision-making process in undergraduate subject selection, there has been plenty of research conducted on how students make decisions when choosing universities and courses. As the growing number of options available in terms of where and what to study, Wu (2014) stated that the decision-making process for students has become more complex. Students prefer universities that are closer to their homes (Kopanidis, 2008; Drewes & Michael, 2006; Briggs, 2006), spend more on scholarships and teaching (Joseph et al., 2012; Drewes & Michael, 2006), and offer higher levels of non-academic student services (Joseph et al., 2012; Raposo & Alves, 2007; Drewes & Michael, 2006). Students' decisions regarding course selection can significantly influence their academic performance and future prospects (Othman et al., 2019). To make informed choices, students often turn to current students for assistance, seeking information about the university's offered courses that align with their academic goals and interests. Goyette and Mullen (2006) discovered that students from higher socioeconomic backgrounds were more inclined to choose arts and science fields, whereas vocational majors led to higher-paying jobs for graduates after four years. Hewner (2014) found that many computer science students lacked specific educational goals and assumed that all curriculum-required courses were useful. Wellington and Sikes (2006) revealed that students pursuing professional doctorates had diverse motivations, including a need for theory, deeper insight into practice, and extrinsic factors.

In the context of Bangladesh, several studies have investigated the factors that influence students' decision-making when it comes to choosing universities and career paths. Islam et al. (2020) found that distance from home, level of education, university location, tuition cost, scholarship availability, and campus visits are influential factors

in university choice. Anam (2019) identified reputation, academic quality, location, cost, and facilities as important considerations for students selecting a university. In terms of career choice, Islam et al. (2021) highlighted personality, family influence, job prospects, job security, and salary as significant factors for undergraduate students in public universities. Hossain and Siddique (2012) emphasized financial benefit, social status, and job security as major motivations for business graduates' career preferences in private universities. Tabassum and Rahman (2014) explored individual, psychosocial, economic, and educational aspects as factors that influence career choices of BBA students. Jony (2021) identified success factors like appropriate choice of study, subject interest, attendance, examination preparation, teachers' skills, written communication, and study methods affecting students' academic performance. Saif et al. (2017) highlighted the importance of reputation and online services in university selection for higher education.

While there is a considerable amount of research on the university and course selection process and factors, there is a limited number of studies on subject selection process in Bangladesh. In this context, this study aims to bridge this gap by investigating the subject selection process and factors influencing undergraduate students in Bangladesh.

Theoretical and Conceptual Framework

Most of the theories regarding decision-making processes have primarily focused on consumer behavior. Engel et al. (1968) introduced a five-step model for how consumers make decisions when they want to buy a product. The steps are problem recognition, information search, evaluation of alternatives, purchase decision, purchase, and post-purchase evaluation.

This model has been widely used and adapted by researchers (Santos & Gonçalves, 2021; Lemon & Verhoef, 2016; Hudson & Hudson, 2013) to analyze consumer decision behavior. In the decision-making process, consumers initially identify a need or issue prompted by internal or external stimuli (Moreau & Dahl, 2005). Subsequently, they seek information from various sources like friends, ads, and reviews (Tavares et al., 2021). Then they assess alternatives based on price, quality, features, and brand reputation (Pelau & Stamule, 2013). After evaluating options, the consumers make a decision aligning with their preferences, needs, and budget (Tavares et al., 2021). The consumer completes the transaction, acquiring the chosen product or service (Lemon & Verhoef, 2016), and then evaluates their satisfaction, potentially leading to repeat purchases or complaints if dissatisfied (Panda, 2014).

This model has also been applied by researchers to comprehend student decision-making processes in higher education, especially in university selection and course selection. Callender and Jackson (2008) assert that higher education's competitiveness has increased, leading students to exhibit consumer-like behavior in their decision-making.

Schwenk (1990) presents a three-stage model for decision-making in strategic contexts. Firstly, students identify their goals or problems. Next, they generate various alternatives to address the identified goals or problems. Lastly, they evaluate and choose the best option among the generated alternatives.

Towers and Towers (2018) have found that postgraduate students have gone through a similar process such as problem recognition, information search, evaluation, decision, and post purchase evaluation in the course selection decision making process. They found that at first, students recognize the need to choose courses that align with their academic requirements, career goals, or interests. Next, they actively search for information from various sources like university websites, catalogs, advisors, and peers. After gathering information, they carefully evaluate and compare course options based on criteria like content, relevance, workload, and opportunities. Once the evaluation is done, they make a decision that considers both rational factors and personal preferences. After enrolling in the chosen courses, they assess their satisfaction and may adjust their choices if needed based on their post-purchase evaluation.

Similarly, Othman et al., (2019) identified three phases in the students' decision-making process: the search phase, evaluation phase, and choice phase. During the search phase, students actively gather information from various sources, such as peers, teachers, and university websites. In the evaluation phase, they assess and rank the gathered information to make informed decisions. Finally, in the choice phase, they make their decision based on the evaluation and proceed with their selected option.

Based on the literature above, this study introduces a conceptual model (**Figure 1**) depicting students' decision-making process when selecting their major. The framework is inspired by Towers and Towers (2018) but has been adapted and modified to suit the specific context of this study.

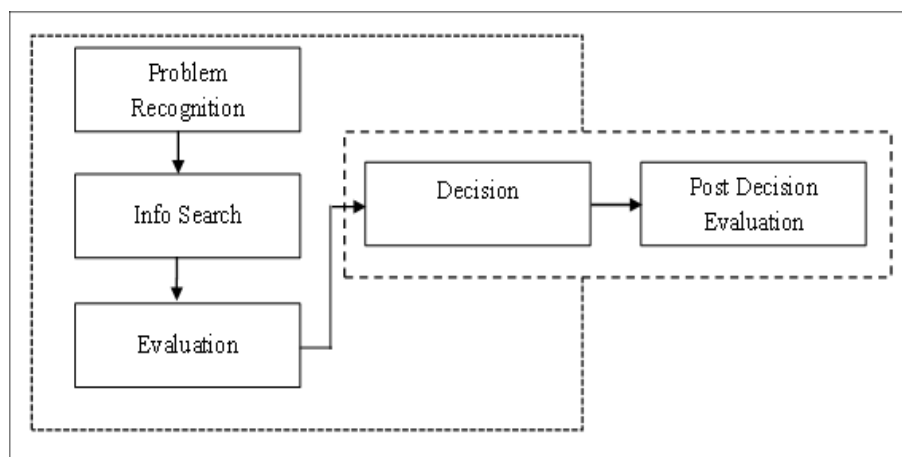


Figure 1. Conceptual Framework of Students' Subject Selection

Materials and Method

This study has adopted a mixed method approach in order to effectively address the research questions and objectives, requiring both qualitative and quantitative methods. Creswell and Creswell (2018) stated that mixed method research combines data collection and analysis from both quantitative and qualitative sources to explore research questions or objectives. Hirose & Creswell, (2023) and Caruth (2013) point out that mixed method research provides richer insights by combining both quantitative and qualitative approaches. It captures information that might be overlooked with a single research design and enhances the knowledge base. Within the framework of mixed methods research, the convergent, explanatory, and exploratory designs are recognized as the core approaches (Creswell & Creswell, 2018). To align with the research questions of this study, the convergent parallel-databases variant mixed method design has been implemented. In a convergent parallel-databases variant mixed methods design approach, the quantitative and qualitative data are gathered parallel, evaluated independently, and combined in the final analysis and interpretation (Creswell & Plano Clark, 2011). The quantitative aspect of this study involved administering surveys, while the qualitative component consisted of conducting focus group discussions (FGDs).

The survey questionnaire for this study was initially developed based on previous research. To ensure the questionnaire's clarity and comprehensibility, a pilot survey of 12 students was conducted beforehand. The feedback and observations from the pilot study were used to refine the language and content of the final questionnaire. The survey questionnaire consisted of a total of 29 questions and statements. This included 11 linear scale questions, ranging from strongly disagree (1) to strongly agree (5). The linear scale question was designed to assess students' satisfaction with their sources and the factors related to those sources. Nine single-choice questions were included to the questionnaire to collect information regarding decisions and sources. Additionally, seven multiple-choice questions and other types of response options were included to get a broad idea of the possible factors they considered important in their decision-making process. Demographic information (e.g., name, gender, and academic discipline) was also collected. To protect respondents' privacy, information that could potentially disclose their identity was not used in this study.

The questionnaire was distributed to first-year students in all academic disciplines via a Google Form link. The link was shared through Facebook groups and Messenger in April and May of 2022. The population for this study was defined as the 1230 students who enrolled in Khulna University in 2020 (Khulna University, 2020). These students had the opportunity to select their subject from multiple options. The online questionnaire was completed

by 371 students in total, which equals a 30% response rate. Among the respondents, 82% had chosen their discipline from a variety of subject possibilities, and 51% were female students. After considering the inclusion criteria of having multiple options when selecting their undergraduate subject, 305 responses were eligible for further analysis. Finally, this study included a total of 300 responses for analysis.

The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS) software. To analyze the data, statistical tools including descriptive statistics and inferential statistics were used.

The FGD method was utilized to gain insights into students' mental condition, sense of responsibility, and how they navigate the entire process. This approach was chosen to avoid potential misconceptions that may arise from using a pre-specified study design developed in other countries, which may not be applicable to the context of developing economies (Soja, 2008). A total of four FGDs were conducted, with each group comprising seven students. Participants were selected from the eight schools within Khulna University, which consists of 29 disciplines.

Data from the FGDs were transcribed, and after transcription, data were manually encoded. Once the encoding was finalized, the codes were manually categorized into different themes.

Results

Characteristics of the respondents

Table 1 shows that nearly half of the respondents are male which is 49% and female respondents are slightly over half which is 51%. Among the respondents, 62.9% are in the age range of 18 to 20, while 37.1% fall within the age group of 20 to 22. Most of the respondents (45.4%) resided in urban areas, and the second largest group of respondents resided in rural areas (35.4%). Most respondents were enrolled in the Science, Engineering, and Technology School (23%) and the Life Science School (26.7%). A significant portion of respondents come from elementary family (61%), followed by extended families (22%), and single-parent households (17%).

Table 1. Demographic profile and characteristics of the survey respondents

Category	Type/Group	No. of Respondents (n= 300)	Percentage (%)
Gender	Male	147	49
	Female	153	51
Age (Years)	18-20	189	62.9
	20-22	111	37.1
Residential Area	Urban	136	45.4
	Suburban	57	19.2
	Rural	107	35.4
Program Taken at University	Science, Engineering and Technology School	69	23
	Life Science School	80	26.7
	Social Science School	64	21.3
	Arts and Humanities School	20	6.7
	Fine Arts School	12	4
	Law School	15	5
	Education School	12	4
	Management and Business Administration School	28	9.3
Family Type	Elementary	183	61
	Extended	66	22
	Single-parent	51	17
Family's Income Range (Annual)	Below One lakh	126	42
	One to Three lakhs	103	34.1
	Three to Five lakhs	48	16.1
	Above Five lakhs	23	7.8

Table 2 presents the participant demographics for four Focus Group Discussions (FGDs) involving eight schools. Out of the 28 respondents, 42.86% were female students, while 57.14% were male students. Additionally, 71.43% of participants fell within the age range of 18-20, while 28.57% were aged between 21-22. The majority of FGD participants, comprising 42.86%, reside in urban areas.

Table 2. Demographic profile and characteristics of the FGD participants

Category	Type/Group	No. of Respondents (n= 28)	Percentage (%)
Gender	Male	16	57.14
	Female	12	42.86
Age (Years)	18-20	20	71.43
	20-22	08	28.57
Residential Area	Urban	12	42.86
	Suburban	07	25
	Rural	09	32.14
Program Taken at University	Science, Engineering and Technology School	06	21.43
	Life Science School	06	21.43
	Social Science School	04	14.29
	Arts and Humanities School	02	7.14
	Fine Arts School	02	7.14
	Law School	03	10.71
	Education School	02	7.14
	Management and Business Administration School	03	10.71

Influencing Factors

The statistical data in **Table 3** shows that the family has played the role of the most influential factors for the respondent categories. Family fully dominated the age categories. In terms of gender, family influenced female respondents the most (54.2%), while male respondents' own desires (54.4%) were the most influencing factors for them. Family has been a significant decision-maker for both elementary and extended family types, with mean values of 1.53 and 1.56 respectively. Interestingly, respondents from single-parent families chose their own desires as the most influencing factor, with a mean value of 1.29. In rural areas, respondents decided their own desires as the most influencing factor for choosing their undergraduate subject, with a mean value of 1.29. In both urban and rural areas, respondents were most influenced by their family, with mean values of 1.38 and 1.63 respectively.

Table 3. Descriptive statistics for most influencing factors

Respondents in Different Categories	Most Influencing Factor	Mean Value	Frequency	Percentage (%)
Male	Own Desire	1.46	80 (n=147)	54.4
Female	Family	1.54	83 (n=153)	54.2
Age between: 18-20 years	Family	1.53	100 (n=189)	52.9
Age between: 20-22 years	Family	1.54	60 (n=111)	54.1
Elementary Family	Family	1.53	97 (n=183)	53
Extended Family	Family	1.56	37 (n=66)	56.1
Single-parent Family	Own Desire	1.49	26 (n=51)	51
Urban Area	Family	1.38	52 (n=136)	38.2
Suburban Area	Family	1.63	36 (n=57)	63.2
Rural Area	Own Desire	1.29	76 (n=107)	71

The data analysis identified that students undergo these nine steps consecutively in their undergraduate subject selection decision-making process.

Identify the Desired Subject

The first step for students is to identify their desired subject, which can come from various sources such as school, college, or post-college experiences. **Figure 2** shows that 63% of students know that they have to identify their desired subject while in school, and 28% while in college.

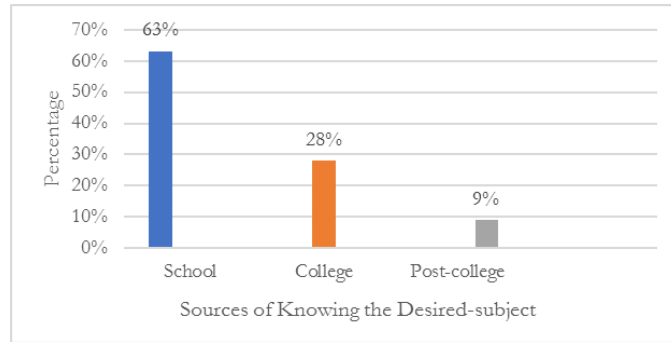


Figure 2. Specific subject selection literacy

In FGD, students expressed that they typically receive guidance from their parents, teachers, and other university students. During this process, they often engage in self-reflection to better understand their interests and goals, although they may also be influenced by social expectations. Some quotes have been presented in **Table 4** below.

Table 4. Participants' identification of desired subject

Category	Quotes from FGDs
Social Concern	"I always wanted to choose the best subject, or at least one that would be respected by society". (FGD 2)
Finds Strong Zone	'I was good in English at school, so I was determined then to try for English in University level.' (FGD 4)
Sources' Impact	'My cousin is a software engineer and I always wanted to be like him.' (FGD 3)

Anxiety about Desired Subject

Students often worry about the possibility of not being able to study their desired subject. The survey results in **Table 5** show that 86% of the respondents had a preferred subject before entering university.

Table 5. Pre-University desired subjects vs. enrollment outcomes

Response	Had Desired Subject		Getting Desired Subject	
	Freq. (n=300)	Per. (%)	Freq. (n=300)	Per. (%)
Yes	258	86	117	39
No	42	14	183	61

However, **Table 5** shows that only 39% of them were able to secure their desired subject by enrolling. The remaining majority of 61% were unable to get their preferred subject due to their merit position in the admission exam, while others faced family pressure. Data obtained from the FGDs about feeling anxiety are presented in **Table 6** below.

Table 6. Category of anxiety about desired subject

Category	Quotes from FGDs
Expecting Desired Subject	<i>'I love the field of agricultural studies but was confused about getting it as my subject.'</i> (FGD 3)
Expecting Easy Subjects	<i>'I prefer subjects that are easy and comfortable for me, and also consider the job prospects in that field.'</i> (FGD 1)
Specific Interest	<i>'I prefer studying applied subjects only. But I was confused whether I get this or not.'</i> (FGD 3)

The FGD participants expressed (Table 6) their thoughts and concerns regarding the factors influencing their choices. Under the category "Expecting Desired Subject" students discuss their passion for a specific field but express uncertainty about whether they can pursue it as their subject. In the category "Expecting easy subjects," students prioritize subjects that they find easy and comfortable while considering future job prospects. The category "Specific interest" highlights students' preference for applied subjects and their hesitation about whether they can enroll in their desired subject. These quotes offer valuable insights into the complexities and considerations that students encounter during their subject selection process.

Source of Information

Figure 3 shows that after identifying a desired subject 34% of respondents use Google as their first source to seek information related to the subject, while 28% approach known university students.

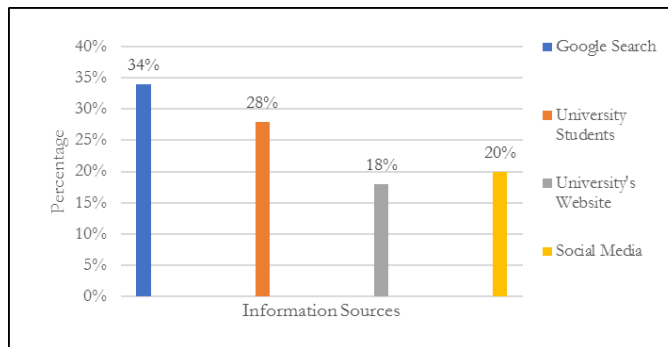


Figure 3. Information sources for subjects

They brainstorm some questions and think of possible sources to find the answers. Students have to face some difficulties in this step. The FGD (Table 7) showed that lack of information in admission process, challenges in finding reliable information and parental involvement are the thematic categories, which provoke students to seek sources for information.

Table 7. Students' aspiration issues for information

Aspiration Issues	Quotes from FGDs
Lack of Information in Admission Process	<i>'I had very little knowledge about the admission process and the value of subjects in higher education, which made it a great challenge for me. I strongly felt the lack of information at that time.'</i> FGD 4
Challenges in Finding Reliable Information	<i>'Finding the actual source of information was a great challenge, so I started by formulating my own questions and then searched for answers on YouTube, Facebook admission groups, and sought out subject reviews.'</i> FGD 1
Parental Involvement	<i>'Before making any decisions, I discussed the subject options with my parents to understand their preferences. During this process, several questions arose such as the depth of knowledge required, the level of effort needed, and the potential career paths associated with each subject.'</i> FGD 3

Sources' Influence

Figure 4 shows that students perceive family members as having the greatest influence on their decisions (41%), and they also see themselves as significant decision-makers (29%). Following their family and their own desires, students seek consultation from their teachers (12%) and then from known university students (9%).

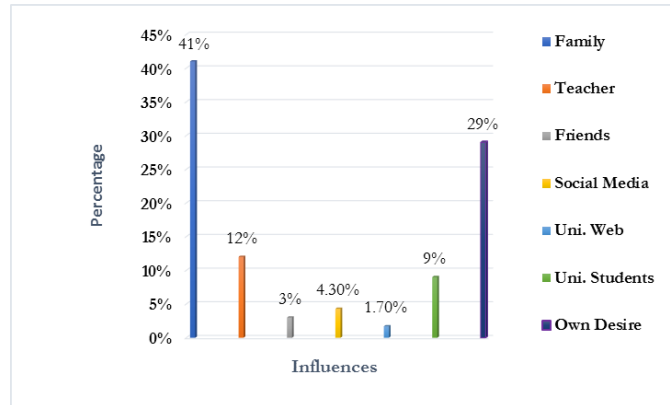


Figure 4. Sources influencing the most

Students generally seek several sources for information. Table 8 presents the FGD data, which indicates that families actively try to influence students in selecting subjects.

Table 8. Influencing facts of sources

Facts	Quotes from FGDs
Family's Desire	<i>'My family always wanted me to be a Lawyer. So, it was fixed that they will admit me in Law Discipline'</i> FGD 4
Educators Suggestion	<i>'My teacher is a guardian to me. He is an English graduate and wanted me to be too. That's what I cordially agreed'</i> FGD 1
Senior Students Impact	<i>'A senior student of this campus told me, there is a separate quota for Sociology in BC.S and told me to admit in this Discipline'</i> FGD 3

Motives of Students

Students' primary motive for choosing a subject is to secure a stable career after graduation, which is their ultimate goal. However, they also consider other factors, such as reputation of the subject, enjoyability of reading, and the potential to achieve a high CGPA. Additionally, some students are concerned with the possibility of getting private tutorship to earn their monthly expenses. Table 9 presents quotes from the respondents expressing their motivation for choosing a major.

Table 9. Students motives to select a subject

Category	Quotes from FGD
Career Opportunity	<i>'I aspire to serve the agricultural industry, which is why I have decided to study Agrotechnology.'</i> FGD 3
Enjoyability	<i>'I enjoy solving mathematical problems, which is why I was inclined towards selecting Mathematics or subjects that involve equations similar to Mathematics.'</i> FGD 2
Subjects' Reputation	<i>'In addition to considering my career goals and personal interests, the reputation of the subject was also a significant factor in my decision-making process.'</i> FGD 1

Table 10 shows that 46% of the respondents' indicated that the most influential factor in subject selection is career goals. The second most motivating factor for subject selection is social impact, constituting 18.3%. A small portion of respondents (1.7%) indicated that they chose their subjects without considering any specific motivation.

Table 10. Motivating factors in subject selection

Question	Options	Frequency	Percentage (%)
The motivating factors that played role in subject selection.	Career Goal	138	46
	Social Impact	55	18.3
	Enjoyability	47	15.7
	Earning CGPA	19	6.3
	No Motive	5	1.7

Comparison between Subjects

Students compare various factors between one subject to another in the selection process. Among them, the job sector or career opportunities of the subject is the most influential factor. Another important factor is the opportunity to pursue higher studies abroad. Students justify the demand for the subjects in foreign countries they aspire to study in. In **Table 11** related quotes from the respondents have been shown below.

Table 11. Students compare subjects before making a decision

Criteria	Quotes from FGD
Career Opportunities	<i>'I primarily compared subjects based on their potential career opportunities, and the wide range of job opportunities in the field of Agrotechnology prompted me to choose this subject.'</i> FGD 3
Personal Desires	<i>'I considered fulfilling my personal desires as the most important criterion, so I evaluated subjects based on their ability to satisfy my interests and be enjoyable for me to study.'</i> FGD 1
Future of the Subject	<i>'Higher study facilities and job opportunities in every subject's field helped me comparing.'</i> FGD 4

Students considered and compared a range of factors when choosing their subjects. **Figure 5** illustrates that 66% of the respondents indicated that the job sector was the most important criterion when comparing subjects. The reputation of the subject (17%) and opportunities for higher studies (7.30%) also played important roles in comparing subjects.

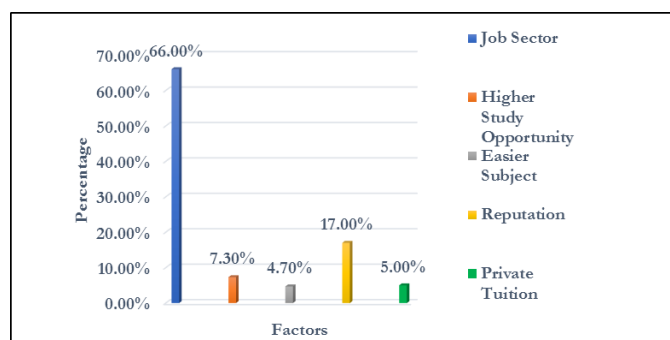


Figure 5. Factors of subject selection

Comparing and Depending on Sources

During the selection process, students compare their sources based on their career position, behavior, smartness, and knowledge. They look for similarities among the information they have received from different sources and cross-check them to justify their reliability. After the justification process, they become more confident and believe in a source calmly. **Table 12** below presents the quotes from the respondents.

Table 12. Comparison of information sources influencing students

Category	Quotes from FGD
Reliability	<i>'It was clear to me that my family wants the best for. They are my most own and reliable. That is why I never needed another source to get or compare'</i> FGD 2
Position of the Source	<i>'I discussed with several senior students about subject selection. When their opinions used to clash, I always compared their present position and keep the better one's opinion.'</i> FGD 4
Clarity of Information	<i>'Some sources could not clearly deliver me information then I approached another one. I cannot depend on a source who is not clear himself.'</i> FGD 1

As **Table 13** shows that, 30% of respondents consider their family to be the most dependable source. University students and social media groups are the second and third most reliable sources, respectively. However, only 3% of the students consider their friends as dependable sources.

Table 13. Primary sources of influence of students

Category	Options	Frequency (n=300)	Percentage (%)
Comparison of Information Sources	Friends	9	3
	University Students	52	17.3
	Family	90	30
	Social Media	42	14
	Teacher	27	9
	University Website	26	8.7
	None	54	18

Decision

Participants of FGDs clearly stated their decision-making moment. At the time of taking decision students mostly try to focus on their preferences. Families of participants, educators and other human sources also made the decision for them too. Some relatable quotes have been presented in **Table 14** below.

Table 14. Students' subject selection decision

Sources	Quotes from FGD
Self	<i>'Though my family was forcing me not to take Journalism, but I took. Because I prefer my own choice.'</i> FGD 1
Family	<i>'My family's decision was the final decision for me because I never disobeyed them. I never had to face difficulties after taking their decision'</i> FGD 3
Senior University Student	<i>'There was no knowledgeable person about university subjects in my family. Even I also did not have much knowledge. So, I decided the decision that was taken by a known senior student of Dhaka University'</i> FGD 4

Figure 6 illustrates that the majority of students (59.3%) indicated that they made their decision on their own. Additionally, 28.6% of the respondents mentioned that their family motivated them to choose a subject, while teachers (6.5%), university students (3.6%), and friends (1.8%) also played important roles as motivators in their subject selection.

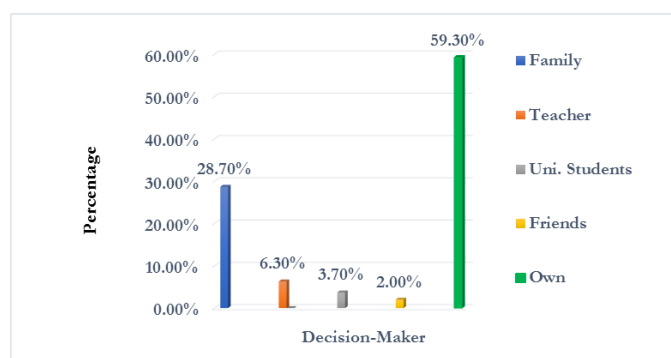


Figure 6. Final decision-makers of choosing study subjects

The Post Decision Evaluation

The participants of this study expressed that they engage in the process of assessing and reviewing the outcomes and consequences of the decisions they have made. The data was collected on a five-point Likert scale, which is considered an interval scale. The mean value of the scale is crucial for determining the outcome of each statement. A mean value of 1 to 1.8 indicates "strongly disagree," 1.81 to 2.60 indicates "disagree," 2.61 to 3.40 indicates "neutral," 3.41 to 4.20 indicates "agree," and 4.21 to 5 indicates "strongly agree."

Table 15. Post decision experiences

Statements	N	Mean	Std. Deviation
1. You are happy with present decision	300	4.20	1.025
2. You are satisfied with human source	300	3.87	1.039
3. You are happy with electric sources	300	4.04	.982
4. You did enough take heed before taking the decision	300	4.41	.947
5. You suffered to get essential information	300	2.31	1.395
6. You are satisfied with the advices from sources	300	4.01	1.100
7. Gender as an issue	300	1.28	.856
8. Family's financial condition mattered	300	2.24	1.501

The results in **Table 15** showed that the majority of students (mean = 4.20) were satisfied with their current decision. Most of the students (mean = 3.87) were satisfied with the human sources they used to gather information. Additionally, most students were satisfied with their electric sources (mean = 4.04). The majority of students (mean = 4.41) believed that they had taken enough care before selecting a subject. Students did not agree (mean = 2.31) that they suffered due to a lack of essential information. The majority of students (mean = 4.01) were satisfied with the advice they received from their sources. In statement seven, gender is not an issue for the students as they strongly disagreed (mean = 1.28). In statement eight, students disagreed (mean = 2.24) that their family's financial condition is a significant factor in their subject selection. They typically receive guidance from their parents, teachers, and other university students. During this process, students often engage in self-reflection to better understand their interests and goals, although they may also be influenced by social expectations. Some relatable quotes have been quoted in **Table 16** below.

Table 16. Students post decision experiences

Experiences Criteria	Quotes from FGD
Subject Selection	<i>'I am very much happy with my decision because I am enjoying the learning on environment.'</i> FGD 2
Satisfaction on Sources	<i>'I am thankful to all the university seniors who guided me through the admission process. Because of their guidance I am studying in a reputed subject like CSE. I think it's my best decision that I heard to their suggestion.'</i> FGD 4
Family Condition Matters	<i>'I myself decided to study in Architecture but now it has been a bit difficult. There are lot of expenses here which my family cannot bear. I am looking forward to give tuition to college or school students.'</i> FGD 1

Discussion

This study investigates the decision-making process of undergraduate students as they face the critical choice of selecting their major for their degree. The research questions aim to understand the sequential steps students typically undergo during this decision-making journey and the significant factors influencing their choices. Additionally, the study sheds light on the sources or factors that contribute to making the decision-making process more manageable and less daunting for students.

Most of the existing decision-making process models discuss either a problem recognition or pre-search stage is the initial steps of a decision-making process (Towers & Towers, 2018; Lemon & Verhoef, 2016; Maringe & Carter, 2007). This study identified a similar decision-making process and identified some factors associated with this stage that led students to begin their decision-making process. The leading step, Identify the Desired Subject, involves students becoming acquainted with the university's approach to education and gaining awareness of potential majors. In this initial step, students actively seek information about universities and subjects. During this process, students predominantly rely on electronic sources like Google search, Facebook, university webpages, and brochure-type sources to gather information. With Identify the Desired Subject as the initial phase, this study found nine sequential steps that students undergo when selecting their undergraduate subjects. These findings align with Towers and Towers' (2018) research, which highlights the Problem recognition (pre-search behavior/early thoughts), Information search, Evaluation (application) stage, Decision stage (course selection), and post-purchase evaluation steps of the decision-making process.

This study also found that one of the critical phases' students go through is the Comparison between Subjects step when choosing a major. During this stage, students explore multiple options and have not yet arrived at a final decision. This pattern closely resembles the evaluation stage in models such as Court et al. (2009) and Blackwell et al. (2001). During this phase, students meticulously consider their motives, compare various options, assess information and sources, take university characteristics into account, and importantly, experience mental pressure while making their choice. This study recognizes two subsequent stages in addition to the Comparison between Subjects stage: the final Decision-making phase and the Post-decision Evaluation. During the decision-making phase, students make their final choice and enroll in the selected major. After enrollment, they undergo a reevaluation process to confirm the appropriateness of their decision. On the contrary, Protivnak and Yensel (2017) and Butner et al. (2001) argued against the existence of additional stages beyond the comparison between subjects' stage in the student's decision-making process. They contend that the decision-making phase and post-decision evaluation are not separate stages but rather part of the same process. According to their perspective, once students have compared the different options available to them, they make a final choice and enroll in the selected major. After enrollment, they may experience a reevaluation process, but this can be seen as a continuation of the decision-making phase rather than a distinct stage.

Participants in this study indicate their family influenced their decision significantly. Among them, 41% said that family played a major role in selecting their major. Additionally, 29% of students said that they selected their subject on their own. In contrast, Beggs et al. (2008) found that students prioritize their personal interests at most when they make decisions about their careers. This study also found that teachers have a notable impact on the decision-making of students. After the teacher, students report that known university students also impact their decision-making process. Vinciarelli, et al. (2019) and Babad and Taybe (2003) found that peers, teachers, and mentors are significantly influencing students' decision-making processes. Conversely, Siann et al. (1998) argued that

students take courses based on career possibilities, financial requirements, and the availability of desirable options. Additionally, Sellami et al. (2017) identified that financial aid, job opportunity after graduation, of students. On the other hand, Joseph et al. (2012) found that students make decisions based on field reputation, personal interaction, facilities, and cost considerations. This study shows that when students compare two subjects, they pay attention to factors like job prospects and career choices. In the end, students want to make choice that help their long-term professional goals. (Zaheer et al., 2018).

Conclusion

This study investigates how undergraduate students select their undergraduate subjects for their studies. It is identified that students were go through few steps and influenced by some factors. By shedding light on the undergraduate subject selection process, this study fills the gaps in the literature on these particular issues. However, this study focuses mainly on a linear decision-making process. It overlooks the important role of social and cultural influences in students' decision-making processes. Factors such as the perception of the job market (government versus private jobs), job satisfaction, and the socially perceived position of the subject could have a significant impact on the decision to choose a major. Future research should investigate these social influences to get a better understanding of the students' decision-making process. On the other hand, a case study method could be employed to examine individual perspectives on this issue. Nevertheless, the current study will assist students, educational policymakers, and universities in understanding the process a student goes through when selecting a major.

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Conflict of Interest

The authors declare no conflicts of interest.

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NEXUS BETWEEN FINANCIAL INCLUSION AND EXCHANGE RATE: EMPIRICAL EVIDENCE FROM BANGLADESH ECONOMY

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Abstract

Financial Inclusion (FI), defined by the engagement and involvement of people with formal financial institutions, has become a buzzword nowadays. The authors have tried to investigate an alluring problem statement considering the nexus between FI and Exchange Rate (ER). The authors have collected data from the Financial Access Survey (FAS) of the International Monetary Fund (IMF) and the World Development Indicator (WDI) of the World Bank (WB) covering the years 2004 to 2020. The study has administered Unit root test, Johanson co-integration test, Vector Error Correction Model (VECM), and Granger Causality Test (GCT) to address the study objective. In accordance with analysis results, ER and Trade Openness (TO), ER and FI, and TO and FI have bidirectional associations which expose that they cause each other, for instance, $ER \leftrightarrow TO$, $ER \leftrightarrow FI$, and $TO \leftrightarrow FI$. On the other hand, Foreign Direct Investment (FDI) and TO have a unidirectional relationship which implies that FDI causes TO ($FDI \rightarrow TO$). However, the authors did not find any relationship between ER and FDI, and FI and FDI. According to the study findings, there is a positive long-term bi-directional nexus between ER and FI, which implies that both factors affect each other because of the increasing transaction demand for money over the periods. Policymakers can take financial inclusion as a phenomenon by increasing the involvement of people taking financial services from formal financial institutions for producing export-oriented and import substitution goods for earning foreign currency to maintain the trade balance as the economy remains in the trade deficit over the time period.

Keywords: Financial inclusion, Exchange rate, Foreign direct investment, Trade openness, Bangladesh economy

Introduction

Financial inclusion (FI), also known as inclusive finance or financial inclusivity/inclusiveness, is a relatively new concept. It has emerged as a remarkable occurrence within the current worldwide plan for comprehensive and enduring economic progress. FI has multidimensional accepted definitions (Sarma, 2008; Solo, 2008). Therefore, the definition of financial inclusion differs. It is considered a multi-dimensional concept because it is defined and measured by individuals and enterprises on the basis of dichotomous classification. Mbutor & Uba (2013) analyzed that a formal financial service is defined as ensuring access at a cost in a clear way. Demirgüç-Kunt et al. (2012) conceptualized FI as an institutional service (Anarfo et al., 2019) from financial institutions (Sarma, 2016). It generally dealt with different groups, and its benefit spilled over to many individuals' welfare. Amidzic et al. (2014) also described FI as an economic phenomenon. There is no one who has not confessed access to financial services in terms of primary. Lagarde (2014) considered the term as simply the 'banked'. A definition in the 2014 Global Financial Development Report (GFDR) by the WB described FI in the way, as the share of households and entities involved in financial sectors and use services (World Bank, 2014). Sahay et al. (2015) characterized financial inclusion as consisting of three dimensions for instance, access (penetration), usage, and operation of financial services and it emphasized the vulnerable segments of society at affordable cost, while Sarma (2016) explained FI as a process only. It mainly ensures accessibility, (Sahay et al., 2015) availability, and use of formal financial services (Demirgüç-Kunt et al., 2012) for all sectors of the country.

FI is used as a composite indexing value for mitigating several macroeconomic indicators and uses as enhancing economic development or growth, sustainability, and stability, creation of employment, reduction of

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income inequality and reduction of poverty in terms of developed countries, as well as emerging and developing economies (Chibba, 2009). On the perspective of the level of FI, it consists of three dimensions for instance: credit of penetration, deposit of penetration and branch of penetration (Kesavan, 2015). Many rural households (Mandiwa, 2014) have to use informal channels (Gupta, 2015) to reach their financial services (Mandiwa, 2014) because the formal sector of finance does not work them well (Kesavan, 2015). FI, thus, gained considerable worldwide momentum. It is a concept and policy solution that helps to enhance the economic status of marginalized people in a considered country. On the other hand, income asymmetry (Hills et al., 2002) goes on social exclusion (Muffels et al., 2002) from the mainstream sector of an economy and it creates inequality in the context of income in the society as well as the economy.

The measurement of FI is accomplished mainly in two ways pointed out by scholars in their previous research via the formulation of a composite FI index. They are: the nonparametric approach of FI that Sarma (2016) used and the parametric approach of FI that Camara and Tuesta (2018) used in their research applying by the principal component analysis (PCA) method. The nonparametric method mainly defines the importance of factors by selecting the weights exogenously in accordance with scholars' willingness. Lockwood (2004) used indices that are important to subjective weight selection because of a slight changing in choosing weights altering the results correctly. Therefore, Camara and Tuesta (2018) tried to sort out that problem through developing FI index on the basis of principal component analysis which is commonly known the PCA approach for the measurement of financial inclusion.

Lapukeni (2015) found that money supply and inflation increases simultaneously. That means there is a positive association between these two variables. Exchange rate (ER) is an important variable of macroeconomics. Rate of Inflation associated with the ER is used as a key factor of macroeconomic policies and interest rate is also considered for the formulation of country policy especially in the central bank policy. ER variation can affect the payment system of taking foreign debt revenue. The purpose of taking debt is to invest in economic activities for enhancing economic development making sufficient funds to pay the debt money (Saheed et al., 2015). Draz et al. (2019) investigated the dynamic influence of macroeconomic factors on ER in South-Asian countries. However, results show that the macroeconomic factors significantly affected the exchange rate.

Furthermore, Lenka & Bairwa (2016) look at the relationship between ER and FI in South Asian Association for Regional Cooperation (SAARC) nations. According to outcomes, the exchange rates of countries are significantly impacted by financial inclusion. Increased financial inclusion results in more stable exchange rates, which lowers currency volatility. Financial inclusion also makes it easier for people to participate more in international financial markets, which enhances the management of exchange rates. The study comes to the conclusion that financial inclusion policies in SAARC nations can help preserve stable exchange rates, boost economic stability, and promote sustainable economic growth.

Likewise, the nexus between FI and ER in Nigeria is the main topic of Mbutor & Uba (2013). It demonstrates how important financial inclusion is in affecting exchange rates. The stability of ER and decreased volatility of currencies are benefits of greater financial inclusion. Financial inclusion also makes it possible for people and businesses to engage in the market dealing with foreign currency exchange more actively, improving the impact of monetary (central bank) policy interventions. In addition, it is emphasized that promoting financial inclusion in Nigeria can help to stabilize the exchange rate, increase economic stability, and improve the efficiency of monetary policy measures (Mbutor & Uba, 2013). Similarly, the study emphasized the link between FI and ER in Nigeria. More financial inclusion encourages exchange rate stability by lowering currency volatility, which helps to create an environment that is favorable for economic diversification and long-term economic growth (Adeola & Evans, 2017). In addition, Matsebula & Sheefeni (2022) examined the connection between South Africa's exchange rates and financial inclusion. It demonstrates how important financial inclusion is to preserving currency stability, lowering currency volatility, and fostering macroeconomic stability in the nation (Matsebula & Sheefeni, 2022).

In the previous empirical paper, the importance of FI and the exchange rate for economic development is discussed thematically. These two are crucial in fostering economic growth, investment decision, employment generation, trade balance, FDI inflow, and so on. Financial inclusion helps to increase savings leading to enhance investment decision helping to increase economic growth (Babajide et al., 2015; Ayoola & Omowunmi, 2018; Erlando et al., 2020), and to attract foreign investors (Anthony-Orji et al., 2023) to do their business in the home

country for getting a strong exchange rate (Errunza, 2001; Chen et al., 2023). Economic growth, monetary policy as well as investment decisions, may be the outcomes of exchange rate and financial inclusion (Lenka & Bairwa, 2016).

Moreover, FI can reduce instability and poverty (Adeola & Evans, 2017) by giving access to credit facilities and formal financial support to the people and accordingly they invest and spend their money to produce goods and services (Mbutor & Uba, 2013). It also helps to increase trade by providing financial services with lower interest rates (Ashraf et al., 2021) and by adjusting and controlling inflation, exporting goods and services, and establishing import-substitution industries helping to maintain trade balance (Irwin, 2021). In addition, it minimizes exchange rate volatility attracting foreign investors helping them produce goods and services at lower prices, and get cheaper to buy goods and services from the domestic country, and it finally grows economic resilience through export-led (Chen et al., 2023) goods and services and stabilizes economy of the host country by the helping of FDI inflow generating employment, ensuring to earn foreign currency, introducing new technology, and so forth, and it takes blessing for the home country (Anthony-Orji et al., 2023). In addition, FI improves transparency by providing formal financial services to the investors by making it easier to track their finances helping to lessen illegal activities such as corruption, tax evasion, nepotism, and so on, it motivates foreign investors (Barik, & Lenka, 2023) to invest in the economy by getting and ensuring financial security (Refakar & Cárdenas, 2023).

Whereas, an exchange rate can help the domestic economy by importing goods and services leading to lower prices for investors, buyers, and consumers. Furthermore, with a weaker exchange rate, it is easier to deal with the world market, and by competing with other economies, the economic growth of home economy can foster and reduce trade deficit through exporting goods and services and increase FDI inflow in the domestic country (Goldberg, 2009). Moreover, Anarfo et al. (2019) defined financial inclusion as formal inclusion with two dimensions: supply and demand sides which consist of six factors. Additionally, based on the entire sample, Anarfo et al. (2019) have revealed that the previous year of the real effective ER is a minor positive determinant of FI.

From the prevailing literature, the one-way impact and direction are evident. Whereas, this research expects that the exchange rate's lag will be positively associated with FI and that there will be a positive bidirectional nexus between the two variables simultaneously. The statistical significance of the relationship will depend on the data. Financial inclusion promotes financial market participation and economic stability, which in turn has a positive effect on exchange rates by lowering currency volatility. Hence, it is anticipated that an increased amount of FI will lead to a positive impact on the ER and vice versa.

In the literature, a study addressing the association between exchange rates and financial inclusion is hardly available. Furthermore, especially in terms of developing and emerging countries, covering the direction of Granger causality, and demand-side and supply-side factors of FI, there is little research work in association with FI and ER.

It is significant and rationale to understand the impact of FI on ER fluctuations and the reverse. The negative impact of ER on FI can affect to access formal financial services for individuals from financial institutions. It might lead to domestic investment decision reduction leading to export reduction, decreasing FDI inflow, increasing unemployment and poverty, and finally negatively affecting economic growth. Conversely, if FI has a positive effect on the ER, which makes it easier and accessible for people to take decisions and access services, it may help to increase domestic investment, exports of goods and services, FDI inflow, employment, and economic growth. Financial inclusion and exclusion may depend on the ER. Intending to address this rationality, this study has formulated three research questions for instance, 'What are the patterns of exchange rate and financial inclusion over the years?', 'How financial inclusion and exchange rate are associated with each other?' and 'What policies might be recommended?'

In order to answer the aforementioned three research questions, this study attempts to empirically investigate an alluring problem statement considering the nexus between FI and ER in Bangladesh economy by using WB and IMF datasets for Bangladesh. Through this research, financial inclusion and exchange rate can help to increase FDI inflow and trade balance. This study may contribute to policymakers, businesses, and investors. Therefore, now it is important to know the association of ER and FI in Bangladesh's economy. The following sections illustrate materials and methods, empirical results, discussion as well as conclusion.

Materials and Method

Data source and study area: The authors have collected data from the Financial Access Survey (FAS) of the International Monetary Fund (IMF) and the World Development Indicator (WDI) of the World Bank (WB) covering the years 2004 to 2020. For this research, the authors have selected one country of south-Asia namely Bangladesh as the study area.

Study variables and measurement: ER is measured by local currency units relative to the US\$ (Dollar) collected from the WDI of the WB (Anarfo et al., 2019; Maher, 2022; WB, 2022). FI consists of supply-side and demand-side factors whose data have been gathered from the FAS of the IMF (Anarfo et al., 2019; IMF, 2022). In addition, FDI is considered as net inflows (yearly percentage of GDP) taken from the WDI of the WB (Dutta et al., 2017). TO is calculated by the sum of exports and imports of goods and services considered as a percentage of GDP and its data source is the WDI of the WB (Omar and Inaba, 2020; Dutta et al., 2017).

Analytical strategy: For answering the research questions of the study aforementioned in the introduction part, some empirical tools and techniques are used. These analytical strategies should be used thoroughly for getting a better understanding for the research questions’ answer. To illustrate the overall condition of financial inclusion of Bangladesh’s economy, the authors apply PCA and the results finally reveal FI’s condition of the country with the use of the normalization method whose range varies from zero i.e. it is less financial inclusion to one i.e. it is more financial inclusion. Furthermore, zero indicates the lower-end degree of the country of FI and one represents the upper-end degree of the country’s FI (Le et al., 2019; Yorulmaz, 2018). Six criteria make up the FI index (Anarfo et al., 2019). Equation 1 shows how the index is specified:

$$FI = f(ATMSPHTA; BBPHTA; CBBPHTA; BAPHTA; BCBPHTA; DCBPHTA)..... (1)$$

Here, six components of Financial Inclusion are enlisted as follows (Anarfo et al., 2019):

Supply side factors: ATMSPHTA stands for Automated Teller Machines Per Hundred Thousand Adults; BBPHTA stands for Bank Branches Per Hundred Thousand Adults; CBBPHTA stands for Commercial Bank Branches Per Hundred Thousand Adults;

Demand side factors: BAPHTA stands for Bank Accounts Per Hundred Thousand Adults; BCBPHTA stands for Borrowers from Commercial Banks Per Hundred Thousand Adults; DCBPHTA stands for Depositors with Commercial Banks Per Hundred Thousand Adults.

Mehry et al. (2021) applied the normalization method for formulating the Financial Inclusion Index (FII) which is outlined in equation 2:

$$Z_i = (X - X_{min}) / (X_{max} - X_{min}).....(2)$$

Where, X is the first value of the determined variable; Xmin is the minimum value of X variable; Xmax is the maximum value of X variable; Zi is the normalization indexing value of i country. In addition, this abovementioned method is also known as Min-Max normalized method. To analyze the pattern of exchange rate of Bangladesh economy over the last 17 years, the authors use line chart. This research mainly wants to see the nexus between FI and ER of Bangladesh economy. For the time series analysis, dynamic method is generally used. From these viewpoints, stationary test (unit root test), co-integration test, VECM, GCT, and diagnostic tests are formulated on the basis of literature. In the following sections, all are described sequentially.

Unit Root Test (URT): To examine the stationary, not changeable over the time period, and non-stationary, changeable over the time period, of the yearly time series data, unit root test is widely used. The significance of stationary test is vast because of executing statistical models and analysing time series data. There are several methods to check stationary of time, among them this study considers Augmented Dicky-Fuller test and Phillips-Perron unit test (Gujrati et al., 2009). Generally, to test for a unit root, there are three channels, for instance, Augmented Dicky-Fuller (ADF), Dickey-Fuller Generalized Least Squares (DF-GLS), and Phillips-Perron (PP) unit root test for the time series data.

Johnson Co-integration Rank Test (JCRT): The maximum likelihood method is used to determine if the model is co-integrated by the Johansen co-integration test, a multivariate extension that permits the model to contain more than one co-integration vector. The long-term connection of the dependent and independent variables is investigated by the co-integration test. If the variables are stationary at difference I(1) but not level I(0), the co-integration test is administered (Al-Masbhi & Du, 2021).

Vector Error Correction Model (VECM): To investigate the long run causality among the variables, the authors use VECM model. The study uses this VECM model to test long run causality among ER, FI, TO, and FDI. Granger (1988) narrated, most probably; causality may happen from error correction term (ECT) and lagged difference. However, if the authors want to analyze long term (run) causal relationship among time series variables of ER, FI, TO, and FDI, the following equation need to be estimated.

$$\Delta ER_t = \alpha_1 + \sum_{j=1}^{k-1} \alpha_{11} \Delta ER_{t-j} + \sum_{j=1}^{k-1} \alpha_{12} \Delta FI_{t-j} + \sum_{j=1}^{k-1} \alpha_{13} \Delta TO_{t-j} + \sum_{j=1}^{k-1} \alpha_{14} \Delta FDI_{t-j} + \lambda_1 ECT_{t-1} + e_t \dots \dots \dots (3)$$

Here, all short forms of the above variables = defined in study variables and measurement section; K-1 = Optimal lag length is reduced by 1; λ_1 = Speed of Adjusted Parameter with negative value; $\lambda_1 ECT_{t-1}$ = Error Correction Term contains long-run information derived from the long-run co-integrating relationship; e_t = Disturbances or residuals in the Equation.

Granger Causality Test (GCT): The existence of unidirectional/bidirectional causality between FI and ER is to be tested using the Granger causality. Following the completion of the co-integration test, the Granger causality test is performed to see if the availability of co-integration is due to its error correction model. As a result, if two variables are present and the trend remains normal, there is a causality minimum in one direction: bidirectional or unidirectional (Granger, 1988). This model contains the estimate of the provided regression equation (4) as well as the estimation of the supplied regression equation (5).

$$y_t = \beta_0 + \sum_{i=0}^n \alpha_i x_{t-i} + \sum_{j=0}^n \beta_j y_{t-i} + u_{1t} \dots \dots \dots (4)$$

$$x_t = \delta_0 + \sum_{i=0}^m \lambda_i x_{t-i} + \sum_{j=0}^m \delta_j y_{t-i} + u_{2t} \dots \dots \dots (5)$$

Where, equation (4), in the regression of y_t and variables x_t (also including its lag values i.e., x_{t-i}) and other lagged values of y_t promotes the approximations of the dependent variable (y_t) significantly, then only it can be defined that x_t (Granger) causes y_t . In the other equation of (5) the same statement applies in the case y_t (Granger) causes x_t . In equation (4) the given hypothesis is tested on the dependence of F-statistics at a selected level of significance.

Where,

Null Hypothesis = = $H_0: x_{(t)}$ does not Granger cause $Y_{(t)}$;
Alternative Hypothesis = = $H_1: x_{(t)}$ Granger causes $Y_{(t)}$.

Also in equation (5), the given hypothesis to examine the causality term:

Where,

Null Hypothesis = $H_0: Y_{(t)}$ does not Granger cause $x_{(t)}$;
Alternative hypothesis = $H_1: Y_{(t)}$ Granger cause $x_{(t)}$.

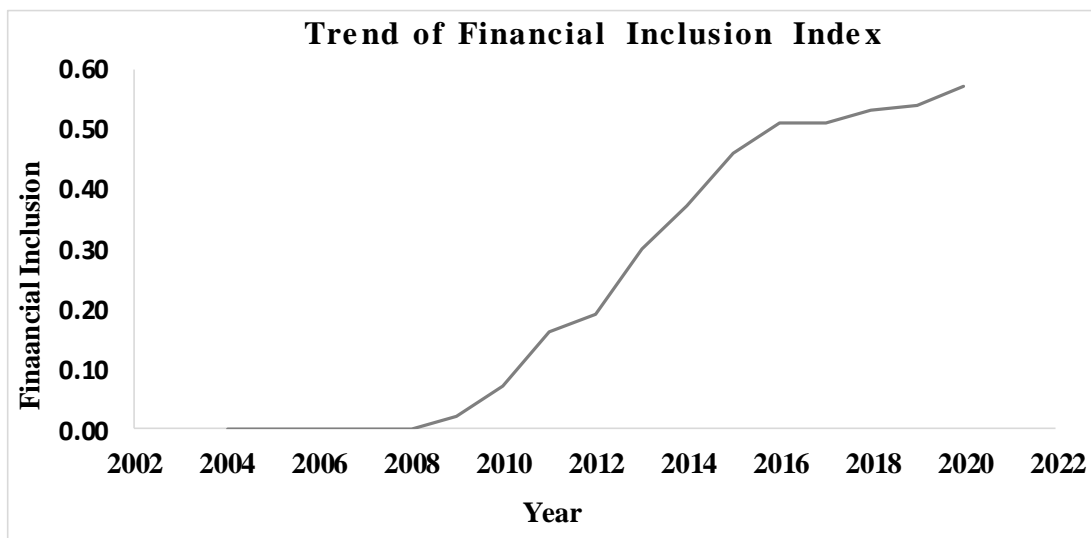
The variables such as ER, FI, TO, and FDI are considered simultaneously as $x_{(t)}$ and $Y_{(t)}$, and also, null hypothesis in equation (4) and (5) are applied against their similar alternative hypothesis (for details, Table 6).

Diagnostic checking/inspection: To be able to conduct the optimum regression approach, multicollinearity, heteroscedasticity, and autocorrelation should be validated before undertaking regression analysis. The Variance Inflation Factor (VIF) is used to check for multicollinearity, Brusch-Godfrey LM test are used to check for autocorrelation, and the White test must be used to check for heteroscedasticity. Before implementing the model, the ADF test, URT, stationary test, and co-integration test are examined. To assess the model's suitability, diagnostic tests including the heteroscedasticity, Jarque Bera, and Breusch-Godfrey tests are used.

Results

Overall condition of FI

From 2004 to 2020, the annual FI indexing value is displayed in Figure 1 as a line graph. The range of indexing value of financial inclusion is 0 to 1. Here, 0 means less financial inclusion or lower end scale of financial inclusion, and 1 means perfectly or fully top end degree of financial inclusion. From the Figure 1, it is clear that from 2004 to 2008, the indexing value of financial inclusion is perfectly zero which means, in those years, the economy stayed at lower financial inclusion. After that, from 2009 to 2016, the indexing value changed sharply. From 2009, the economy was going on upper end of financial inclusion up to 2020. In addition, from 2016 to 2017, the indexing value was unchanged. Then, after 2017, the inclusion indexing value increased progressively up to 2020. In conclusion, evident from the graphical line, the highest indexing value of financial inclusion was 0.57 in 2020 which indicate moderate level financial inclusion. On the contrary, the lowest indexing score of FI was 0.00 from 2004 to 2008. Finally, it can be commented on the line graph that the financial inclusion in the determined economy is improving from year to year over the last twelve years and also it shows a rising trend line which depicts increasing financial inclusion.



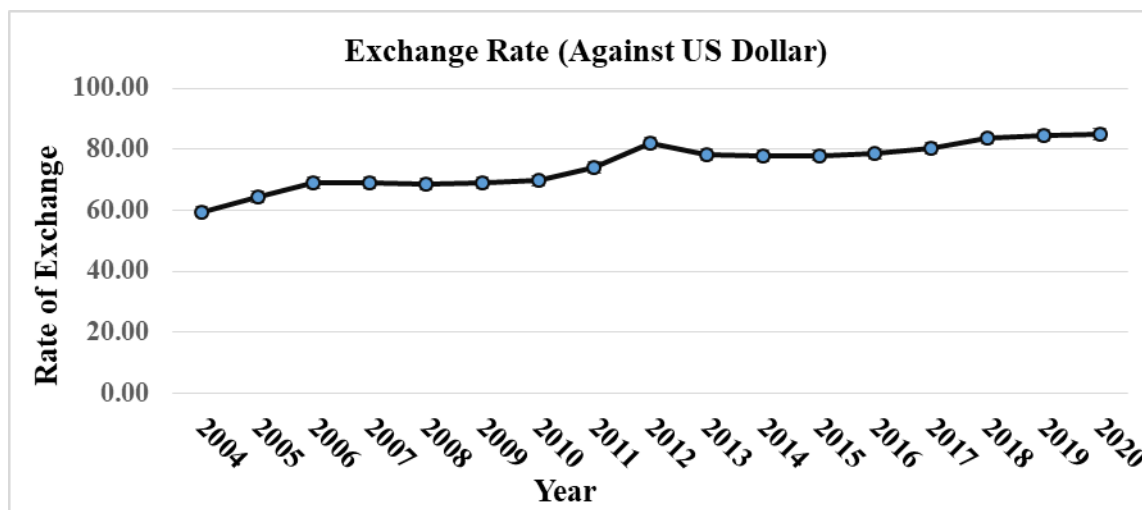
Source: Authors' Estimation Based on IMF (2022) Data

Figure 1. Performance of Financial Inclusion in Bangladesh

Overview of exchange rate

To get the pattern of exchange rate, a trend line is shown in Figure 2. The Figure demonstrates the pattern of the exchange rate of the Bangladesh economy from 2004 to 2020. Figure 2 gives information on the exchange rate. In 2004, the exchange rate was approximately 60.00 taka against a dollar. In 2005 and 2006, it increased slightly and reached about 70 taka against a dollar. The exchange rate remained almost unchanged up to 2010. In 2011, it arose a little and jumped to above 81 taka against a dollar in 2012. In 2013, it went down slightly and came below 80 taka. From 2013 to 2016, the exchange rate was almost the same. In 2017, it touched 80 taka against a dollar. From 2017

to 2020, it increased gradually and went near to 85 taka against a dollar. Nevertheless, as is illustrated by the graph, the lowest exchange rate was almost 60 in 2004 and the highest exchange rate was 85 taka in 2020 against per dollar. In conclusion, the exchange rate of the economy shows an upward trend from the beginning to ending year and in the middle year, it oscillated and remained static for some years. But, overall it demonstrates a pattern of increasing exchange rate over the period of time.

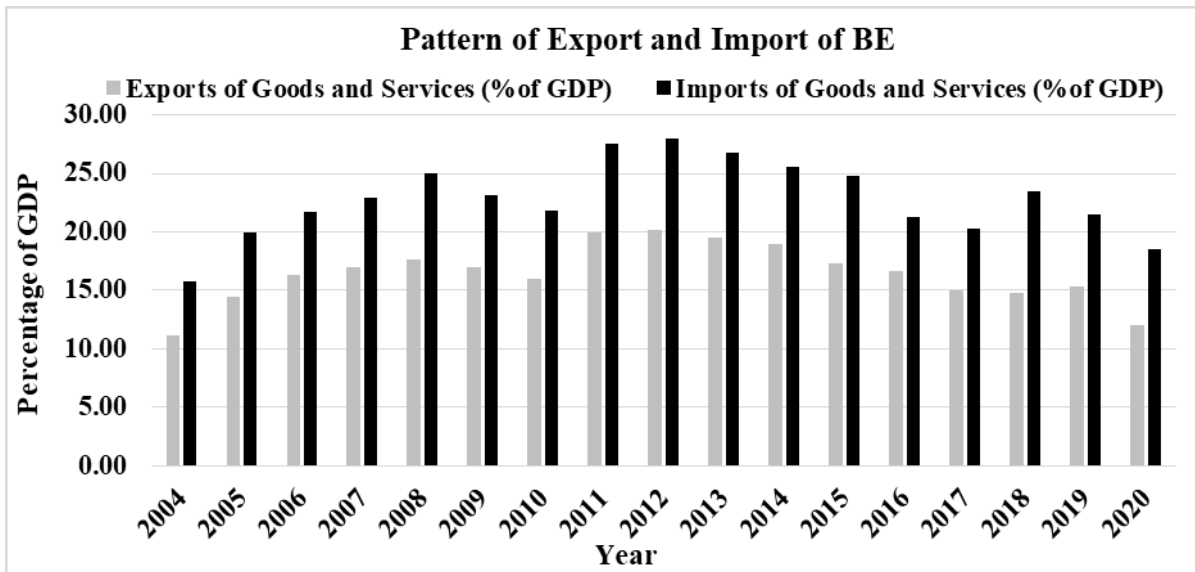


Source: Authors' Calculation Based on WB (2022) Data

Figure 2. Pattern of Exchange Rate of Bangladesh Economy over the Years

Overview of export and import (TO)

The pattern of TO of the Bangladesh economy is exhibited in Figure 3 considering the years from 2004 to 2020. Figure 3 depicts the trend of export and import (Trade Openness). As is seen on the graph in every year, exports of goods and services in the context of the percentage of GDP are lower than imports of goods and services in the context of the percentage of GDP. Therefore, the concerned economy is an import-oriented country and shows a trade imbalance. In terms of trade openness, it is the combination of export and import. From 2004 to 2020, the economy of Bangladesh always imports more than exported. Because of more import of luxuries, raw materials and capital-intensive goods by the government of Bangladesh and limited export of goods, this economy always stays in deficit trade (trade imbalance). Therefore, the policy makers have to think in this regard to diversify exported goods and services as well as to motivate Bangladeshi investors to produce goods which are imported and also institutions must focus on making skilled technicians and labors. That means; concerned policy makers must prioritize national and international investors to produce import substitution goods and services instead of imports these, and have to give them securities and facilities.

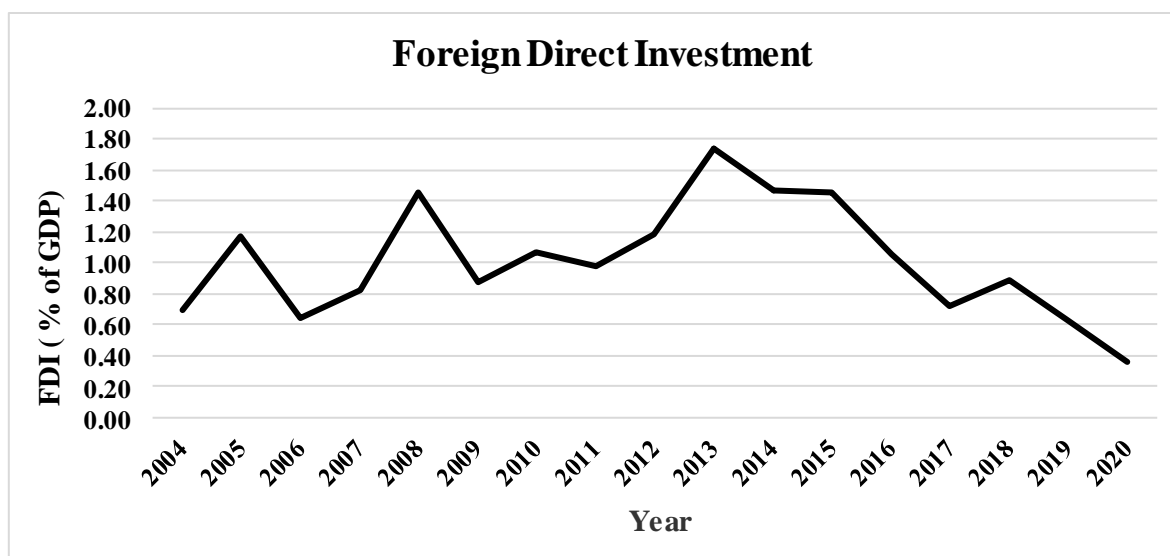


Source: Authors' Estimation Based on WB (2022) Data

Figure 3. Pattern of Export and Import of Bangladesh Economy (BE)

Overview of foreign direct investment in Bangladesh

Figure 4 illustrates the performance of FDI in the economy of Bangladesh from 2004 to 2020. Figure 4 explains FDI based on the percentage of GDP in terms of the Bangladesh economy. In 2004, the FDI was 0.69 percent. It increased radically in 2005 and reached 1.17 percent. Then it plummeted to 0.64 percent in 2006. It increased slightly in 2007 and came to 0.82 percent. In 2008, it jumped dramatically and arrived at 1.45 percent. Again, it fell radically and came to 0.88 percent in 2009. From 2009 to 2012, it fluctuated and it was 1.9 percent in 2012. There was a dramatic rise in FDI in 2013. The FDI reached its peak and was 1.74 percent in 2013. In 2014, FDI went down by 0.27 percent and remained almost constant in 2015. From 2016 to 2020, it decreased rapidly from 1.05 percent to 0.35 percent with a slight rise in 2018. However, it is clearly evident from the chart that the highest FDI was 1.74 percent in 2013 and the lowest FDI was 0.35 percent in 2020. The difference between the highest and lowest FDI was 1.39 percent of GDP. To conclude, from the starting year to the terminating year, the graph has shown a trend of decreasing FDI in this economy.



Source: Authors' Calculation Based on WB (2022) Data

Figure 4. Performance of Foreign Direct Investment in Bangladesh

Summary statistics of study variables

Table 1 contains the descriptive statistics of Official ER (USD), Exports, Imports, TO, FDI, FI, and FII.

Table 1. Summary Statistics of Macroeconomic Indicators

Variable with Unit of Measurement	Mean	Std. Dev.	Min	Max
Official Exchange Rate (Against Per USD)	74.73	7.53	59.51	84.87
Exports of Goods and Services (% of GDP)	16.43	2.54	11.15	20.16
Imports of Goods and Services (% of GDP)	22.81	3.26	15.71	27.95
Trade Openness (% of GDP)	39.24	5.73	26.86	48.11
Foreign Direct Investment (% of GDP)	1.02	0.37	0.35	1.74
Financial Inclusion	-0.01	2.17	-3.00	3.38
Financial Inclusion Index	0.25	0.24	0.00	0.57

Source: Authors' Calculation Based on WB and IMF (2022) Data

Note: Std. Dev., Min, and Max stand for Standard Deviation, Minimum, and Maximum respectively.

Table 1 represents the overall condition of the selected variables from 2004 to 2020. The table shows that the mean of the exchange rate of 2004-2020 is 74.73 taka and the standard deviation, minimum, and maximum of ER are 7.53 taka, 59.51 taka and 84.87 taka respectively against one dollar calculated on the basis of total 17 years. Besides, the mean, standard deviation, minimum, and maximum of exports and imports are 16.43 percent, 2.54 percent, 11.15 percent, 20.16 percent, and 22.81 percent, 3.26 percent, 15.71 percent, and 27.95 percent of GDP sequentially. Here, it is important to clarify the TO. That means that the summation of the export and import of goods and services is trade openness. Its mean, standard deviation, minimum, and maximum value are 39.24 percent, 5.73 percent, 26.86 percent, and 48.11 percent of GDP corresponding. In addition, the mean, standard deviation, minimum, and maximum of foreign direct investment (% of GDP) are 1.02 percent, 0.37 percent, 0.35 percent, and 1.74 percent individually. On the other hand, the mean, standard deviation, minimum, and maximum value of financial inclusion and financial inclusion indexing value are -0.01, 2.17, -3.00, and 3.38 for per hundred thousand adults and 0.25, 0.24, 0.00, and 0.57. The country exists in financial inclusion on the basis of the average value estimated according to out of seventy years from 2004 to 2020.

Description of Unit Root Tests

The outcomes of Table 2’s URT of ER, TO, FDI, and FI with and without intercept and time trend on the level series show that researchers accept the null hypothesis at a level of 5% because the absolute value of test statistics for time series variables is less than the 5% critical value, for example, ER, TO, FDI, and FI are all less than 5% and they are non-stationary. Conversely, the outcomes of the concerned variables on the first difference series indicate that the researchers cannot reject the alternative hypothesis at the 5% level because the time series variables ER, TO, FDI, and FI are stationary at the first differential form and their absolute values of test statistics exceed the 5% critical value. As a result, the researchers come to the conclusion that ER, TO, FDI, and FI are integrated with order one, i.e. I(1).

Table 2. Results of ADF Test and Others for Unit Root Tests

Variable Name	Without Dirft and Trend	With Drift and Trend	With Drift and Without Trend	DC, LS
ER	1.34	-3.48	-1.13	I(0)
Δ ER	-3.02***	-3.61**	-3.82***	I(1)
TO	-0.52	-1.36	-1.32	I(0)
Δ TO	-2.85***	-3.88**	-2.66**	I(1)
FDI	-0.84	-0.899	-1.03	I(0)
Δ FDI	-3.23***	-3.98***	-3.12 ***	I(1)
FI	-0.57	-2.01	0.17	I(0)
Δ FI	-0.31	-3.06	-3.32***	I(1)
Δ FI	-2.15 ** based on DF-GLS Test			I(1)
Δ FI	-20.09*** bssed on PP Test			I(1)

Source: Authors’ Estimation Based on WB and IMF (2022) Data

Notes: All variables are in general value. *, **, and *** denote significance at the 10 percent level, at the 5 percent level, and at the 1 percent level. I(0) and I(1) denote the integrated order for the time series data. DC stands for Decision Criteria and L.C stands for Lag Selection.

The results of the ADF test are represented in Table 2, and none of the variables within them attain stationary at their level form. This indicates that the absolute values are below the critical value of 5% in their level form. According to this stance, the authors accept the null hypothesis while rejecting the alternative. These time series variables are non-stationary at the level form as a result. Therefore, they are not integrated at order zero, for instance, I(0) because p-values are not significant for each variable in the level form (MacKinnon, 1996). However, the mentioned test is applied further to their first differences and their outcomes are also summarized in Table 2. The results show that these time series variables are stationary at the five percent significant level. These results are applicable for all concerned time series variables except FI on the perspective of ADF test. Here, with drift and trend of FI are not significant in ADF test but it shows significance in PP unit root test in the first difference indicating stationary. In addition, DF-GLS is applied to check stationary and also robustness of the FI represented in the above table. Therefore, it can be said that time variables are not stationary in level series that the authors justified in the above table for the four variables being applicable. But, in first difference series, the four variables are stationary and the authors accept the alternative hypothesis. Thus, the concerned four variables are first-ordered integrated shown as like I(1) in the mentioned table and subject to JCT, unrestricted co-integration rank test.

Outcome of Co-integration Test

The cointegration test must be carried out since it is determined that the four variables under consideration are integrated in the first order, which shows that there is a long-run or equilibrium link between them. The authors use JCT to determine the order of cointegration. The results of the Johansen cointegration test's equations, trace statistics and maximum statistics, or eigenvalue, are reported in Tables 3 and 4.

When a 90 percent confidence interval is used, the interval range is widened, which improves the likelihood that the null hypothesis is accepted. It is advised to use 95 or 99 percent confidence level. For this, the 95 percent confidence interval is used by the authors to test the hypothesis which is appropriate. The null hypothesis ($r=0$) of no co-integrating vectors in the relevant four time variables is likely to be rejected since the value of the trace statistics (λ_{trace}) (0)² is 77.59, which exceeds the trace statistics' 5 percent critical value. In the second instance of trace statistics (λ_{trace}), (1)³ indicating the third eigenvalue, the authors compare the alternative hypothesis of two co-integrating vectors ($r = 2$) with the null hypothesis ($r \leq 1$).

Table 3. Trace Statistics

Null Hypothesis	Alternative Hypothesis	Trace Statistics (λ_{trace})	5%CV
$r = 0$	$r = 1$	77.59***	47.21
$r \leq 1$	$r = 2$	30.94***	29.68
$r \leq 2$	$r = 3$	9.64	15.41
$r \leq 3$	$r = 4$	0.02	3.76
$r \leq 4$	$r = 5$	-----	-----

Source: Authors' Estimation Based on WB and IMF (2022) Data

Notes: r represents the co-integration vector. *** shows the rejection of the null hypothesis at a one percent level. CV stands for Critical Value.

The null hypothesis cannot be accepted since the (λ_{trace}) statistics 30.94 exceeds the crucial value at the 95 percent confidence range. The authors compare the alternative hypothesis ($r = 3$) of two co-integrating vectors to the null hypothesis ($r \leq 2$) in the third case of trace statistics (λ_{trace}), (2) representing two co-integrating vectors. The alternative hypothesis can be ruled out because the (λ_{trace}) statistics 9.64 is less than the critical value at a 95 percent confidence range. In the fourth instance of trace statistics (λ_{trace}), (3) representing three co-integrating vectors, the authors compare the alternative hypothesis of two co-integrating vectors ($r = 4$) to the null hypothesis ($r \leq 3$). It is possible to accept the null hypothesis because the (λ_{trace}) statistics' 0.02 value is lower than the crucial value at a 95% confidence interval. Trace statistics at the 95 percent confidence level clearly confirm no more than two co-integrating vectors from the perspective of the above results based on Table 3.

Table 4. Maximum Eigen Value

Null Hypothesis	Alternative Hypothesis	Max Statistics (λ_{max})	5% CV
$r = 0$	$r = 1$	46.65***	27.07
$r \leq 1$	$r = 2$	21.30***	20.97
$r \leq 2$	$r = 3$	9.62	14.07
$r \leq 3$	$r = 4$	0.02	3.76
$r \leq 4$	$r = 5$	-----	-----

Source: Authors' Estimation Based on WB and IMF (2022) Data

Notes: r represents the co-integration vector. *** shows the acceptance of the alternative hypothesis at a one percent level. Max denotes maximum. CV stands for Critical Value.

The greatest eigenvalue result in the Table 4 shows that the null hypothesis that there is no co-integrating vector ($r = 0$) is clearly rejected in favor of the particular alternative hypothesis. From the viewpoint of outcomes, in the same way it is clear that at the 95 percent confidence level, max statistics verifies no more than two co-integrating vectors. Therefore, it becomes clear that the time series variables, which are ER, TO, FDI, and FI, contain two co-integration vectors from the perspectives of trace statistics and maximum eigenvalue or statistics.

Outcome of VECM

Since the JCT reveals that there are two co-integrated equations of the time data of ER, TO, FDI, and FI, which means that they show long-term associations among them, the unconstrained co-integration rank test has also disclosed this. The VECM approach is vital for establishing and supporting associations with them, and it has also demonstrated a long-term relationship. As a result, the predicted VECM performs well, and the results of the model are shown in Table 5.

Table 5. Outcome of VECM

Variable Name	Co-efficient	Standard Error	Z	P> Z
ER	1.00	-----	-----	-----
TO	0.17	0.05	2.96	0.00
FDI	-2.15	0.84	-2.55	0.01
FI	-3.33	0.08	-40.18	0.00
_cons	-78.90	-----	-----	-----
ECT	-0.82	0.26	-3.12	0.00

Source: Authors' Estimation Based on WB and IMF (2022) Data

Understanding the significance of the variable's coefficient sign is crucial. In the VECM analysis, a variable's negative coefficient denotes a positive result, while a variable's positive coefficient denotes a negative result. ER is

the model's dependent/ outcome variable, while TO, FDI, and FI are independent/explanatory variables incorporated in Table 5. The first variable's (TO) coefficient is 0.17, indicating that TO has a strong long-run negative impact on ER at one percent significant level. Additionally, the ER is strongly and positively influenced over the long term by the other two variables FDI and FI, whose coefficients are 2.15 and -3.33 respectively. These two variables have significant levels of 5% and 1%, respectively. Therefore, the authors come to the conclusion that FDI and FI show a long-term influence on ER of Bangladesh economy but the consequences of TO have a long-term negative impact. At the 5% and 1% levels, each result is statistically significant. Long-term adjustment speed is adequately represented by the ECT coefficient with 1% level.

Outcome of GCT

The results of the GCT test are presented in Table 6.

Table 6. Outcomes of GCT

Null Hypothesis (NH)	Alternative Hypothesis (AH)	Decision on NH	F Statistics	Indication of Direction (Causality)
ER does not Granger cause TO.	ER Granger causes TO.	Rejected	3.80*	ER↔TO
TO does not Granger cause ER.	TO Granger causes ER.	Rejected	6.48**	
ER does not Granger cause FDI.	ER Granger causes FDI.	Not Rejected	0.39	-----
FDI does not Granger cause ER.	FDI Granger causes ER.	Not Rejected	0.08	-----
ER does not Granger cause FI.	ER Granger causes FI.	Rejected	13.99***	ER↔FI
FI does not Granger cause ER.	FI Granger causes ER.	Rejected	9.14**	
TO does not Granger cause FDI.	TO Granger causes FDI.	Not Rejected	1.08	-----
FDI does not Granger cause TO.	FDI Granger causes TO.	Rejected	8.99**	FDI→TO
TO does not Granger cause FI.	TO Granger causes FI.	Rejected	6.55**	TO↔FI
FI does not Granger cause TO.	FI Granger causes TO.	Rejected	6.80**	
FDI does not Granger cause FI.	FDI Granger causes FI.	Not Rejected	1.52	-----
FI does not Granger cause FDI.	FI Granger causes FDI.	Not Rejected	0.31	-----

Source: Authors' Estimation Based on WB and IMF (2022) Data

Note: *, **, and *** denote significance at the 10 percent level, at the 5 percent level, and at the 1 percent level.

Table 6 contains the outcomes of Granger Causality using the previously computed stable value of the VECM with two lags. The outcomes ensure the existence of a causal association among the selected variables in both unidirectional and bidirectional forms. Based on the Table 6, the first hypothesis is that ER does not Granger cause TO and this has not been accepted at 10 percent level of significance.

At a 10% level of significance between ER and TO, the alternative hypothesis can be adopted. Besides, the null hypothesis, which is that TO does not Granger induce ER, can be rejected at a 5 percent significant level. The computed F-value is statistically significant, and the results of ER and TO have bidirectional causality, for example, from ER to TO and TO to ER. This indicates that the results demonstrate that Granger induces both ER and TO (ER↔TO).

The second one is that the causal relationship between ER and FDI and the results show that they have no causal association which means ER does not Granger cause FDI and FDI does not Granger cause ER. Hence, they are statistically insignificant and they do not have any unidirectional or bidirectional association.

The next finding is that ER Granger causes FI, which is statistically significant at 1 percent level, and FI Granger causes ER, which shows significant at a 5 percent level. That means they have bidirectional association (ER↔FI).

The next alternative hypothesis is that TO Granger causes FDI that is insignificant but the reverse shows that an FDI Granger cause TO that is significant at a 5 percent level. That means, only a unidirectional form (FDI→TO) exists in them.

The prior hypothesis of the last one, which is not accepted at the 5% level of significance, is that TO does not Granger induce FI. The alternative hypothesis can be accepted if there is a 5% level of significance between TO and FI. Additionally, at a significance level of 5%, the null hypothesis that FI does not Granger produce TO that can be rejected. The findings demonstrate that there is a bidirectional causal relationship between FI and TO

because obtained F-value is statistically significant. This means that the findings show Granger to cause in both FI and TO (TO↔FI).

The final one is that they have no causal association which means FDI does not Granger cause FI and FI does not Granger cause FDI. Hence, they are statistically insignificant and they have no unidirectional and bidirectional association.

Therefore, it is clear that ER and TO, ER and FI, and TO and FI have bidirectional associations which reveal that they cause each other, for instance, ER↔TO, ER↔FI and TO↔FI. On the other hand, FDI and TO have unidirectional relationship which indicates that TO is caused by FDI (FDI →TO). Besides, ER and FDI, and FI and FDI have no association revealed.

Outcome of diagnostic tests

These obtained results, which incorporate the JCT and VECM mechanisms, recognize two co-interacting vectors and a long-term relationship in the time variables. The VECM result is thus determined to be stable or not shown by applying these tests.

Table 7-A. Diagnostic Tests of VECM

	ΔER	ΔTO	ΔFDI	ΔFI
Adjusted R ²	0.752	0.160	0.612	0.881
Serial Residual Correlation Test for the Model				
Null Hypothesis, H ₀ : No Serial Correlation				
Alternative Hypothesis, H ₁ : Serial Correlation				
LM (1), x ² =24.407, p-value =0.081				
LM (2), x ² =14.754, p-value =0.542				
Normality Test for the Model				
Null Hypothesis, H ₀ : Residuals are multivariate normal.				
Alternative Hypothesis, H ₁ : Residuals are not multivariate normal.				
Skewness	x ² =4.653		p-value =0.324	
Kurtosis	x ² =0.513		p-value =0.972	
Jarque-Bera	x ² = 5.166		p-value =0.739	

Source: Authors' Calculation Based on WB and IMF (2022) Data

According to Stata, the authors reject the null hypothesis if the P-value is less than the significant level of 1 and 5 percent. Table 7-A demonstrates that the p values exceed the significant threshold of five percent. Because the model does not exhibit problems with heteroscedasticity, the authors accept the null hypothesis. The p-value for the Jarque-Bera test, which is 0.739, is greater than the significant five percent, indicating that all residuals are normally distributed. Serial correlation, which does not exist in this model, is also explained by the Breusch Godfrey test and Lagrange Multiplier (LM) test.

From Table 7 (A-F) and Figure 5, the results show that the datasets are free from all diagnostic problems namely, multicollinearity, heteroscedasticity, and autocorrelation. Therefore, the study results are accurate. In short, the diagnostic inspections applied by the authors imply that all results are legitimate and accurate.

Table 7-B. Result of Brusch-Godfrey LM test for Autocorrelation

	H ₀ : No Serial Correlation			
	H ₁ : Serial Correlation			
	1	0.202	1	0.6529
	2	0.626	2	0.7313

Source: Authors' Calculation Based on IMF and WB Data (2022)

Table 7-C.Result of White’s Test for Homoscedasticity

H0: Homoscedasticity		
H1: Unrestricted Heteroscedasticity		
	13.83	0.1285

Source: Authors’ Calculation Based on IMF and WB Data (2022)

Table 7-D. Result of Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity

H0: Constant variance		
H1: Not Constant/ Unequal variance		
	0.00	0.9802

Source: Authors’ Calculation Based on IMF and WB Data (2022)

Table 7 –E. Result of Cameron & Trivedi's decomposition of IM-Test

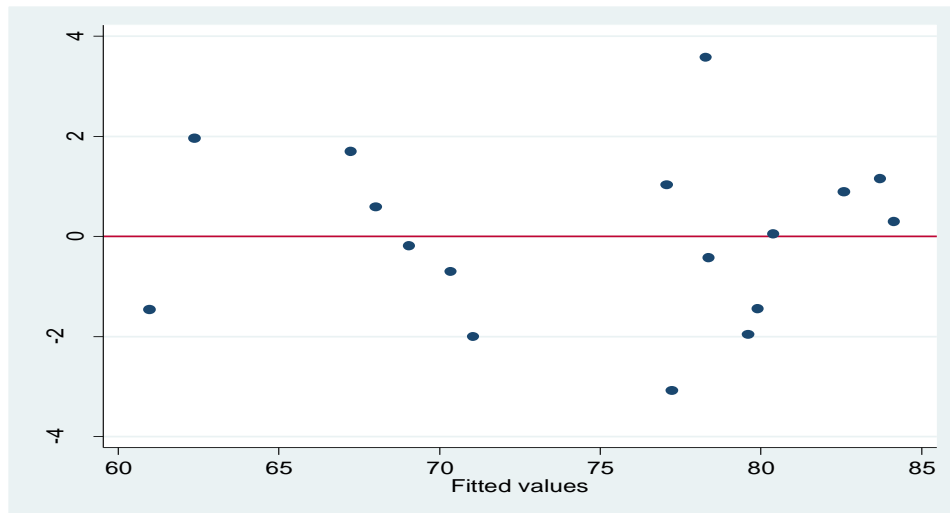
Heteroskedasticity	13.83	9.00	0.12
Skewness	0.61	3.00	0.89
Kurtosis	0.29	1.00	0.59
Total	14.73	13.00	0.32

Source: Authors’ Calculation Based on IMF and WB Data (2022)

Table 7-F.Outcomes of VIF: Multicollinearity

FDI	1.92	0.52
TO	1.89	0.52
FII	1.04	0.96
Mean VIF	1.62	

Source: Authors’ Calculation Based on IMF and WB Data (2022)



Source: Exhibition Based on IMF and WB Data (2022)

Figure 5.Homoscedasticity

Discussion

This part deals with a discussion on the present study related to the other empirical literature. FI, defined by the two indicators with seven factors, for instance, access indicators: and usage indicators which indicate the increasing trend of the FI index over the years of 2000 to 2017, the result is calculated by applying PCA, which is consistent with the implementation of several programs to increase the involvement of all sectors of Egyptian society throughout the institutional financial system (Elsherif, 2019). Moreover, there are several studies concluded in the same direction (Nguyen et al., 2020) that FI increases over the years throughout the world (Mehry et al., 2021; Tram et al., 2021).

From the perspective of the authors' study, the trend of inclusion index value calculated by using PCA and the normalization method also demonstrates a rising trend over the years of 2004 to 2020. Elsherif (2019) used ADF for the URT. The result shows that almost all the series are unstable at their levels. The ADF test indicates that one variable is stable at its level form while the rest remain unstable. Hence, all the series are expressed at first differencing to attain a trend stable level. The result, therefore, suggests that the series are integrated to order 1, shown as $I(1)$. The application of the presence of a unit root indicating non-stationary meaning that the mean, variance, and covariance are different is the likelihood that a series will be consistently affected by outside shocks and disturbances on the variables, which, if unchecked, could produce a spurious/nonsensical/over-fitted result. On the other hand, the authors' study is not exceptional to the previous results of the URT. Therefore, all series are integrated with the first order, represented as $I(1)$. That means that all variables are stationary and the results of the study are far from spurious regression.

In the course of JCT, Elsherif (2019) used it not to uncheck for the existence of cointegrating relationships among the concerned variables. The result shows that Johansen test ensures that there is more than one cointegration vector (Trace test indicates cointegrating equation (s) at the 0.05 level and Max-eigenvalue test indicates cointegrating equation (s) at the 0.05 level) among the determined variables and it suggests that the existence of one (or more) long-run associations within the set variables as well as the authors' result shows that there are two cointegrating vectors considering the significant level at the 5% among four variables and they have long run association among the set of variables.

In the context of VECM, the calculation of the VECM applies; both short-term variations in the variables and departures from long-term equilibrium (Elsherif, 2019) must be adjusted in this process. It explains the effects of FI, ER, interest rate, and money supply on inflation in order to comprehend the VECM results, which are used for effective and sound monetary policy (Elsherif, 2019). From the viewpoint of the authors' study, the outcomes of VECM are slightly different because the set of variables is not the same. But, the impact of FI on macro-variable has exposed the existence of long-run relationships.

The efficiency of monetary policy and FI are causally linked in both directions, according to the GCT. The p-value is less than 5% in both directions. In a nutshell, the empirical findings show that, over time, financial inclusion and monetary policy efficacy are related by a series of long-run correlations. Exchange rate shocks, on the other hand, have a positive and statistically significant long-term influence on the degree of monetary policy effectiveness.

In addition, in the dimension of the authors' study, ER and TO have a positive long-run bidirectional association. Moreover, ER and FI, and TO and FI show the same association of ER and TO. There is positive and negative relationship between trade openness (TO) and exchange rate (ER) in terms of short run and long run with statistical significance that can be unidirectional, bidirectional, and no relationship. A study of 101 countries found that TO has a statistically significant negative influence on the ER (Gantman & Dabos, 2018) and this negative impact is consistent with authors' study and the bidirectional association between them has been found in authors' study. Besides, some literatures have found that long-term effects of TO on ER are favorable but it has a negative short-run impact, and the impact of TO is weaker under a floating ER regime (Zakaria & Ghauri, 2011; Yusoff & Febrina, 2014).

Furthermore, ER and FDI have a complex relationship between them. A positive exchange rate refers to a weaker exchange rate for the domestic country helping to lead the increase of the FDI inflow because of getting goods and services along with assets cheaper and affordable from home country in comparisons with other countries for the international investors. In the literature, some studies have found that they have positive association. Goldberg (2009) has revealed that a weaker exchange rate leads positively FDI, as it makes home

country's assets cheaper and reasonable for outside investors and it can attract to increased FDI and other factors influence more FDI for instance, the political condition, skilled labor, fiscal policy as well as economic stability (Lily et al., 2014). This positive impact of FDI on ER is similar direction, consistent, and aligned with authors' study. On the other hand, Zhang & Zhang (2018) has illustrated that a stronger exchange rate helps to decrease carbon emissions because of decreasing FDI inflow and there exists negative relationship between ER and FDI.

Additionally, there exists a unidirectional (Liargovas & Skandalis, 2012) and positive relationship between FDI and TO (Biglaiser & DeRouen 2006) in the long run (Chakrabarti, 2001). There is a direct causality and positive association between FDI, and TO (Seyoum et al., 2015). Thus, TO helps positively to the increasing FDI in developing countries (Liargovas & Skandalis, 2012). In addition, Goldberg and Klein (1999) suggested that foreign direct investment affects trade openness. Whereas, Seim (2009) uncovered that a negative association between FDI inflows and TO exists. Conversely, the association between TO and FDI inflows differs and explains complex explanations depending on the country's case. Theoretically and empirically, the impact of TO on the FDI (Markusen & Maskus 2002) differs based on involving in FDI inflow activities (Dunning 1994). From the discussion, the authors' study reveals the same almost that they have positive association. In accordance with Hajilee & Niroomand (2019), FI plays an important role in the short run. The effect of it on the trade openness exists in many developing countries. On the other hand, the authors find that TO and FI have long run association. FDI significantly and positively affect exchange rate and a long-run relationship (Zakaria & Ghauri, 2011) exists between them. The same conclusion is evident in the author's study. Gantman & Dabos (2018) found that an upward in TO shows a depreciation of the real ER. It was conducted with some developing economies (Yusoff & Febrina, 2014). The authors' result reveals the same. Contrarily, a study shows a significant positive effect of TO on ER (Zakaria & Ghauri, 2011). Therefore, the association between ER and TO shows empirically mixed. Nevertheless, other empirical studies did not find any relationship between ER and TO (Elbadawi & Soto, 1994).

In Sub-Saharan Africa, the real effective ER has a substantial impact (Anarfo et al., 2019) on interest and inflation rates. The negative ER co-efficient in the panel VAR model has demonstrated this. It means that when the REER rises, the interest rate in Sub-Saharan Africa falls. There has been evidence of a negative association between monetary policy (Lenka & Bairwa, 2016) and the real effective ER (Anarfo et al., 2019). In addition, Anarfo et al. (2019) have shown that the FI index and the ER variables that are integrated of first order, $I(1)$ as well as the author's study shows that the ER and the FI, which are integrated of order one symbolically demonstrated as $I(1)$.

In addition, Anarfo et al. (2019) have disclosed that the lag of the real ER rate is a minor positive determinant of FI based on the large sample. And, the authors' study reveals the lag of the ER is positively associated with financial inclusion and they have a positive bi-directional association and this outcome is statistically significant. On the other hand, factors of macroeconomics are important drivers of the FI index in the sub-Saharan African sample. The real effective ER lag and the FI index are both important factors and also the lag of FI index FINDEX are drivers of the real effective (Anarfo et al., 2019) exchange rate in sub-Saharan Africa that shows the negative short-run bi-directional relationship and viewed from a 1% level, it is statistically significant. But the authors' study exposes the opposite of it that the lag ER and the lag FI have a positive long-run bi-directional association with each other and its relationship is statically significant at 1% and 5% level.

Conclusion

This paper's primary goal is to empirically investigate an alluring problem statement considering the nexus between FI and ER. The authors have garnered data from secondary source namely the FAS of the IMF and the WDI of the WB covering the years 2004 to 2020. Using time series yearly data with the aim of getting balanced data, the authors have applied some tests for example Augmented Dicky Fuller test, DF-GLS test as well as Phillips-Perron test commonly and formally known as unit root test for assessing stationary, Johanson Co-integration inspection for understanding long run nexus among variables, VECM and GCT to finally address the core objective of the study. For getting FI value, the researchers have applied Principal Component Analysis (PCA). The diagnostic results of PCA show that the overall KMO and Alpha values are 0.74 and 0.93 respectively meaning that the FI score is applicable for the data analysis.

The study has revealed that each and every variable is stationary and also all series are integrated at the first-order difference, $I(1)$, and long-term relationships exist among the variables with two co-integrated vectors and the

maximum lag value is two in accordance with AIC and BIC criteria. The analysis result of Exchange Rate (ER) and FI shows a rising pattern over the years. In addition, the outcomes of the VECM diagnostic test disclose that the interpreted results are free from the problems of heteroscedasticity and auto-correlation.

Furthermore, in order to address the aim of the study, the outcomes of GCT have demonstrated bi-variate, uni-variate, and no causality. From the GCT outcomes, Exchange Rate (ER) and Trade Openness (TO), ER and FI, and TO and FI have bidirectional associations that expose that they cause each other, for instance, $ER \leftrightarrow TO$, $ER \leftrightarrow FI$, and $TO \leftrightarrow FI$. On the contrary, FDI and TO have a unidirectional relationship which implies that FDI causes TO ($FDI \rightarrow TO$). Moreover, the authors did not get any relationship between ER and FDI, and FI and FDI.

According to the study findings, a long-term positive bidirectional nexus exists between exchange rate and financial inclusion, which implies that both factors affect each other because of increasing transaction demand for money over the periods. When financial inclusion increases, the devaluation of home currency also increases. By affecting the demand and supply of foreign currency, financial inclusion can affect exchange rates. As more people and companies conduct cross-border business or invest in foreign markets, for instance, a higher level of FI may result in an increase in the demand for foreign currency. As a result, there may be pressure on the local currency, which could cause the ER to depreciate. The demand for foreign currency may be constrained and the local currency's susceptibility to outside shocks or speculation may be diminished, additionally, if FI is less widespread.

Promoting inclusive financial systems, enhancing access to banking services, promoting financial literacy, and fostering economic stability are some of the policy implications for the connection between FI and ER. The recommendation of this paper may increase the involvement of people and companies with formal financial institutions. Side by side, our policymakers can take into consideration promoting financial inclusion for the increase in exports of goods and produce import substitution goods to maintain trade balance through giving government support and facilities to make and foster businesses for the national and international investors.

The main limitation of this study is the difficulty to get balanced data before 2004 and after 2020 of financial inclusion for the country. The other shortcomings are that some variables for instance economic growth, real interest rate, money supply, and so on, can be included to associate with exchange rate and financial inclusion but they have not complied with the model's requirements in this study. However, this study may help to make macroeconomic policy to reduce economic instability via enhancing financial inclusion for the expansion of exports to maintain trade balance for the concerned economy.

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Conflict of Interest

The authors declare no conflicts of interest.

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DIGITAL LEARNING ENGAGEMENT OF PRIMARY LEVEL STUDENTS: PERSPECTIVES AND ROLES OF PARENTS AND TEACHERS

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Abstract

During the COVID-19 pandemic, primary education shifted to a digital platform in Bangladesh due to the school closures from March 2020 to February 2022, resulting in a lack of technological resources and preparation from the viewpoint of parents and teachers. Therefore, this study explores the perceptions and roles of parents and teachers regarding digital learning engagement for primary-level students during the pandemic. To gain insights into the perceptions and roles of parents and teachers, qualitative data were collected from 32 parents (through four focus group discussions) and 10 teachers (via interviews) immediately after school reopening. The participants were selected based on their involvement with digital learning during the pandemic using a deviant purposive sampling technique with geographical proportions. Didactic thematic analysis was then employed for data analysis. The study found that while some parents and teachers lacked preparation and facilities for digital learning, they still showed motivation and a positive mindset towards it, particularly in urban areas. However, in contrast, those in rural areas faced challenges and had no choice but to embrace the trend of digital learning. Besides, urban teachers found digital learning helpful and suggested continuing it after the pandemic, while parents believed it was only suitable for tertiary-level students and had negative consequences for younger children. Furthermore, urban parents provided reinforcements to engage students, whereas rural parents struggled and depended solely on schools. Additionally, teachers engaged students through storytelling, gamification, redesigning content, using pictures, interactive questions, orienting students on digital platforms, and reaching out to absent students. Finally, the findings of this research will guide the government and policymakers in updating the education system and implementing digital learning at the primary level.

Keywords: Technology, Digital learning, Perception and role, Engagement in learning, Primary education

Introduction

Over the past few decades, researchers, educators, and policymakers have extensively investigated the integration of emerging technologies for remote learning among young children (Aubrey & Dahl, 2014; Plowman et al., 2012). Debates have arisen concerning the appropriateness of introducing digital learning to elementary school children, with some researchers expressing apprehensions about its potential impact on their social and emotional well-being and overall development (Elkind, 2007; Zalaznick, 2019). In contrast, other studies have highlighted the potential benefits of digital learning in enhancing children's understanding of abstract concepts and promoting engagement in group learning, reasoning, and problem-solving activities (Stephen & Plowman, 2002; Yelland, 2006). Amidst these discussions, apprehensions have been expressed regarding the consistency and effectiveness of digital learning (Chen et al., 2010; O'Doherty et al., 2018), as well as challenges in establishing a digital learning environment that fosters social presence and commitment. These challenges entail issues such as social isolation, video addiction, loss of interactivity, and delayed or inadequate feedback (Jiang & Monk, 2015; Khurana, 2016; Radesky et al., 2016). In response to these circumstances, researchers have suggested that parents and teachers play a mediating role in regulating digital learning activities, such as setting norms for technology usage and monitoring children's media consumption (Nouwen & Zaman, 2018). Despite these ongoing discussions and possible concerns, millions of

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young learners have embraced digital learning over the past ten years, underscoring its value as a crucial element of contemporary education (Franklin et al., 2015; Zalaznick, 2019). Since the emergence of COVID-19 in December 2019, the global education system has faced an unprecedented crisis, prompting many countries, including Bangladesh, to shift to digital learning (UNESCO, 2020). This sudden shift has presented significant challenges for students, teachers, and parents, particularly those at the primary level (Setoningsih, 2021; Sharjeel et al., 2022). As such, this study aims to investigate how parents and teachers perceive digital learning and their roles in facilitating students' engagement with it.

Statement of the Problem

In response to the COVID-19 outbreak in Bangladesh, the government implemented school closures from mid-March 2020 (Al-Amin et al., 2021a). As a result, more than 38 million students and over a million teachers were out of work (World Bank, 2021). Digital learning methods were adopted by both parents and teachers to minimize learning gaps. However, adopting these methods was not without challenges. Specifically, primary-level students' parents and teachers faced difficulties due to additional stressors, such as economic and physical concerns, social isolation, and the management and outcomes of home-schooling (Fontanesi et al., 2020).

Moreover, the extended lockdown deprived children of any form of social contact or engagement, leading to increased uncertainty and anxiety (Ramchandani et al., 2020). Parents had to take on the role of a teacher in the digital learning system (Simons & Moffett, 2022), which presented new opportunities as well as unanticipated obstacles. According to a recent study by Alam and Hoon (2021), teachers encountered challenges in maintaining their children's attention on schoolwork, establishing a daily routine, adapting instructional methods, and managing work from home. Given these multi-faceted challenges, it is essential to narrow the focus and understand the perceptions and role of parents and teachers specifically in technology-based teaching-learning in the context of Bangladesh. Additionally, the number of research studies on digital learning at the primary level in Bangladesh is limited, as most studies have primarily focused on secondary and tertiary education. Therefore, this research aims to explore how parents and teachers perceived and engaged primary-level students in digital learning, addressing the gaps in the existing literature and providing evidence-based strategies for effective digital learning in crisis situations.

Literature Review

The rapid advancement of digital technology has significantly impacted educational practices worldwide, prompting researchers, educators, and policymakers to explore its integration into various learning environments. During the COVID-19 pandemic, the adoption of digital learning methods has become a crucial strategy to ensure educational continuity, especially among young children in primary education (Aubrey & Dahl, 2014; Plowman et al., 2012). This aligns with the Technology Acceptance Model (TAM), examining parents' and teachers' tech acceptance. TAM includes cognitive, affective, and behavioral components as external variables (Zhu et al., 2018). Cognitive variables encompass factual knowledge about technology, affective variables involve personal opinions and feelings, while behavioral variables relate to experiences and capabilities (Ilieva & Farah, 2013; Zhu et al., 2018). In the context of parents and teachers, the adoption of digital learning platforms involves cognitive, affective, and behavioral dimensions. Perceived educational benefits shape perceptions (Wang & Wang, 2009; Boticki et al., 2015), while negative potential influences opinions about distractions and health implications (Soykan, 2015; Harjule et al., 2021). Prior experience impacts the role and engagement of the users in digital learning (Schumacher & Morahan-Martin, 2001; Wu & Song, 2021). Therefore, the perception and role of parents and teachers are interlinked while a new teaching-learning strategy is explored. This section provides an overview of literature focusing on parents' and teachers' perceptions and roles in engaging primary-level students in digital learning during the pandemic in Bangladesh.

The perceptions of parents and teachers regarding the digital learning engagement of the students have been a subject of significant interest among researchers. Mourlam et al. (2020) and Orben and Przybylski (2019) have expressed concerns about the potential negative impact of digital learning on the social and emotional well-being of elementary school children. These researchers argue that excessive screen time and reduced face-to-face interactions might hinder young learners' overall development. Similarly, Kaimara et al. (2022) found that parents worry about

the risk of video addiction and the loss of valuable social interactions that are essential for children's holistic development.

Conversely, other studies have underlined the positive aspects of digital learning and its potential to enhance children's learning experiences. Amzalag (2021) found that parents and teachers perceived digital learning as an effective tool to facilitate children's engagement in group learning, reasoning, and problem-solving activities. Digital learning platforms have recognized for their capability to provide interactive and engaging content, promoting active participation and knowledge acquisition among primary-level students (Gameil & Al-Abdullatif, 2023).

Amidst the challenges posed by the sudden shift to digital learning, parents and teachers have taken essential roles in facilitating students' engagement and learning experiences. As digital learning is regulated from home, therefore, parents must understand responsibilities of co-teachers for supporting their children's educational journey (Simons & Moffett, 2022). Research by Alam and Hoon (2021) reveals that parents have played an essential role in providing necessary reinforcements and motivation to engage students in the digital learning process. They have been actively involved in establishing a conducive learning environment at home, encouraging regular study routines, and providing emotional support to alleviate any anxiety or stress related to the virtual learning experience (Agaton & Cueto, 2021).

In the context of teachers, the pandemic has prompted a shift in pedagogical practices, requiring educators to adapt their instructional methods to suit the online environment (Sepulveda-Escobar, & Morrison, 2020). They have employed various techniques such as experience sharing, game-based learning, participatory inquiry, and redesigning content to sustain students' interest and participation in the digital classroom (Jagust et al., 2018). Additionally, teachers have played a critical role in providing timely feedback and support to address individual learning needs, ensuring that each student receives personalized attention and guidance (Rapanta et al., 2020). In terms of roles in digital learning, researchers have mentioned various types of roles such as pedagogical role, planning role, managerial role and technical role for parents and teachers to play during digital learning (Alvarez et al., 2009; Deshler et al., 2014; Naylor & Nyanjom, 2021; Rosalina et al., 2020).

Materials and Method

This study employed a qualitative research approach to explore the experiences of teachers and parents in engaging their students in digital learning. Qualitative research is a methodological approach that seeks to investigate individuals' understanding, perspectives, and concepts of their social reality in natural settings. This is accomplished by using people's accounts of their experiences as data through a flexible, evolving, yet structured research process (Hancock et al., 2001).

Given the exploratory nature of this study, a qualitative research design was deemed most appropriate for collecting detailed data. The study population comprised primary school teachers and parents in Bangladesh. A deviant purposive sampling technique was utilized to select 10 primary school teachers who conducted online classes, with the aim of gathering data on their roles and perceptions. Similarly, 32 parents with children currently enrolled in primary school were selected using the same sampling technique to answer research questions pertaining to their experiences. By employing a qualitative research approach and utilizing purposive sampling, this study sought to gain rich and in-depth insights into the experiences of primary school teachers and parents in Bangladesh.

Results

Perception of parents and teachers

Perception about familiarity and experience of digital learning

The findings indicate that parents who lacked familiarity with digital learning prior to the pandemic were less likely to engage in it. However, those who had previous experience with educational videos on the internet or social media were more motivated to embrace digital learning during the pandemic. It appears that many parents only became aware of digital learning recently and did not express significant interest in it prior to the pandemic. Some parents even held misconceptions that digital learning was only intended for university-level students and not suitable for primary-level students. These findings suggest a need for targeted efforts to promote digital learning among parents in rural areas and to dispel misconceptions about its applicability to different age groups. In this regard, one of their responses is given below:

"I have read some chapters of secondary level ICT book and I have learned about online learning, digital learning, digital contents, etc. but I thought it is not feasible in our country and also only for university graduates." (P-U:02)

According to the teacher's interviews, they reported being knowledgeable about digital learning through government training, free learning platforms like Muktopath, various apps, social media, and YouTube. However, most of them only became acquainted with digital platforms after the pandemic had started. The teachers expressed their belief that while the pandemic had forced the adoption of digital learning, it had also highlighted the importance of incorporating technology into education. One of the teachers said,

"I had previous training on digital learning before the pandemic situation. One of my relatives was connected to A2I (Access to information) and very earlier in the pandemic, he let me into one of their trainings on digital learning." (T-U:01)

All of the surveyed teachers received 10 days of ICT (Information and communication technologies) training from the Upazila Education office before the initiation of teaching through digital platforms during the pandemic. Through this training program, they gained experience in creating and operating digital content.

Perception about scopes, challenges, and other consequences of digital learning

Some of the parents especially from urban areas found digital learning helpful. But their concern was mostly about assessment and the amount of concentration children give to the digital mode. One of the parents stated her opinion in this way,

"I have warmly embraced digital learning as an alternative method for children's learning because everything is closed due to COVID-19, including the schools, and there is no way to go to school physically." (P-R:4)

Moreover, the parents said, this mode of learning is time-saving. This also opens the doorway of technological skills and the scope of interaction for introvert students.

While a majority of the surveyed parents expressed concerns that the devices used in digital learning were inappropriate for young children, a few also cited negative consequences associated with their children's device usage. Some respondents believed that excessive screen time was causing physical, emotional, and behavioral problems for their children. These issues included eye strain, as well as physiological discomforts such as body stiffness and neck pain resulting from poor posture during online classes. Such concerns raise important questions regarding the suitability of digital learning for young children and highlight the need for effective strategies to mitigate the negative impacts of excessive device usage.

Perception about the importance of digital learning and orienting students to digital platforms

In the question of formal orientation to digital learning, parents responded positively that respective schools have arranged an orientation for the primary students. The rest of them said that teachers used social media to conduct classes. Therefore, there was no formal orientation for their children. Most of the teachers stated that they had tried to be connected with students through social media and feasible platforms during online classes. One of the school teachers responded in this way,

"During this period of the pandemic, I continued the academic activities of the students of my school through digital platforms. I had no experience but the situation demanded for diving in this new era of technology." (T-R:03)

The participant teachers expressed their belief that the incorporation of digital platforms in education would enable them to effectively track students' progress by providing access to records of their activities. Furthermore, teachers observed that students are highly interested in innovative learning strategies that offer a departure from traditional methods. They viewed digital learning as an exciting opportunity for 21st-century students to engage in joyful and effective learning experiences. Such insights highlight the potential benefits of digital learning in enhancing student engagement and performance and suggest a need for greater integration of technology in education. One of the teachers explained,

"In brief, digital learning may improve the scope of learning opportunities, free up teachers' time, allow them to better adapt their instruction to meet the needs of their students, help track students' progress, and offer credibility into the learning process for all parties involved, among many other benefits." (T-U:04)

However, the teachers responded with a concern that primary-level students will require familiarization with the processes, tools, and expectations and all will benefit from an introduction to their new academic community which seemed almost unimaginable for the primary-level students.

Perception about students' engagement through digital platform-based learning

Some of the teachers agreed that there were a few students who would always raise their hands to take part in activities and others who were reluctant to do so, but the latter group was smaller. It could be challenging to engage children in conversations who were reluctant to offer their voices. One of the teachers said,

"I used to call everyone to respond and tried to communicate with their family so that they encourage their students to join the digital mode of learning. Moreover, I used to motivate them by saying various positive words (excellent, very good, etc.) to make them motivated" (T-R:05)

Teachers also perceived that digital platforms such as Zoom or Google Meet provide an effective way to divide students into smaller groups and facilitate academic engagement while reducing the likelihood of gossiping. Additionally, digital learning offers several advantages, such as the ability to share screens and presentations, as well as download materials, which can enhance student interactivity and engagement. However, teachers in rural areas also noted that engaging students in digital platforms can pose challenges, including network irregularities, a lack of smartphones, and difficulties affording mobile data due to poverty. These issues can seriously impede both students' and teachers' engagement in the digital learning process. Such insights underscore the need for targeted efforts to address digital access and equity issues, particularly in rural areas, in order to promote more effective and inclusive digital learning environments.

Perception about post-pandemic digital learning

When parents were asked about the potential for continuing digital learning after the pandemic, the majority of urban parents expressed support for its continuation. Specifically, ten parents stated that they would like to see digital learning persist beyond the pandemic. Among the teachers, the majority (07) expressed willingness to continue with digital learning after the pandemic, with several conditions. These conditions included providing supportive training for both students and teachers, ensuring access to necessary devices, and maintaining stable internet connectivity. Additionally, two teachers suggested that digital learning could be limited to one or two days a week to reduce their workload, as the school did not have sufficient staffing. These findings suggest that while there is support for digital learning among both parents and teachers, there are important considerations regarding resource allocation and training that must be addressed in order to promote sustainable and effective digital learning environments. One of the teachers responded in this way,

"Yes, I am willing to continue digital learning in the post-pandemic phase for reducing class load. I expect the necessary instruments from the institute regarding this matter. In the aftermath of the emergency, there are possibilities for digital learning. There are many issues in the textbook which would have a more profound impact through digital platforms." (T-U:04)

On the other hand, two of the rural teachers said "no" to the proposal of post-pandemic online classes and one of them said that if it is well managed that we can go for it.

Role of parents and teachers

Pedagogical and planning role

Before the government implemented televised classes, many parents expressed unawareness of the benefits of regular digital learning. However, over time, a small number of urban parents began discussing the situation with their children and encouraging them to engage in a regular learning process. Specifically, three parents reported that they had started following the schedule of Shangshad TV. These findings suggest that the availability and accessibility of educational resources, such as televised classes, may play an important role in promoting engagement in digital learning among parents and students. One of the parents from the urban region stated in this way,

"The COVID-19 situation was so overwhelming that situation which distorted my child far away from his regular life. Forcing him constantly could have a negative impact on her mental and physical health. So, I waited for a few days to let my child understand the situation and then tried to discuss with him the overall pandemic status and possible way of getting out of this state." (P-U:09)

According to the findings of this study, many parents, particularly those residing in urban areas, consider YouTube to be an important medium of learning for their children. However, some parents reported that they did not simply rely on random videos, but instead chose videos that were related to textbook lessons and topics. Despite

this interest in digital learning, the majority of parents in this study still waited for their children's schools to initiate digital learning through devices. Some parents even contacted teachers to inquire about the next steps and were sometimes advised to engage in home-schooling on their own. These findings highlight the importance of effective communication between schools and parents to ensure the successful implementation of digital learning in education.

Teachers referred to the pedagogical role as presenting, developing content, linking with students, checking learners' prior knowledge, and encouraging students to engage. Therefore, the teacher had this challenging part to play their pedagogical role. One of the teachers said,

"It was very challenging to make content and lesson plans for the students through digital platforms. But we were guided by our head teacher and we were able to use our knowledge to make it useful through digital medium." (T-R:01)

During the pandemic, teachers have been forced to adapt their teaching methods to the new digital platform. This has required them to revise their content knowledge and adjust their teaching styles to fit the flexibility of the digital medium. As a result, they have had to condense the length of their lessons, focusing only on the most important sections. Some teachers have found that using examples with pictures has been effective in helping students understand the material. This approach is less challenging for students when delivered through a digital medium. Given the unprecedented circumstances of the pandemic and the challenges posed by digital learning, teachers have attempted to avoid creating additional stress for their students by avoiding difficult questions and instead asking more interactive and open-ended questions.

Teachers said that they always tried to make the class attractive by using multiple ways of teaching, taking the help of gamification, providing regular feedback, sharing interesting stories, and offering gameplays to the students so that they can engage enthusiastically by being motivated in this newly introduced system. A teacher added that they gave students as much time as they need to be ready for the lessons to understand as there is flexibility in teaching students online with minimum time boundary. They also planned their lesson considering more time and flexibility. One of the teachers said,

"I had the chance to observe the students' connectivity to learning through homework, later which was done through worksheet exchange. I have mediated lesson plans based on specific subjects to act on digital learning." (T-U:03)

For these, they have developed themselves for using technology learning from various apps, different courses from free learning platforms, and many ICT-related courses from YouTube and they have helped the students to learn about operating the devices by informing them about the digital security act. To continue education through digital platforms, the teachers organized online classes and continued teaching through google meet regularly and they left no stone unturned to make the students regular and attentive in digital learning. One of the teachers from the urban area said,

"Through digital learning or in the field of communication, we have presented the art techniques of digital learning platform to the students in compliance with the digital safety laws and hygiene rules of the students." (T-U:03)

Managerial and technical role

Parents said that initially, it was very difficult to engage the students in this new mode. Some of the parents said that they offered reinforcement in the beginning phase of digital learning. In the question of adapting a child to the digital learning system, one of the parents said in this way,

"Child can be shaped in any form in no time. They are habituated to the physical classroom however they can be guided very easily to the digital platform as well. It may probably take a few weeks but can be done very conveniently." (P-U:15)

However, in rural areas, pedagogical and managerial roles were played very inappropriately by the parents. They stated that they relied totally on the decision of the schools. They had a lack of knowledge and facilities for engaging their students in digital learning.

According to the study, the majority of parents from urban areas reported that their children are interested in using digital devices for learning. As a result, these parents found it easier to play the necessary technical roles in facilitating their children's digital learning experiences. However, parents from rural areas encountered challenges in preparing their children for digital learning. Many did not have access to smartphones and lacked knowledge of how to use online or digital learning platforms. Only five out of sixteen rural parents reported being able to support their

children's digital learning, largely due to the presence of older siblings who were college students and could assist with technical support.

The teachers said they should possess technological expertise, along with proficiency in content and pedagogical activities, and exert efforts to transform static approaches into more student-centric and dynamic ones. This ensures that learners can maintain communication with classmates, comprehend instructions, access learning materials, and participate in online classes from around the world. During interviews, all of the teachers mentioned their first role is the technological role as the learning process is based on digital technologies. Even, one of the teachers mentioned that,

“Students feel uncomfortable due to the lack of technological knowledge. However, if the teachers are skilled with technology then it will be easier for the students to continue digital learning. My technical tasks include pointing students to resources for technical support, answering technical questions, diagnosing and explaining problems, and giving students enough time to encounter new approaches.” (T-U: 05)

In this study, a few teachers said that though they went through a short training as well they have come up with ICT literacy during their pre-service training but they were not able to execute their technological role in the very beginning of the switching to digital mode. One of the teachers from a rural area expressed her concern in this way,

“I have knowledge about using digital technologies, websites, and software for conducting online classes but I have perceived that I was unable to ensure my technological role in terms of ensuring students learning. Because I delivered lessons in google meet which was guided by the authority of the school but I didn't get enough response from the students' end which was very disappointing” (T-R:03)

The teachers also said that they tried to give a brief about the way of joining and responding in the digital learning mode so that students can easily participate. They also used to call the students personally whenever they felt that any student failed to join the class properly.

One of the teachers said,

“We have provided google meet links via mobile SMS to the students and tried to confirm that each and everyone has joined the class. We have also made them understand how to use the link for joining the class. But it was a matter of sorrow that there were never more than 50% students present in the digital classes” (T-R: 05)

However, this scenario was not very common for the village teachers as they were not able to contact the students personally due to not receiving phone calls in their contact numbers. One of the head teachers said that she used to tell the parents to communicate with other parents so that they can help one another in facing the shortage of mobile devices, problems with internet connection, and other issues.

In the case of the teachers' managerial role, they replied that they used to manage time properly, control the classroom situation, and provide appropriate assignments and home-works. Few of them said they have strengthened learners' necessary internal motivation through open discussions and group discussions whenever they could. One of the teachers said in this way,

“I knew my managerial role as a teacher. I used to maintain the activities which I usually do in my physical classes. For instance, I maintain time table, offer exams, assignments, and homework, and provide clear instructions as a teacher. Because I feel that managing class is one of the important tasks to be done for the teachers to ensure the learning process.” (T-R: 01)

Moreover, to connect the students to the digital learning platform, the respondents always contact the students via mobile phone to provide them with the google meet link and provided necessary instructions on connecting through google meet. However, it was a matter of sorrow that the number of regular attendances was less than 50% and the teacher received very few responses from the students during live classes, which hindered their ability to fulfill their managerial role.

Discussion

This research demanded knowing the perception and role of parents and teachers in engaging students with digital learning platforms. The findings show that most of the parents and teachers didn't have familiarity with the digital learning platform before the pandemic situation. But once the demand for the current situation was raised, they started to know about the new strategy. There are various perceptions about digital learning as they called it mobile

learning or learning strategy regarding only higher education. Rapanta et. al. (2020) also mentioned the case in a similar way. However, teachers and parents were also concerned about the orientation of the digital platforms to the primary level students which was also supported by Reimers et al. (2020), though researchers have said it is only true for those students who have never experienced digital learning (Teras et al., 2020). Some parents were concerned about students' proper learning via digital mode. Not only that the demographic factors are also a matter of concern for the parents and teachers. It is found that the parents of the urban area are more interested in digital learning as they had the feasibility to join the classes regularly. However, the parents as well as the teachers showed an unsteady position in terms of engaging students in digital learning. They were also concerned about the health and mental issues of students due to learning through the digital mode, and this concern aligns with findings in other studies (Lischer et al., 2021).

In terms of the teacher's role, it was found that most of the teachers were very attempted professionals during the pandemic situation. They changed their mindset according to the necessities of the students and the COVID-19 situation (Ozamiz-Etxebarria et al., 2021). Teachers also prepared their content and lesson plans differently for the digital learning process (Kim, 2020). The present study revealed that parents exhibited a positive attitude towards their children during the pandemic and adopted a less pressurizing approach towards their education. In contrast, both parents and teachers residing in rural areas expressed reluctance towards continuing with digital platforms in the post-pandemic era, while their counterparts from urban areas embraced this mode of learning. This disparity in mindset may be attributed to the lack of internet facilities, inadequate knowledge of information and communication technology (ICT), absence of devices, and traditional beliefs (Al-Amin et al., 2021b; Bell, 2022; Ozdamli & Karagozlu, 2022).

Conclusion

This research aimed to explore teachers' and parents' perspectives regarding students' engagement in digital learning. From the above discussion, key findings demonstrate that both parents and teachers perceived some positiveness in terms of digital platform-based classes. Thus, closing the chapter on digital learning for primary education would be premature, as it has already guided our education system toward improvements that are more student-friendly. Moreover, aligning with the findings of other studies, the combination of digital learning and traditional methods can open a portal to the blended learning approach. Consequently, feasible strategies can be explored to address the needs of both urban and rural stakeholders, ensuring a technology-based learning system that benefits all. As a result of this research, we suggest introducing digital learning gradually, starting with a minimum margin based on recent experience. For example, schools could shift to digital mode once a week to initiate the transition. Furthermore, the findings of this research hold significant implications as it sheds light on the perceptions and roles of parents and teachers in a novel situation. It can also be served as a guiding resource for policymakers to enhance the development of digital learning in primary education.

Recommendations

Proper orientation and training should be given to all the parents, teachers, and students whenever a technology-enhanced learning system is introduced. More classes should be designed for adopting multimedia. This digital learning should not be stopped rather this opportunity can be taken as a gateway to enter a technology-enhanced world. The government should reduce the price of the internet and focus on the stability of the internet in rural areas. Finally, mitigating obstacles to improving digital learning for elementary students can be a topic for further research.

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Conflict of Interest

The authors declare no conflict of interest.

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THE BARRIERS OF WOMEN ENTREPRENEURS IN ACCESSING MARKETPLACE AND FINANCIAL SUPPORTS: A STUDY AT RAJSHAHI CITY IN BANGLADESH

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Abstract

Bangladesh, a developing country, still discriminates the gender roles regarding marketplace access. Women entrepreneurs in this country are more vulnerable to starting a new business and participating equally in the marketplace. Although existing literature suggests that there are governmental and financial initiatives to support women entrepreneurship, the barriers to accessing such support have remained unimportant. Also, their vulnerability in participating in marketplace activities needed more details. This study aims to investigate the barriers women entrepreneurs face in accessing governmental and non-governmental support in Bangladesh and address their vulnerability in the marketplace. This qualitative study has been conducted in Rajshahi City with a purposive sample of 40 women entrepreneurs aged between 25 and 55. The interviews followed a semi-structured questionnaire. Data collected from July to August 2022 through in-depth interviews have been analyzed using narrative analysis while considering participants' narratives as units of analysis. Results show that women entrepreneurs struggle to establish shops in a market and are often frightened to take loans even when they are in need of it. Those who take loans face difficulties following complex and time-consuming procedures and providing guarantor, mortgage, and documents. The findings highlight challenges faced by women entrepreneurs in Bangladesh who need governmental and non-governmental support to ensure equal participation of women in the marketplaces. This study recommends reducing bureaucratic difficulties in accessing governmental financial facilities, minimizing the time and paperwork required to access loans, and more efficiently connecting non-governmental organizations with women entrepreneurs to enhance their entrepreneurial capabilities.

Keywords: Entrepreneurs, Marketplace, Vulnerability, Financial Support, Gender Roles

Introduction and Background

Entrepreneurship is often defined as the process of assuming financial risk to initiate, manage, and operate a business or venture with the goal of earning a profit (Morris et al., 1994). This can include organizing and utilizing resources to produce goods and services while facing the potential for failure. However, it is important to note that the experiences of women entrepreneurs cannot be separated from the broader societal and institutional factors that may limit their mobility, opportunities, and access to resources. In particular, the business environment for women entrepreneurs may be influenced by ingrained gender biases and societal inequalities. This is particularly true in regions like South Asia, where women may face significant barriers to equal participation in economic activities and access to fundamental human rights.

Entrepreneurship contributes to the growth of any economy, and it also plays a role in creating innovative opportunities for others (Fielden & Davidson, 2006). Entrepreneurship is increasingly recognized as a crucial driver of economic growth, productivity, innovation and employment, and it is widely accepted as a vital aspect of economic dynamism. As entrepreneurs, women need to manage their financial responsibilities and improve their businesses (Stevenson & St-Onge, 2005). However, research has shown that women entrepreneurs often face unique barriers in accessing the marketplace and financial support compared to their male counterparts.

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There has been growing recognition of the importance of understanding and addressing the barriers women entrepreneurs face in recent years. Studies have revealed that women entrepreneurs often have lower access to finance and other resources than men (Carter et al., 2003). The involvement of women entrepreneurship has historically been overlooked due to the minimal nature of women-owned enterprises (Verheul et al., 2006). They also tend to face more constraints in terms of networking and market access. These barriers can significantly impact the ability of women entrepreneurs to start and grow their businesses.

In Bangladesh, women entrepreneurship is considered a powerful tool for economic development and poverty reduction. Entrepreneurship has been considered a driving factor in the economic growth of Bangladesh. Women entrepreneurs in this country are more vulnerable to starting a new business and participating equally with their male counterparts in the marketplace. According to Article 19, section 3 and Article 28, section 2 of Bangladesh's constitution, the state shall endeavor to ensure equality of opportunity and participation of women with men in all spheres of national life (The Constitution of the People's Republic of Bangladesh, 1972). However, according to the Bangladesh Bureau of Statistics (BBS), women in this country do three and a half times more wage-less work than men (Bangladesh Bureau of Statistics, 2019). In this patriarchal system, women struggle to get equality and are considered as marginal of all entrepreneurs and face gender-based barricades to begin and advance a business. Despite the potential of women entrepreneurship, women in Bangladesh still face many blockades to enter the marketplace and financial backings. Moreover, the situation is even more severe in rural areas.

The anthropological perspective adopted in this study is particularly well-suited to understanding the multifaceted social and cultural aspects that shape the involvement of women entrepreneurs in Rajshahi City. Anthropological research is vital to highlight the importance of considering the social and cultural context in which economic activities take place (Ewick and Silbey, 1998). By investigating the specific cultural and social norms that figure the knowledge of women entrepreneurs in Rajshahi City, this study will contribute to a more nuanced understanding of the fences faced by women entrepreneurs in accessing the marketplace and financial support.

Women entrepreneurship plays a significant role in economic development and poverty reduction, but it is still challenging for women in Bangladesh. The country's patriarchal system and societal norms hinder women from accessing the marketplace and financial support. Despite the constitutional provisions for equality of opportunity and participation for women in all spheres of national life, the reality is different. Men control women's labor, restricting them to part-time work, paying low wages, and even taking their earnings through illegal means, thereby exploiting women's labor power for economic gain (Obaidullah, 2020). This highlights the gender-based barriers that women entrepreneurs face in starting and growing a business. Recent studies have shown that women entrepreneurs in Bangladesh lack access to domestic and export markets (Ahammad & Moudud-Ul-Huq, 2013). They also face difficulties in obtaining marketing information, which hinders their ability to participate in trade or business. In a study conducted in Bangladesh, Anderson and Eswaran (2009) illustrate the positive relationship between entrepreneurship and women's empowerment. Although, there has been a positive change in attitude towards women entrepreneurship and increased loan facilities, training facilities, and other kinds of support. However, the barriers to accessing such supports remain unclear, and the vulnerability of women entrepreneurs in participating in marketplace activities has not been well-documented. Previous studies have shown that women entrepreneurs face difficulties in establishing their businesses and participating in the marketplace (McClelland et al., 2005). Additionally, women entrepreneurs often lack access to financial support, either due to a lack of awareness or bureaucratic difficulties in obtaining loans (Karmakar et al., 2018). Most of those who apply for a loan from commercial banks do not receive the necessary amount (Richardson, Howarth, & Finnegan, 2004). Similar research has shown that knowledge, networks, and access are the three key elements to trigger women's entrepreneurial development (Rakib, 2023). A study conducted in Rajshahi City found that despite increasing governmental and non-governmental initiatives to support women entrepreneurship, the barriers to accessing such support remained trivial to researchers (Anis & Hasan, 2013).

Studies have shown that formal and informal institutions and policies can play a significant role in shaping the opportunities and constraints faced by women entrepreneurs. By examining the specific institutional and policy-level factors that shape the experiences of women entrepreneurs in Rajshahi City, this study will contribute to a more comprehensive understanding of the barriers faced by women entrepreneurs in accessing the marketplace and financial support.

The present study aims to investigate the barriers that women entrepreneurs face in accessing the marketplace and financial support in Rajshahi City. The study will also examine the vulnerability of these entrepreneurs in this context. This empirical study is conducted based on two research objectives as follows:

- a) To investigate the specific barriers faced by women entrepreneurs to marketplace access and secure financial assistance from governmental and non-governmental organizations in Rajshahi City.
- b) To examine the vulnerability of women entrepreneurs in the context of Rajshahi City in accessing the marketplace and financial support and identify possible solutions to make them resilient.

Literature Review

Economic and social challenges faced by women entrepreneurs in Bangladesh

Parvin et al. (2012) provide background on the economic and social challenges faced by women in Bangladesh, including poverty, gender discrimination, and lack of economic opportunities. They discuss the challenges faced in terms of illiteracy, unawareness, social and religious constraints, and the need to critically review government policies for women entrepreneurship development.

In a journal article, Ahammad & Moudud-Ul-Huq (2013) presents the socio-economic context of women entrepreneurship in Bangladesh, highlighting challenges such as illiteracy, social and economic deprivation, lack of knowledge and resources, and rigid social customs. The author suggests that women entrepreneurship is crucial for socio-economic development despite these challenges.

Shoma (2019), in a journal article, depicts challenges faced by cottage, micro, small, and medium enterprises (CMSME) in Bangladesh. She argues from a liberal feminist perspective that women entrepreneurs are treated differently than men in financial institutions in Bangladesh. She shows how financial institutions have yet to play a significant role in improving women entrepreneurs. For her, the main barrier to improving women entrepreneurship in Bangladesh is gender inequality. That is why she concludes by recommending equality in financial facilities, governmental opportunities, and social reforms.

Constraints and challenges faced by women entrepreneurs in specific regions

Sultana (2017) focuses on the challenges faced by women entrepreneurs in Rajshahi Metropolitan City, Bangladesh. The study adopts a 'before and after' strategy to evaluate the impact of small and medium entrepreneurship on empowerment by comparing the respondents' situation before and after becoming involved in SME. This study has found that women entrepreneurs in Rajshahi Metropolitan City, Bangladesh, face a wide range of problems, including start-up difficulties, marketing challenges, availability of foreign products, difficulties obtaining bank loans, issues with business locations, competition from other businesses of the same type, delays in product delivery, low profits, worker turnover, lack of training, political influence, societal attitudes, lack of coordination, and lack of support from the Rajshahi Chamber of Commerce and Industry (RCCI).

Rahmatullah and Zaman (2014) portray current problems confronted by women entrepreneurs in three regions of Bangladesh (Dhaka, Rangpur, and Chittagong), such as lack of access to resources, cultural and social norms, lack of information and supportive networks, and lack of knowledge in business skills. They recommend solutions like collateral-free loans, interest-free loans, and direct access to finance for women entrepreneurs.

Access to finance and business development for women entrepreneurs in Bangladesh

Yingjun et al. (2021) argue that access to external capital and accessible business formations are critical determinants for developing women-owned SMEs in Bangladesh. They also argue that financial development is a must to enhance women's strength and gender-based equality. They highlight the importance of financial development, address correlations between gender disadvantage and financing, and suggest extending credit plans to accelerate women-owned SMEs.

Nora et al. (2021) critically present the low level of women's economic participation in Bangladesh. They argue that Bangladeshi women entrepreneurs are involved in trades in a limited manner, with most of them focusing on the national market only. The authors emphasize, as they put it, 'most significant barrier' that is access to finance. The gender gap has also been considered as a force to trigger the disadvantages of women entrepreneurs. The authors then recommend integrating gender focus into trade policies.

Empowerment and socioeconomic outcomes of women entrepreneurship

Olarewaju and Fernando (2020) argue that women entrepreneurship is a route to women's socioeconomic advancement in developing countries. They argue that through entrepreneurship, women are driving social change as it affords women greater agency and contributes to their autonomy. They also discuss the role of microfinance in enhancing women microenterprises in developing countries. They conclude by proposing the capability and capacity building of women entrepreneurs to sustain socioeconomic outcomes and gender parity.

Mehta et al. (2022) assess the influence of access to financing and knowledge level on women entrepreneurship development in Bangladesh. Based on coefficient and structural equation modeling, the authors statistically imply that financial accessibility plays a positive role in women's entrepreneurship development. The authors conclude by suggesting innovative governmental financial facilities for women-owned SMEs and a continual capacity development program that may help to promote women entrepreneurship.

While there have been several studies on women managers in Southeast Asia (Alam et al., 2011), very few studies are on women entrepreneurs identifying their constraints and challenges. Although the literature discussed above has shown some of the important factors hindering women entrepreneurship, there are some notable gaps that are addressed through this study. These are:

- a) Limited focus on the specific barriers faced by women entrepreneurs in accessing both marketplace and financial support.
- b) Limited focus on the best practices for addressing the barriers faced by women entrepreneurs and for promoting the growth and success of women-owned businesses, particularly Rajshahi.
- c) More emphasis on the problems faced by the women SMEs, but it needs to investigate the socio-cultural reasons behind the problems and the possible solutions.

These gaps in the literature suggest for further research opportunities to understand better the specific challenges women entrepreneurs face in accessing the marketplace and financial support. This study is crucial to develop effective strategies for addressing these challenges and promoting the success of women-owned businesses in the region.

Methodology

This study aims to investigate the barriers to women entrepreneurs in accessing the marketplace and financial support in the context of Rajshahi City. The women entrepreneurs of Rajshahi City who own a small or medium enterprise were considered as the research population. The study was conducted through in-depth interviews with 40 women entrepreneurs aged between 25 and 50, and the data was analyzed using narrative analysis. In narrative analysis, the goal is to discover regularities in how people tell stories or give speeches (Bernard, 2017). The sampling method used was purposive sampling under the non-probability sampling framework, which refers to selecting samples from an overall sample size based on researcher's judgment (Creswell & Creswell, 2018). 40 women, all of whom lived and owned a small or medium enterprise in Rajshahi City, were selected as research participants based on their experience and willingness to participate in the research.

Data was collected through in-depth interviews, a qualitative research method that allows for a detailed exploration of participants' experiences and perspectives. The interviews were conducted in person and were recorded and transcribed for analysis. The interview protocol consisted of open-ended questions that were formulated based on the research objectives. Data was analyzed using narrative analysis. Analyzed data was thematically organized and grouped into categories that were used to address the research objectives.

The study was conducted in accordance with ethical principles, including obtaining informed consent, maintaining confidentiality and anonymity, minimizing harm, and respecting the rights and dignity of participants. The participants were informed of their right to withdraw from the study at any time, and their confidentiality was protected by removing any identifying information from the transcripts and data.

Theoretical Framework

This section will connect relevant theoretical claims regarding the issue of women entrepreneurs' barriers in accessing the marketplace and financial support. Two different but relevant theoretical frameworks are presented through a multidisciplinary perspective.

Feminist theories highlight the ways in which societal structures and cultural norms can limit the opportunities and resources available to women. This includes theories like Simone de Beauvoir, who, in her seminal work *'The Second Sex'* (De Beauvoir, 1949), argues that women are defined as the "Other" and are treated as inferior to men. Similarly, Bell Hooks, in her work *'Feminism is for Everybody'* (Hooks, 2000), argues that patriarchal power structures are limiting the full potential of women. Other feminist theorists like Germaine Greer, Audre Lorde, and Kimberle Crenshaw also discuss the intersectional barriers that women face based on race, class, sexuality, and other factors.

Following the work of Simone de Beauvoir and Bell Hooks, a diagram is presented (see diagram 1) to show societal and cultural barriers in a patriarchal society limit women's potentiality, that is to say, their access to opportunities and resources and thus, 'othering' them systematically through traditional gender roles.

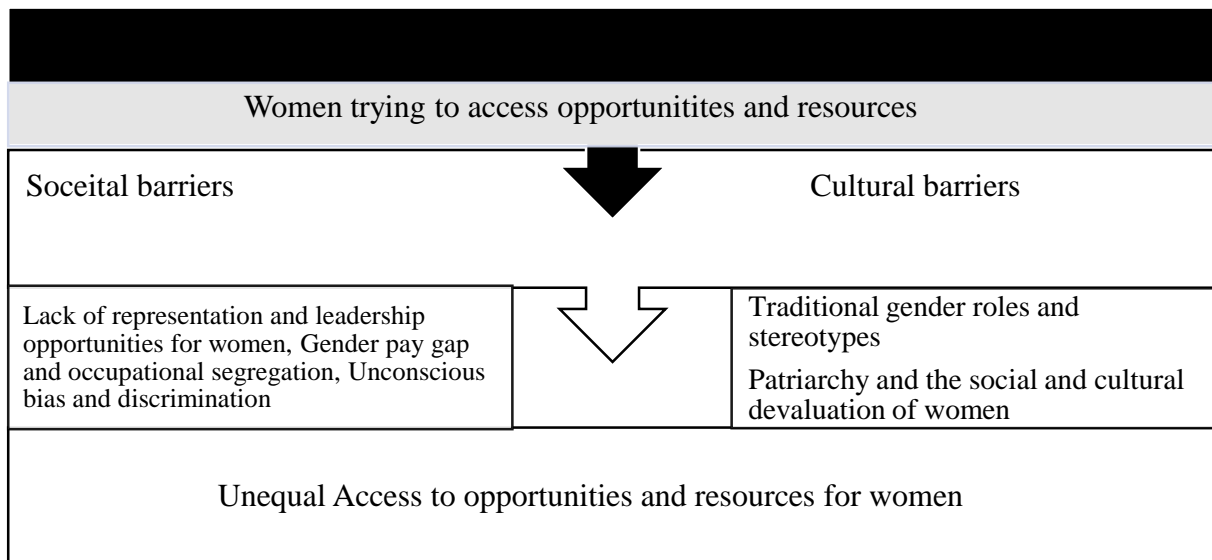


Diagram 1. Theoretical Framework Based on Feminist Theories

Anthropological theories help understand the cultural, social, and economic factors that affect women entrepreneurship. Clifford Geertz, in his work *'The Interpretation of Cultures'* (Geertz, 1973), argues that culture is a system of shared meaning and that this shared meaning shapes the way people act and interact in the world. He believed that individuals are not passive recipients of culture but rather active participants who create and shape culture through their actions and interactions with others. Geertz also emphasized the necessity of understanding the cultural context in which economic activities take place. According to him, financial transactions may be influenced by local customs, traditions and social norms. It is essential to understand these cultural factors to comprehend how economic activities are shaped by culture. Following his work, a diagram is presented (see diagram 2) that portrays how culture shapes the individuals navigating the marketplace and accessing financial support by shaping social and economic relations of the individual.

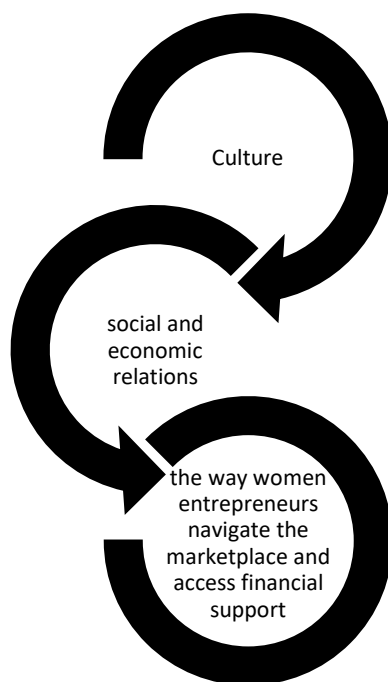


Diagram 2. Theoretical Framework Based on Anthropological Perspective

These theoretical frameworks suggest that the vulnerability of women entrepreneurs triggered by cultural and gender-based inequality is one of the main barriers to accessing the marketplace and financial support. Additionally, these frameworks draw on existing theories in feminist and anthropological literature to help explain the ways in which societal structures and cultural norms can shape the experiences of women entrepreneurs.

Results and Discussion

Overview of their business involvement

Most of the participants were owners of small and medium enterprises. Only three of the participants were successful enough to own a shop in a shopping mall. Most of the participants started their journey as entrepreneurs by their own will to start-up something new as they did not want to stay home and do only household chores. Some of the participants started their business because their family members were also involved in it. Owner of a laundry shop stated,

“My father-in-law used to do this business. I realized this is the family business when I came to join this family as a wife. Whether I wanted it or not, I had to do this. Later when my father-in-law died, I took over this business.”

(Female, 50)

The statement highlights societal pressure and expectations on women to prioritize family and relationships over their own careers and goals and the exclusion of women from positions of power and leadership in the workplace, as seen in the patriarchal family structure of passing down a business. Woodhams et al. (2014) present similar findings in their study concerning critical career decisions of Chinese women that were influenced by family priorities. Owner of a floating cigarette stall said,

“My husband died. He used to run this business. Now, in his absence I run this stall. I cannot do any other works. If I was educated, maybe I could have done something else.”

(Female, 51)

Here, the speaker regrets their lack of education and how it limits their options for economic stability and independence due to societal expectations, gendered responsibilities, and patriarchal structures. Similar research

already has marked illiteracy as one of the barriers for women to achieve economic independence. (Parvin et al., 2012, Ahammad & Moudud-Ul-Huq, 2013). This is highlighted by the death of their husband, who was the primary breadwinner.

Husband's income sufficiency is seen as a major priority for women to start or manage a new business (McGowan et al., 2012). Similarly, this research included participants who would start a business because the income of their husbands was not sufficient to run a family. Owner of a floating snack store stated,

"My husband used to sell bananas earlier. He used to come home early as all the bananas were sold within morning. With his little income, it was difficult to run a family. That is why I started a separate business."

(Female, 27)

The statement describes a family where traditional gender roles are upheld, with the husband being responsible for providing financially and the wife managing household and familial responsibilities. Caputo and Dolinsky's study (1998) argue that the presence of a freelance husband increases the likelihood of a woman being self-employed. But in this case, husband's insufficient income from selling bananas made the wife start her own business to supplement their income, indicating financial insecurity and economic vulnerability within the family. Additionally, as the husband's previous job had limited earning potential, motivating the wife to start a new business to improve the family's financial situation. Even some of them were forced to continue the business as their in-laws would hinder their agency. Owner of a small cosmetic shop said,

"I was forced to start this business as my in-laws wouldn't let me do any other jobs."

(Female, 32)

The statement suggests that the individual's in-laws exert control over their career choices, and the individual may feel constrained in making autonomous decisions. Cultural norms prioritize in-laws' expectations over individual aspirations.

Most of the narratives imply that many women entrepreneurs started businesses to ensure their family's well-being. In some cases, they were obliged to follow the family tradition and thus had to continue the business. Stories suggest that most of the participants started a business just because they 'had to', reinforcing the notion of 'forced entrepreneurs' seeking for better family incomes. (Tambunan, 2009)

Vulnerability regarding market access

Although most of the participants claimed that their husbands and other members of their families supported them in running a business, a few participants were demoralized by their family members. However, they still went on to continue their business. Nevertheless, they faced many problems while accessing the marketplace, such as political pressure and lack of support from family and colleagues. One of the participants was forced to move her stall away by another market competitor who had more political power.

"At first, I opened my stall at Octroy More as that would be profitable. But a bad person forced me to move away for opening his own hotel."

(Female, 27)

This statement highlights that any man with comparatively more political power can force a woman entrepreneur to move her business away, making her vulnerable to access the marketplace. Another participant said,

"Earlier, I had my stall on the fourth floor of this shopping complex. Then I moved to the second floor. But I did not let any other businessmen know this before I moved there. Because accessing in such a market is challenging. There is competition in market."

(Women, 40)

This narrative points to the market competition a women entrepreneur has to go through. One has to be strategic enough to avoid problems regarding market access while acknowledging their vulnerability if any problem occurs regarding marketplace access. Owner of a clothing shop said,

"When I was about to start this business, many people warned my husband about my business. Many people did not want me to start a business. As I had studied in marketing department, many people considered me as a business competitor. That's why they did not want me to start. But I maintained a good relationship with them. Also I made way for many women to start a business here."

(Women, 51)

Contrasting with the situation in Sweden where women who run businesses in a local or regional market are largely excluded from financial business support to promote so called 'fair competition' (Berglund et al., 2018), her

statement clearly implies that a women entrepreneur struggles to make way to access in marketplace. It also implies that to survive in a competitive marketplace, they have to compromise and make alliances with their competitors just to make sure her business stays in that market.

Vulnerability regarding access to financial support

Among the participants no one received any financial support from the government or non-government organizations whatsoever. As studies suggest, one of the reasons behind this is the lack of information or knowledge women entrepreneurs have regarding financial supports (Afroze et al., 2014, Belwal et al., 2014 & Mwobobia,2012). One of the participants said,

"I did not receive any governmental support. I do not know about these. I have never tried."

(Female, 32)

The statement suggests that a lack of access to resources and government support programs for women may be a symptom of larger societal issues such as discrimination and bias, including the gender pay gap, lack of representation in leadership positions, and societal stereotypes that discourage women from seeking out resources and support. Ahammad and Moudud-Ul-Huq (2013) assert in their work that women in South Asia get less than 10% of commercial credits, making them virtually invisible to formal financial institution. This lack of access may be more prevalent for women, as research has shown that they are more likely to experience poverty and financial insecurity. This statement also suggests the lack of effort on the part of the government to reach out and inform women about the support programs available to them, which could be seen as a failure on the part of the government to address the specific needs and challenges that women face.

Another reason for their vulnerability to access financial support may be corruption. Those who have good contact with the banks and NGOs or have relatives working there have a greater chance to access financial support or help their near ones to access it easily. A participant said,

"I do not even know anything about financial support from government, how would I even get it! Those who have familiar persons there, they are the people who get it. When I was pregnant, I heard many of the women are getting financial support. We are not much known to people; we did not get a single penny."

(Female, 32)

This statement can be interpreted as highlighting a number of societal issues that women, especially those who are marginalized, may face in accessing government support.

Firstly, the speaker's lack of knowledge about financial support from the government suggests that there may be a lack of outreach and information about these programs targeted explicitly towards women or that the information is not easily accessible to them. This can be seen as a failure by the government to address the specific needs and challenges that women face. Secondly, the speaker's comment that *"those who have familiar persons there, they are the people who get it"* implies that the speaker may believe that accessing government support is based on social connections and networks rather than need. This highlights the potential for corruption and nepotism in the distribution of government support and can be seen as a form of systemic discrimination against marginalized groups. Thirdly, the speaker's comment that *"when I was pregnant, I heard many of the women are getting financial support. We are not much known to people, we did not get a single penny"* implies that the speaker may feel that she and her family are not well-connected enough to access government support, which can be seen as a form of structural discrimination. This highlights the intersectional nature of oppression and discrimination, where the speaker's marginalized status may have been exacerbated by her gender.

There are some participants who did not even try to seek financial support because of the difficulties they face while getting government loans. A participant said,

"As I did not even try, I did not get it. These works include many difficulties, so I did not even try."

(Female, 36)

This statement can be interpreted as highlighting two social issues that women face while accessing financial support. Firstly, the speaker's comment that *"these works include many difficulties"* implies that the process of applying for and accessing government support may be overly burdensome and complicated for her. Charumathi et al. (1998) also specify rigidity of collateral requirements and heavy paper work as further hindrance to women entrepreneurs. This can be seen as a form of bureaucratic barrier that marginalized groups face when trying to access support.

Secondly, the speaker's comment that *"I did not even try"* suggests that she may have been discouraged from applying for government support due to the perceived difficulties of the process. This can be seen as a form of systemic discrimination against marginalized groups, as the burden of navigating complex bureaucratic processes falls disproportionately on them.

While other research marks lack of confidence, less education, market awareness, dual role, low bargaining abilities, and mobility constraints as significant setbacks for women entrepreneurs to continue a business (Noor & Isa, 2020), this study highlights lack of communication as another barrier for women entrepreneurs in accessing non-governmental loans. One of the participants said,

"The problem of communication occurs while dealing with NGOs. Sometimes when I am in need of a loan, it becomes hard to find them available."

(Female, 36)

This statement highlights issues of power and access within the context of communication and resource allocation. As a woman, the speaker may face additional barriers in terms of societal discrimination and bias, making it more difficult for her to effectively communicate and access resources from NGOs. This speaks to broader societal inequalities and the need for efforts to address and combat these issues.

Moreover, financial institutions do not allow loans for small and medium enterprises if they do not have a trade license for a minimum of three years. This is another reason for the vulnerability of women entrepreneurs. As they do not have equal access to resources as men, they may be in need of a loan during the starting phase of their business. However, they cannot access it due to this problem.

One of the participants said,

"I tried to take a loan. But they do not allow loans for us who do not have a trade license for three years."

(Female, 40)

This narrative highlights the ways in which societal and systemic barriers can make it difficult for women, particularly those who are starting their own businesses, to access the financial resources they need to succeed. The requirement of having a trade license for three years may disproportionately affect women, as they are often underrepresented in specific industries and may face discrimination in the workplace. Similarly, in Tanzania, licensing practices under sector laws have a disproportionately negative effect for creating opportunities for women entrepreneurs (Ellis et al., 2007). This can make it difficult for them to acquire the necessary experience and qualifications to meet these requirements. This requirement also reveals the vulnerability of the person, as she is unable to get the loan to start her business or grow her existing one. This can have a significant impact on her economic empowerment and independence.

Another barrier to accessing financial support is providing checks for guarantors. Owner of a cosmetic shop said,

"In the process of taking a loan, the problem occurs while involving the guarantor. Providing the guarantor's check becomes a major problem. Because if I seek for a check from an outsider, he/she may take that personally."

(Female, 36)

This statement highlights how institutional norms and social expectations can create vulnerabilities for women in accessing financial resources. Providing a guarantor's check is a major problem, illustrating the societal expectation that women should have men as their financial guarantors. This reinforces the patriarchal norms that women are dependent on men for financial support and decision-making. It is revealed through empirical study that 32.9% women entrepreneurs in Bangladesh did not receive a loan due to lack of collateral, guarantor, experience. Although guarantor of loan is essential, women entrepreneurs become reluctant to access in bank credit (Chowdhury et al., 2018). The mention of seeking for a check from an outsider may also indicate the institutional and cultural norms of nepotism, where people tend to trust and do business with people they know. This can make it difficult for women who may not have the same social networks or connections as men to access financial resources. Additionally, the fact that seeking a check from an outsider may be taken personally illustrates the societal and cultural expectation that women should not seek help or support from outsiders. This can create a sense of vulnerability as the person may feel that they are not supported or trusted by their own community and may be hesitant to seek help from outside sources.

Overall, the vulnerability of women in accessing financial resources is due to institutional and cultural norms and expectations that limit their access to financial support and decision-making power. In a nutshell, it can be said based on the findings of the study that the vulnerability of women entrepreneurs in accessing financial support is triggered by factors such as lack of information, corruption, nepotism, bureaucratic difficulties, systematic barriers, and lack of communication.

Socio-cultural barriers in accessing marketplace and loans

Women entrepreneurship in Bangladesh is hampered by a lack of access to financial resources due to societal and political gender bias (Gupta & Hoda, 2021). The most common problem a woman entrepreneur faces while accessing a loan is the requirement of details about her husband's occupation and properties. Studies in Asian countries like Pakistan have shown similar results (Haq & Safavian, 2013). Many of the participants have addressed this as a problem.

"While taking a loan, the first thing they ask is if my husband has a job; if he has a job, only then his reference works. They allow all kinds of loans based on his signature."

(Female, 40)

This narrative highlights the ways in which societal and cultural norms around gender roles and expectations can create barriers for women to accessing financial resources. The fact that the employment status of the person's husband and his signature are being used as some primary criteria for loan approval which reinforces the idea that women are financially dependent on men and implies that women's creditworthiness is determined by their husband's creditworthiness. This reinforces the patriarchal societal norm that men are the primary breadwinners and decision-makers in the family, and women's financial autonomy is secondary. This is a transparent socio-cultural barrier to women's financial empowerment and independence. As Hossen (2020) puts it, the hierarchical relations existing in the family keeping men at the top and women at the lowest and thus restricting their economic independence and social agency. Additionally, this also reveals the vulnerability of the person as she is dependent on her husband's signature and employment status to get a loan which limits her financial decision-making abilities. An owner of a clothing shop stated,

"I started this business with a capital of 150 tk. Many people said many things behind my back. They said I would go house to house and sell three pieces (clothes). Still, now, many of my relatives are jealous of me. They do not purchase products from me. They are jealous of my business."

(Female, 40)

The statement highlights specific societal and cultural norms that create barriers for women to start and grow their own businesses. The fact that people made negative comments about her starting a business with a small capital of 150 tk reinforces the stereotype that women are not capable of starting and running successful businesses. It implies that society does not believe in the capabilities of women entrepreneurs. The jealousy and lack of support from her relatives are the reflections of societal and cultural norms that discourage women from becoming financially independent and pursuing business ventures. This kind of attitude and behavior is a manifestation of patriarchal norms that prioritize men's role as providers and decision-makers. The fact that the person's own relatives do not purchase products from her illustrates the societal and cultural expectation that women should prioritize their family and domestic responsibilities over their professional pursuits.

Another participant, owner of a ladies' garment shop stated,

"They asked me about my husband's occupation and salary. They came to our home and observed our assets. They wanted to see a couple photo of me and my husband. I would take the loan, I would repay it all by myself, but the necessity of my husband's profession for getting it is an obvious insult for women."

(Female, 51)

This can also be seen as a form of discrimination and bias against women entrepreneurs. The fact that they came to the person's home and observed their assets, and wanted to see a couple photo of her and her husband, illustrates societal and cultural norms that view women as secondary to men in financial decision-making and also reinforces the stereotype that women are dependent on men.

These societal and cultural barriers not only limit the opportunities for women to start and grow their own businesses but also reveal the vulnerability of the person as she has to face negativity and lack of support from her own community to grow her business.

Few participants addressed the stereotypical societal beliefs that demotivated them to start a business by themselves. Owner of a stationary shop stated,
“Many people discouraged me for being a women businessman. At first, they said why I would run a business, why would I sit in a shop. They even asked me if I had a husband or not and if my husband had a job or not. Some of them said these while others demotivated me by saying that the recent circumstances are bad, my business would not grow.”

(Female, 32)

This statement highlights specific societal and cultural barriers women entrepreneurs face, rooted in gender stereotypes and discrimination. The fact that people discouraged the person for being a woman businessman illustrates societal and cultural norms that believe women should not be in leadership or business roles. This reinforces the stereotype that business is a man's domain and women are not capable or suitable for it. The fact that people asked if the person had a husband or not and if her husband had a job or not reflects societal and cultural norms that view women as financially dependent on men. This implies that a woman's creditworthiness and ability to run a business are determined by her husband's creditworthiness and employment status. The fact that some people demotivate the person by saying that the recent circumstances are dire illustrates societal and cultural norms that view women's businesses as less important and less likely to succeed than men's. This reinforces the idea that women's businesses are not taken seriously. These societal and cultural barriers not only limit the opportunities for women to start and grow their own businesses but also reveal the vulnerability of the person as she has to face negativity and lack of support from her own community to grow her business based on her gender.

Apart from the socio-cultural barriers that are proven to make the women entrepreneurs vulnerable to access financial support there are some other kinds of existing socio-cultural barriers that make the them vulnerable to access the marketplace. A participant said,

“For being a woman, I have to look after both business and family. Sometimes I can eat breakfast; sometimes, I cannot. In the afternoon, I have to rush to go home and cook, then again, I have to come back to the shop. These are the difficulties I face.”

(Female, 51)

This statement highlights how societal and cultural expectations of gender roles and responsibilities can create additional challenges and difficulties for women entrepreneurs. The fact that the person has to balance the responsibilities of running a business and taking care of her family illustrates the societal and cultural expectation that women should prioritize their domestic responsibilities over their professional pursuits. This can make it difficult for women to fully access and participate in the marketplace as entrepreneurs. The mention of not being able to eat breakfast sometimes and having to rush back home to cook illustrates the difficulties and pressures that women entrepreneurs face in balancing their work and family responsibilities. This can also lead to vulnerability in terms of health, well-being, and work-life balance. As research suggests, lack of sufficient time, gender bias, social and cultural norms as well as family responsibilities are the most significant challenges women face to achieve balance in a patriarchal Islamic society (Rehman and Roomi, 2012). This statement also highlights the vulnerability of the person as she has to face difficulties balancing her responsibilities as a woman and an entrepreneur. This can limit her ability to fully access and participate in the marketplace and can affect her business growth and success.

Conclusion

Women entrepreneurship is a way of attaining economic freedom and a source of generating income and employment. Through a feminist and interpretivist theoretical approach, the study found that women entrepreneurs are socio-culturally susceptible to accessing the marketplace. While entrepreneurship may help women make some progress toward gender parity, to sustain these benefits, a transformation of constraining institutional arrangements must take place to increase the autonomy women entrepreneurs have over the income they generate through their entrepreneurial endeavors (Yousafzai et al. 2019). Women entrepreneurs in Bangladesh lack agency and autonomy, which certainly hinders their chance of growth. Women entrepreneurs, particularly in Rajshahi City, are a marginalized group, not only for the systematic and sociocultural barrier but also for being away from the mainstream, the country's capital, Dhaka. Lack of opportunities may hamper the chance of creating new women

entrepreneurs from Rajshahi. There should be the right policy adjustment with its proper implementation and allied necessary actions that will pave the way for the development of women entrepreneurship in Rajshahi City. Government and non-government organization's cooperation is an essential step in developing the capacity of women entrepreneurs.

Recommendations

The findings and discussion emphasize the gender gap at a certain point. However, applicable laws and policies need to be adapted to develop women entrepreneurship comparatively and should not just focus on equality from a gender perspective (Metcalf, 2008). There are numerous policies that are being regulated frequently to support SMEs so that they can contribute to the country's economic growth. However, in reality, the policies are not implemented in such a way that will benefit marginalized women entrepreneurs. After analyzing the findings, some recommendations are made to conquer the barriers endured by women entrepreneurship in Bangladesh. The government and non-governmental organizations (NGOs) such as SMEF should collaborate to address the financial needs of women entrepreneurs, as access to finance remains a significant challenge. The government can take proactive measures by offering increased financing options through state-owned banks at lower interest rates. Special packages tailored for women entrepreneurs in both urban and rural areas can be introduced. NGOs like MIDAS and SMEF should also strengthen their efforts in providing loans and advances to women entrepreneurs at lower rates and with flexible terms. Private commercial banks can contribute by offering special packages exclusively for women entrepreneurs. This collective effort would help alleviate the financing problem. Additionally, the government should monitor organizations to prevent bureaucratic difficulties and nepotism in the provision of financial facilities. Lengthy loan application processes should be simplified to encourage new women entrepreneurs. It is crucial to recognize that most women entrepreneurs operate in the SME sector, and therefore, efforts should be made to support their development. International market information, marketing opportunities, and economic conditions should be shared with entrepreneurs to aid their business growth and forecasting. Moreover, the accessibility, publicity, and accountability of loan resources need improvement to ensure entrepreneurs are well-informed about available financial options. To foster a culture of entrepreneurship, entrepreneurship courses should be introduced in formal and informal educational institutions, enabling underprivileged women to view themselves as job creators rather than job seekers. Practical and need-oriented training programs should be designed to equip entrepreneurs with applied knowledge relevant to their businesses.

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Conflict of Interest

The authors declare no conflict of interest.

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DATA JOURNALISM IN HEALTH REPORTING IN BANGLADESH: PATTERN OF PRACTICES, IMPEDIMENTS AND PREPARATIONS FOR JOURNALISTS

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Abstract

Data journalism, with its ability to provide macro and micro-scale perspectives on health care, redefined health reporting during the global COVID-19 pandemic. Under these circumstances, health has taken the place of high significance. Consequently, the curiosity to see how data journalism is exercised while covering health issues in Bangladesh led to the idea of this study. This investigation aimed to shed light on how data journalism was applied while reporting on health in Bangladeshi media. The study was conducted following a mixed-method approach; quantitative data through content analysis and qualitative data through key informant interviews. The news published in August and September of 2022 in online editions of The Business Standard, the Prothom Alo, the Daily Star and the Ittefaq; was taken for content analysis. Additionally, four key informant interviews with academicians, journalism trainers and media development experts were conducted. The study concluded that data journalism practices in Bangladesh are not up to the standard. The scenario is also severely poor in terms of the number of published data stories; only 24 reports among 736 health-related news were data-driven stories. The Business Standard published 19 health-related data stories, which is the highest among the four news outlets. On the other hand, the Prothom Alo and the Ittefaq did not publish any health-related data story. Even the data-driven stories published in these four news outlets focused only on urban areas. Additionally, the data-driven stories were mainly reported based on government sources. Besides, among 25 data visuals, 84% were pictographs. However, the interviewees identified not having an Optical Character Recognition (OCR) tool for the Bengali language as a significant impediment to the flourishing of data journalism in Bangladesh. They also marked that, journalists in our newsrooms often do not possess the technical skills to carry out the data-driven story. Nevertheless, they proposed that, to improve the scenario of data journalism in Bangladesh, news industry and the universities should work together. Media development organizations should advocate the concept of data journalism in the newsrooms. Furthermore, they have to introduce workshops and training programs on data journalism.

Keywords: Data journalism, Online newspaper, Data visualization, Health news, Health journalism

Introduction

The COVID-19 pandemic made everyone realize the importance of maintaining health and well-being. When there is a public health emergency, health journalists and the media can play a role in rapidly communicating vital information to the public (Mach et al., 2021). In a sense, they serve as a component of the community of health care providers. As citizens struggle to comprehend and navigate the health care system, journalists are responsible for researching and reporting on their needs (Schwitzer et al., 2005). Data journalism is extracting information with news value from data, writing news stories based on the extracted information, and visualizing the information (Veglis & Bratsas, 2017). As data journalism utilizes large amounts of data, it can give the audience more precise and interpretative information. Additionally, interpreting a large amount of data helps to assess risk situations better (Desai et al., 2021).

Bangladesh is a developing country with a large population facing significant health challenges such as malnutrition, infectious diseases, maternal and child health issues, and many more. In this context, health news coverage can yield fruitful outcomes regarding any health-related topic. Exposure to the media promotes healthier behaviors in the use of public spaces (Scopelliti et al., 2021). On the other hand, data-driven journalism has immense

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potential to influence policymakers. Additionally, data can show many underlying characteristics that are not visible to the naked eye (Chai et al., 2021). Besides, from a socio-political perspective, the role of mass media as the fourth state of a nation is now under question. A load of press releases from these departments and sections is making the mass media a 'compromised fourth state' (Lewis et al., 2008). Living in the age of datafication (Arsenault, 2017; Lycett, 2013), data journalism can solve this as it enables the press to observe its watchdog role (Bril et al., 2012).

Concerning academic research, both health and data journalism are concepts that have yet to be investigated less in relation to Bangladesh. In this context, this study examined how data journalism is practiced in health reporting in Bangladesh. Additionally, it explored the barriers to the development of data journalism in health reporting in Bangladesh and how the situation could be improved.

Data journalism is in the early stage in Bangladesh

In 2018, Dataful, an open data-based information hub about Bangladesh, began operations. They prepare various Bangladesh-based open data with Accessible-Right-Now (ARN) engine and publish data-driven contents on their website. It derived the realization that the practice of data journalism has already been started in Bangladesh.

News outlets in Bangladesh had started to feature infographics in their story. But the practice of publishing news on the basis of data did not flourish (Datta, 2022). A study found that, in Bangladesh, data journalism is in its early stages. Only some investigative articles are based on extensive data analysis. The majority of data-driven stories focus on business and economic issues and sports. The Bangladesh Bank, the Bangladesh Bureau of Statistics, and a number of other government entities are the primary data sources for these articles (Islam, 2018). Another study examined the use of data journalism in Bangladesh's 2018 National Election in two prominent newspapers, the Prothom Alo and the Daily Star from December 15, 2018 to January 14, 2019. The results demonstrated that approximately 3% (29 out of 958) of election coverage in the Prothom Alo was data-driven, compared to 6% (19 out of 298) in the Daily Star (Quarmal & Islam, 2020).

Poor state of health journalism in Bangladesh

A study (Khasru et al., 2021) investigated health-related news published between March 1, 2017 and July 31, 2017, in several Bangladeshi newspapers and surveyed 23 health journalists. It was found that just under one-third (32.5%) of all health care providers mentioned in the news were registered physicians, while the remaining two-thirds (67.5%) involved unregistered clinicians or health care providers, such as physiotherapists, medical assistants, nurses, homeopaths, community health care providers (CHCP), kabiraj (Ayurvedic practitioners), fakirs (faith healers), religious leaders, health administrators, and pharmacists. Most health journalists (78.3%) had no previous training in health journalism, and only 26.1% of them were offered training by their media houses. A survey conducted on 100 journalists from eight administrative divisions showed that 48% of the survey respondents were unaware of the theoretical approaches used in health journalism. 88% had never attended a training or workshop on disaster or pandemic reporting and 10% found COVID-19 training to be beneficial (Chowdhury et al., 2022).

Data journalism in health reporting

A study was conducted on the visualization pattern of data-driven stories during the COVID-19 epidemic in China (Liu, 2021). The content analysis method was used to analyze the articles published between January 22 and October 26, 2020. Most of the data stories were identified to report with official government data. The data are credible, but the number of sources is marginally insufficient. Additionally, it was discovered that descriptive texts were less in the amount in these reports, which were primarily concerned with data analysis. Simple and easily understood illustrations were used for visual elements. Media outlets around the globe, such as the Financial Times, The Economist, The New York Times, and The Hindu, were engaged in systematically collecting, aggregating, and analyzing data. (Desai et al., 2021). The discussed literatures helped this study to know the patterns and practices of data journalism and health communication in Bangladesh and worldwide. Additionally, it helped to set a precise research method to undertake this study. The existing literature focused on how data journalism was practiced while reporting on covid-19. However, minimal focus was on how data-driven reporting was practiced for overall health beat. For this reason, this study was carried out to fulfill this gap.

The objectives of this study were i) to examine how data journalism is practiced in health reporting in Bangladesh, ii) to explore potential software, sources and iii) impediments toward the flourishing of data journalism in health reporting in Bangladesh.

Materials and Method

This study followed a quantitative approach while examining how data journalism is practiced in health reporting in Bangladesh. Additionally, it followed a qualitative approach while exploring the potential software and tools for making health-related data stories, impediments toward the flourishing of data journalism in health reporting in Bangladesh. Thus, this study was carried out with a mixed-method approach.

Employing convenience sampling, this study looked into the online version of four newspapers' health-related news published from August 1 to September 30, 2022. The newspapers are (i) the Prothom Alo, (ii) the Daily Star, (iii) The Business Standard, and (iv) the Ittefaq. Elaborately, the health news archives of these four news outlets were integrated, well-organized, and well-navigated. Consequently, it was convenient to collect data from these four news outlets. The collected data were analyzed to examine how data journalism in health reporting is practiced in Bangladesh through content analysis. A coding sheet was developed where various factors, principles, and research techniques of journalism were followed. This study used Microsoft Excel to analyze these data. Likewise, to explore potential software and tools for making health-related data stories, and impediments toward the flourishing of data journalism in health reporting in Bangladesh, Key Informant Interviews (KIIs) were conducted through a semi-structured questionnaire. The interviews were analyzed thematically.

Results

Quantitative findings

The researchers identified the total number of health-related data stories, data visualization patterns, sources and topics of data stories, and the number of data stories based on urban and rural areas through content analysis of news articles.

Total number of health-related and data stories

In August and September of 2022, The Business Standard Published 181 health-related news; 19 were data stories. Similarly, the Daily Star published 301 health stories; 5 were data-driven reports (**Figure 1**). In contrast, the Prothom Alo and the Ittefaq published 198 and 56 health news, respectively. However, no data stories were found in these two outlets. Therefore, the quantity of health-related data stories was found to be inadequate.

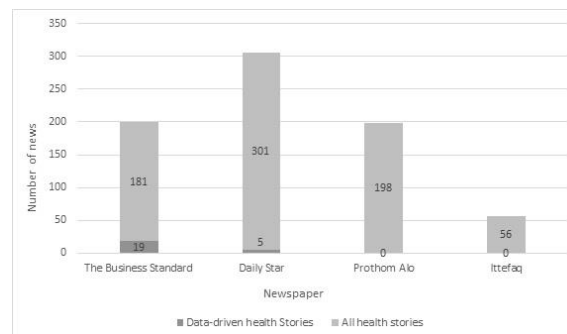


Figure 1. Total number of health-related stories and data-driven stories

Text and number ratio in data visualization

24 health-related data stories were found in The Business Standard and the Daily Star. The visuals of these data-driven reports carry 77% text (**Figure 2**). In contrast, the number used 23% to visualize those data. This indicates that news outlets put more focus on text than numbers in their data visuals.

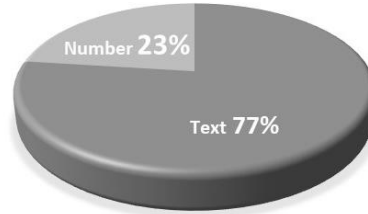


Figure 2. Ratio of text and number in data visuals

Number of data stories by location

The Business Standard published 19 health-related data stories; 13 covered the whole country, five were about Dhaka and one was about Chittagong (Figure 3). On the other hand, four data stories the Daily Star published were about the whole country and one data-driven report was about Dhaka. Number of data stories by location

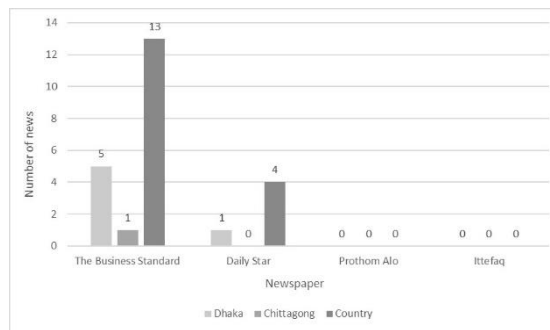


Figure 3. Number of data stories on the basis of location

Number of data stories of urban and rural area

The Business Standard published 19 health-related data stories, all of them were reported about the town side (Figure 4). On the other hand, the Daily Star published five data-driven reports. All of them were also reported on the town side. This demonstrates the media’s bias toward urban areas.

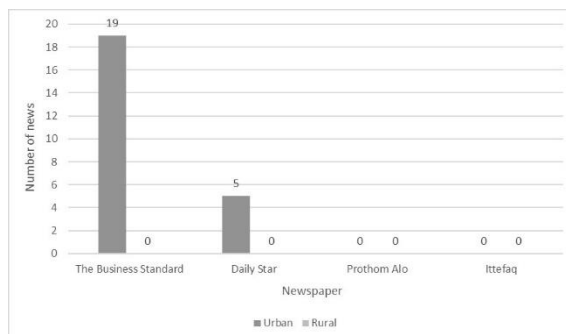


Figure 4. Number of data stories on the basis of urban and rural area

Number of data stories of visualization type

The Business Standard published 19 health-related data stories. They used 16 pictographs, one pie chart, one bar chart, one column graph, and one line chart to visualize data (Figure 5). In contrast, the Daily Star used five pictographs to visualize data. This indicates news outlets use pictographs more frequently than other types of visuals.

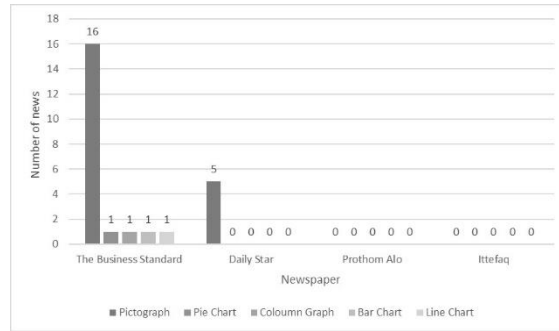


Figure 5. Number of data stories on the basis of visualization type

Number of data stories of source

The Business Standard published 19 health-related data stories, of which, six reports were made from primary sources, 11 were made from government sources, one was from World Health Organization’s website, and one was from research data (Figure 6). On the other hand, all five data stories of the Daily Star were made from government sources. This indicates that news outlets rely heavily on government sources for data-driven health stories.

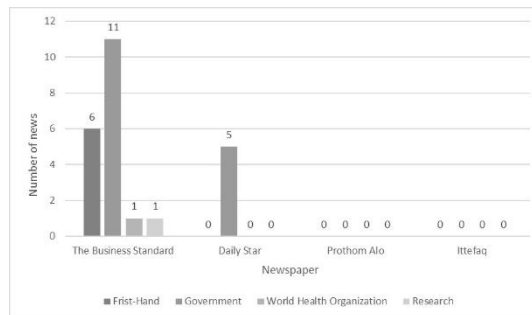


Figure 6. Number of data stories on the basis of source

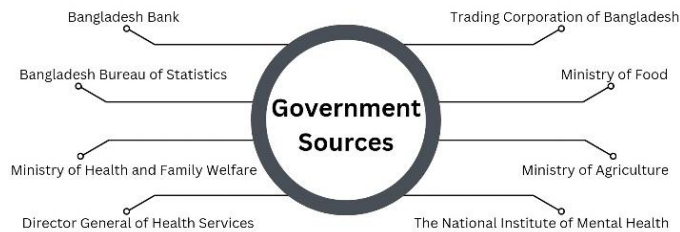


Figure 7. Details of government sources used to make data stories

Number of data stories by topic

The Business Standard published 19 health-related data stories; among them, 12 stories were on food, three stories were on disease, two stories were on health expenditure, one story was reported on health plan and one story was reported on hospital (Figure 8). In contrast, three data stories from the Daily Star were on disease, one was on food, and one data story was reported on health plan. This denotes news media have not explored significant topics like health-related corruption, budget provision, and insufficient health professionals while making data-driven reports.

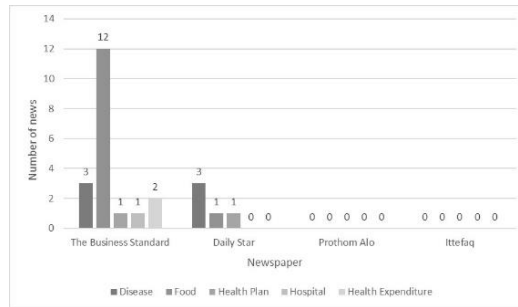


Figure 8. Number of data stories on the basis of topic

Qualitative findings

Through key informant interviews, this study identified some potential software and sources for making data driven-report and the impediments toward the flourishing of health-related data journalism in Bangladesh. Owing to the confidentiality issue, informants’ pseudo names were used.

Table 1. Details of interviewees of Key Informant Interview (pseudonyms were used)

Number	Name	Designation
1	Siraj Chowdhury	Bangladesh bureau editor of an international media development organization
2	Mominul Islam	Senior Lecturer of Journalism and Media Studies at a private university of Bangladesh
3	Shamim Ferdous	Project Manager of an international media development organization
4	Dr. Abdul Rahim	Associate Professor of Journalism, Media and Communication at a private university of Bangladesh

Significance of data journalism in health reporting

The interviewees discussed that human beings feel the most interest in knowing about their own life. For this reason, data journalism holds great significance in health beat. They also stated that what cannot be said openly can be shown through data visualizations and numerical analysis, even in a country like Bangladesh, where the press is under constant pressure. Shamim Ferdous stated,

“In a country like Bangladesh, where the press is under continuous pressure, issues that cannot directly shared, can be shared through numerical analysis and visualizations. Also, journalists can share composite stories through interacting infographics.”

It was found that data visualization saves time of the readers and easily evokes their interest. It also sometimes makes the report understandable regardless of literacy of the reader. The interviewees also pondered that data-driven reports may assist policymakers in making important decisions and necessary steps. Mominul Islam explained,

“Data reports help people in decision-making; for instance, if the COVID-19 infection rate increases in your locality, you must wear masks. Thus, people make a health safety-related decision after reading data stories.”

Impediments to the flourishing of data journalism in health reporting

How people think in the newsroom was a matter of major obstacle to the development of data journalism. Elaborately, senior journalists in newsrooms tended to refrain from learning new technological skills. They were not familiar with mathematics and statistics. As a result, there was negligence in the newsroom toward data journalism. Shamim Ferdous opined,

“One of the challenges to the growth of data journalism is the mindset of journalists. Senior reporters and editors often resist picking up modern software and hardware. Mathematics and statistics strike fear into their hearts. This has led to a lack of emphasis on data journalism within the newsroom.”

Data journalism was not prioritized in the academic programs offered at universities in Bangladesh. As Dr. Abdul Rahim said,

“The curriculums of the universities of Bangladesh do not prioritize data journalism. Even they do not signify skills like data analysis and visualization. Therefore, students do not learn much about data journalism’s theoretical and practical aspects.”

No Optical Character Recognition (OCR) tool was created for the Bangla language. Consequently, no Bangla-written numerical data set could be utilized directly. The reporter had to manually enter the information. Consequently, data journalism in Bangladesh became time-consuming. Additionally, organized digital data sets were uncommon here. Siraj Chowdhury said,

“There is no OCR tool developed for Bangla Language. Consequently, no numeric data set written in Bangla can be used directly. The reporter has to input data manually.”

Potential tools and software for making health-related data stories

The interviewees identified some software and tools for data-driven journalism (Figure 9). They suggested Google Sheets and Excel for conducting data analysis, Open Refine and Trifacta for data cleaning and Canva, Flourish, Infogram, Datawrapper, and Tableau for data visualization.

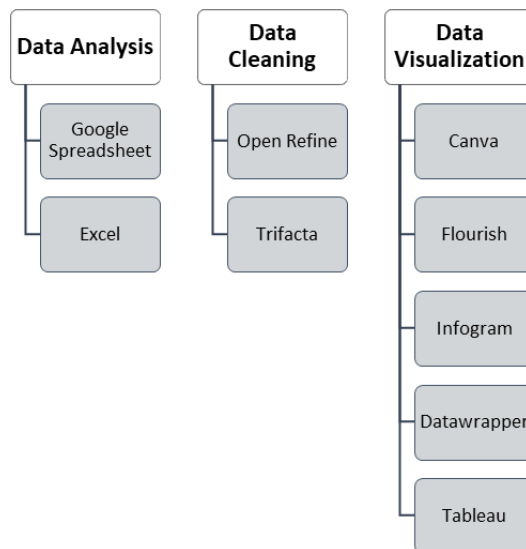


Figure 9. Details of suggested tools and software

Sources for data-driven reports in health beat

The interviewees discussed that data reports require numeric data sets. Registry books of hospitals and clinics could be used as vital sources for data-driven reports in Bangladesh. Besides, Government organizations, such as the Ministry of Health and Family Welfare and Bangladesh Bureau of Statistics could provide data sets related to health. Siraj Chowdhury stated,

“Registry books of hospitals can be a potential source for data journalism. Databases can provide insightful information about patients, health expenditures, diseases, and many more. However, the problem is that these data are often not preserved digitally.”

Additionally, the reporters could use World Health Organization and non-governmental organizations such as the Red Crescent Society Bangladesh and Mamata Bangladesh as sources for making data-driven reports.

Measures that should be adopted

The interviewees addressed that the media industry and universities should work closely to improve the practice of data journalism in health reporting in Bangladesh. Additionally, universities should have arranged seminars and panel discussions engaging media practitioners and researchers. It would have enabled the media executives to understand the importance of data journalists in the newsroom. Likewise, media educators could have assessed the current needs and loopholes of the media industry through these programs. Shamim Ferdous stated,

“Media development organizations should also advocate data journalism through meetings and conferences with media executives. At the end of the day, a data journalist will be appointed; a data-driven report will be assigned or not; it is their call. Every other program will go in vain if we fail to convince the media executives.”

The interviewees conversed that media development organizations should launch dedicated data journalism fellowship programs with small groups of young journalists interested in data journalism. These fellowship programs should provide hand-holding mentorship to be impactful.

Discussion

The number of health-related data reports were found to be insufficient. Moreover, the data-driven reports exclusively focused on urban areas, which portrayed biases in media coverage towards urban regions. The interviewees reflected upon the problematic aspects of practicing data journalism due to the absence of an Optical Character Recognition (OCR) tool for the Bengali language. However, they proposed several software and tools, such as Excel, Trifacta, and Canva, that can be utilized to create data-driven stories.

The researchers found 24 health-related data-driven reports in four news outlets’ online version. Among them, the Prothom Alo and the Ittefaq did not publish any health-related data story. So, the number of data story is not sufficient. A similar study (Quarmal et al., 2020) also found that the use of data was not that significant in terms of the number of data-driven stories.

Among 24 health-related data stories, 16 were reported from government sources. Only 6 reports were made based on primary data. In contrast, 1 report was made on research data and 1 on World Health Organization’s data. A study (Islam, 2018) also found that data-driven reports are mostly made with government sources in Bangladesh.

News outlets focus most on Food and then Disease while practicing data journalism in health reporting. 55% of stories were reported about Food, and 25% of stories were reported about Disease. Besides, 8% of stories about health expenditure, 8% about health plans, and 4% about hospitals were reported. In contrast, News outlets did not explore necessary topics like health-related corruption, budget provision and the inadequate number of health professionals.

While practicing health-related data journalism in health reporting, news outlets mostly make stories on Dhaka. They put less focus on other divisions. Among 25 data stories, 71% were about the whole country, 25% were about only Dhaka, and only 4% were reported about the Chittagong division. There was no story reported about other divisions in the country. Similarly, news outlets paid zero attention to rural areas. All the stories reported were about urban areas. These findings also match the study (Trisha et al., 2018), where they found that media focuses more on urban areas due to their commercial zeal.

Health-related Data-driven stories mostly used pictograph for data visualization. For 24 stories, 25 data-visuals were used. Among them, 84% were pictograph; pie chart, column chart, bar chart and line chart were used

4% each. Additionally, in visualization, the number and text ratio were 23:77; this depicts that news outlets used more text in the data visualization than numbers.

The interviewees identified that data journalism is very necessary, especially for health reporting. Data-driven reports help people and policymaker to take major decisions. Additionally, the data visualization also makes the report understandable to people who are illiterate. Besides, it helps the journalist to tell compound story which matches with a statement (Bradshaw, 2012) that data journalism can help a journalist tell complex story through engaging infographics.

Interviewees discussed there is no OCR tool for the Bangla language. As a result, making a data story becomes very time-consuming. A study (Islam, 2018) also found that the newsroom's main challenges are a shortage of time and the need for data journalism skills. Additionally, digital data availability is a significant concern for practicing data journalism in health reporting in Bangladesh.

Interviewees pointed out that the journalists in our newsroom do not have the necessary technological skills to carry out data-driven reports. A study conducted 24 semi-structured interviews with professionals in British newsrooms. Despite claims of journalistic authority over computational proficiency, at least half of regional data journalists reported feeling constrained by their inability to write software code regarding this skill as a robust enabling agent in data journalism (Borges-Rey, 2016).

Data-driven reports are mostly made with government sources, focusing mostly on food and disease, and not exploring necessary topics like health-related corruption. Data journalism is necessary for health reporting, but it is time-consuming due to the lack of OCR tool and technological skills needed to carry out data-driven reports are absent in the newsrooms of Bangladesh.

The media development organizations such as the DW Akademie, Internews, and Global Investigative Journalism Network may discover the findings of this study to be helpful. Additionally, this research may stimulate the interest of future researchers in studying the application of journalism in other news beats. Furthermore, researchers worldwide may find it interesting to examine the application of data journalism in health beat in other countries.

The strength of this study is that it did not confine itself to just examining the practice of data journalism in the health news coverage of Bangladesh. Instead, it also explored the impediments to the flourishing of data journalism and extracted some potential software and tools through key informant interviews. Thus, it captured almost the whole situation incorporating the problems and prospects of data journalism in health reporting in Bangladesh. In contrast, the limitation of this study is that it only examined news in a timeframe of two months. A more extended timeframe should have been used.

Recommendations and Conclusion

This study recommends the news outlets to revamp health-related data journalism. Elaborately, the media outlets of Bangladesh should train their reporters in technologies related to data journalism. They should also equally emphasize urban and rural areas. Besides, this study suggests that the media development organizations organize long-term data journalism workshops. These organizations should also educate media executives about the significance of data journalism in health reporting to increase the number of data-driven reports in this field. The media development organizations can consider creating a Bangla OCR tool in order to assist the news outlets. Additionally, the study recommends future research initiatives to consider larger sample sizes and more extended timeframes. At the global level, journalism embarked on using artificial intelligence (AI). So, researchers may consider exploring the feasibility of integrating AI and data journalism.

During the COVID-19 pandemic, journalism was redefined by data-driven reportage worldwide. It can provide both macro and micro-scale views of health care aspects. By analyzing and visualizing health data, data journalism helps to identify patterns, trends, and correlations in the domain of public health. These analyses can be used to monitor disease outbreaks, track the effectiveness of interventions, and identify emerging health issues in Bangladesh. For these reasons, data journalism should be promoted and practiced more and more in health beat.

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Conflicts of interest

There is no conflict of interest in publishing this work.

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FACEBOOK USE AND ACADEMIC PERFORMANCE: A STUDY ON THE STUDENTS OF KHULNA UNIVERSITY

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Abstract

Facebook is the well-liked and most-used social networking site among students nowadays. This paper aims to observe the impact of Facebook use on students' academic performance. The data were collected from undergraduate and master's level students of Khulna University by applying a random sampling procedure. Facebook use was measured in hours and academic performance in CGPA. The average time of Facebook use was almost double of the average study hours of the students per day. Two separate econometric models were run in this study to attain the study goals. An OLS regression model tried to identify the determinants of Facebook use, and a Tobit regression model attempted to determine the factors that affect students' academic performance. This study identified current residence, hometown, participation in co-curricular activities, relationship status, study hours, parent's Facebook use, and use of other social networking sites as the significant determinants of Facebook use. On the other hand, hours of study, class participation, time of Facebook use, Facebook use in the class, and following course materials were statistically significant factors that affected students' academic performance. This study identified a significant negative impact of Facebook use on students' academic performance. Participation in co-curricular activities and increased study hours are some suggestions derived from this study for controlling Facebook use. Allowing more time for study, following course materials, reducing Facebook use time and class participation are recommended by this study to improve academic performance.

Keywords: Academic performance, Class participation, Facebook use, Study hour, Khulna University

Introduction

The number of Social Networking Site (SNS) users is growing rapidly (Sivakumar, 2020; Kaya & Bicen, 2015). There are several SNS including Facebook, WhatsApp, YouTube, and Instagram. Among these, Facebook is the most popular one (Talaue, 2018). People are using these networking sites for communication and different purposes as they are living in the era of networking. Facebook was initiated in 2004 by Mark Zuckerberg with his friends which was initially used by the Harvard students only. However, over time, Facebook has been developed as a social networking site (Altaany & Jassim, 2013). Generally, the number of users indicates the popularity of a SNS. Facebook is the first SNS whose number of users exceeds 1 billion. According to the statistics of January 2023, Facebook is ranked first with 43.25 million monthly active users (Statista, 2023).

The number of Facebook users has been proliferating in Bangladesh (Ghosh, 2023). Digitalization leads to an increase in the number of Internet users in the country. This increase in Internet usage mostly indicates Facebook usage in Bangladesh. Statistics reveal that about 30 million people use social media in Bangladesh and more than 90 percent of them are Facebook users (The Financial Express, 2019). Mostly young generation uses Facebook in Bangladesh (Ghosh, 2023). Like other SNS, Facebook also provides a well-structured web page where users can enter personal information including date of birth, gender, current city, hometown, political and religious views, e-mail address, mobile number, relationship status, activities, educational background, favorite music and movies and a profile picture (Caers et al., 2013). Facebook enables its users to share information and connect with friends. The user of Facebook can have a large number of friends. They can see the pictures, updates, and information of their

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friends which he/she shared. Friend on Facebook doesn't mean that they are also off line friend (West et al., 2009; Donath, 2007).

At present Facebook is the most well-liked and most-used social networking site among the students. Most of the university students use Facebook and spend a lot of time on this site. University students have to use Facebook for academic purposes like gaining information, connecting with friends, completing coursework, and accessing important educational groups (Moghavvemi et al., 2017; Morallo, 2014; Oskouei, 2010). Sometimes students started to use Facebook for academic purposes but later they diverted from it. Young people spend much time on Facebook looking at unimportant content or just chatting with their friends (Khan & Ahmed, 2018). Excessive use of Facebook is diverting students from their studies (Selvaraj, 2013). Nowadays, most students are engaged heavily in Facebook. It is even more challenging for the parents to know the actual scenario. Occasionally Facebook use becomes an addiction for the young generation. Sometimes students could not reduce Facebook use though they wanted to reduce its use. Many students suffer from sleep problems because they spend long hours at night on their phones and use Facebook; as a result, they become tired in educational institutions and cannot focus on their studies. Some students use Facebook during class, and hence they cannot concentrate on their classes, resulting in a fall in their academic results (Moghavvemi et al., 2017). Some studies found that excessive Facebook users face academic and official difficulties (Chou & Edge, 2012; Junco, 2012). Students differ in their extent and frequency of Facebook use because of some factors. Therefore, conducting this research is necessary for answering two burning questions about the factors that motivate students to use Facebook and its effect on their academic performance.

Prevailing literature shows that several factors affect the frequency and extent of Facebook use (Ulusu, 2010; Suki, 2012; Ross, 2009). Factors like age, income, and gender affect the extent of Facebook use (Khan & Ahmed, 2018; Kaya & Bicen, 2015). People's participation on Facebook varies according to their personalities, culture, and other factors (Hofstede et al., 2005). Generally, Facebook is a platform to see and to be seen, to express own identity to others, and to connect with others (Pempek, 2009; Lee, 2012). Gaining social identity from friends is an important factor behind joining Facebook. People use Facebook for different purposes like communication, socialization, getting information, and passing the time (Moghavvemi et al., 2017). Today most people are affiliated with social media without concern about its effects on life, whether it is positive or negative. Facebook usage's impacts are both positive and negative based on different aspects of life (Ainin et al., 2015). The positive impact of Facebook includes better communication, ease of sharing information, and improved relationships with friends and family through communication (Ainin et al., 2015). People who use Facebook are more updated than non-users (Mehmood & Taswir, 2013). The negative impact of Facebook use includes becoming addicted to Facebook, the effect on academic and official performance, health problems, mental health problems and so on. Many studies show that there is a negative relationship between Facebook use and academic performance (Karpinski & Duberstein, 2009; Alwagait et al., 2015; Moghavvemi et al., 2017; Khan & Ahmed 2018). That means that more time spent on Facebook reduces academic performance and vice versa. Academic performance indicates how students deal with their studies and how they perform on the tasks which are given by their teachers. Some factors reflect students' academic performance. These factors include CGPA, hours of study per day, efforts to complete the task (assignment, presentation, report), class attendance and so on (Khan & Ahmed, 2018; Mehmood & Taswir, 2013; Moghavvemi et al., 2017).

The objective of this study is to find out the relationship between Facebook use and academic performance. The novelty of this study is threefold. Firstly, what is the frequency and extent of Facebook use? To answer this question, the authors collected data from respondents regarding their frequency of Facebook use so that authors could measure the extent of it. Secondly, it tries to find out the factors that drive students to use Facebook. This focuses on different factors, including social, institutional, and other factors, influencing students' Facebook use and its extent. Solving this research question enables us to see the reasons that are crucial or that are playing backstage to motivate students to use Facebook. The researchers have used the OLS Regression Model to find the answer. As the dependent variable, Facebook use is a continuous variable and it is measured in hours. Finally, the study attempts to determine the consequences of Facebook use on students' academic performances. By answering this question, we attempt to compare the academic performance of different levels of Facebook user students at Khulna University. Data on academic performance are collected to measure the consequences of Facebook use. In doing so,

the authors have used a Tobit regression model. With the help of these analytical tools, we have evaluated the impact of Facebook use on students' academic performance.

The relationship between Facebook use and academic performance has been explored by several researchers throughout the world. But most of the work was done in developed countries like the UK and USA. Some of the works are also found in South Asian countries. However, there is a lack of available research work in Bangladesh on this context and few studies have been done on students of Khulna University regarding this issue. This study could be done to see the impact of using other SNSs as a whole on academic performance but due to some constraints, the authors only focus on Facebook. This study also could be done on college students and other university students to see the impact. However, time and other constraints limit the authors to confine this study among Khulna University students. It is less preferable to do for school students because they are comparatively less Facebook users than college and university students. Consequently, the authors have conducted this study on students of Khulna University to find out the impact of Facebook use on academic performance.

Materials and Method

Study area and sampling framework: Researchers conducted this study on students of Khulna University. A systematic random sampling method was employed in this study. The sample is chosen from both undergraduate and master's level students. So, the students of 1st year, 2nd year, 3rd year, 4th year, and master's level are considered as the population of this study. There are a total of 5,624 students who are considered as the population of this study. Khulna University is the ninth public university in Bangladesh, established in 1987 (Khulna University, 2019). It is the only public university in Bangladesh to be free of student politics. Students in this university get to study in an uninterrupted environment with no session jam in academic activities. It is situated at Gollamari, Khulna, Bangladesh, beside the Moyur River and Khulna-Satkhira highway. To conduct this research work authors considered 29 Disciplines of Khulna University. Both undergraduate and postgraduate students are considered in this study. Each discipline has 5 different batches (1st year, 2nd year, 3rd year, final year, and masters), and from each batch, one student is randomly selected as they can represent the total population. Accordingly, there are 135 respondents. From these 5 batches, researchers randomly choose one student having a random ID (here, it is 09) from each batch. If ID 09 is missing, consideration goes to ID 23. Again, if ID 23 is also missing, the authors consider ID 32. The data were collected during July-September of 2019.

Analytical strategy: Descriptive statistics and cross-tabulations are used in this study to measure the frequency and extent of Facebook use. There are two dependent variables in this study, which are Facebook use and CGPA. Facebook use is measured in hours and academic performance by CGPA. Two separate econometric models are used to attain the study goals. An OLS regression model is used in this study to identify the determinants of Facebook use, and a Tobit regression model is used to determine the factors that affect students' academic performance. Here, the dependent variable of equation (1) is continuous and also satisfies all the assumptions of the OLS regression. As a result, the authors have chosen the OLS regression model.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_{13} X_{13i} + u \quad (1)$$

Here $i = 1, 2, 3, \dots, 135$

In equation (1), Y_i indicates the time of Facebook use, which is the dependent variable, and X_i indicates the explanatory variables which are the determinants of time of Facebook use.

$$y^* = \beta_0 + x\beta + u, u | x \sim \text{Normal}(0, \delta^2) \quad (2)$$

Equation (2) is used for the Tobit model to identify the significant factors that affect academic performance. Here, the Dependent variable y^* indicates the CGPA. The maximum value of y^* is 4.

Results

Summary statistics: Table 1 shows the summary statistics of this particular research with the variable name, measurement units, observation, mean, standard deviation, minimum and maximum values. There are 135 observations for all the variables. According to the summary statistics, the average age of the students is 21.73 years, which deviates from the average value with a standard deviation of 1.82 years. As this study is conducted on the students, most of the respondents are young adults with a minimum age of 19 and maximum age of 26. The students spend an average of 1.96 hours watching television daily, which deviates from the average value with a standard deviation of 1.11. The average monthly family income of the students is BDT 28,737, while the standard deviation is BDT 14,798. The average education of the father and mother is 12.61 and 9.70 years, respectively.

Table 1. Summary Statistics

Variable	Unit of Measurement	Observation	Mean	Std. Dev.	Min.	Max.
Age	Year	135	21.73	1.82	19	26
Watching Television	Hour	55	1.96	1.11	0.5	6
Family Income	BDT/month	135	28,737	14,798	4,500	70,000
Education of Father	Years of Schooling	135	12.61	3.75	4	17
Education of Mother	Years of Schooling	135	9.70	3.44	2	17
Student's Monthly Expenditure	BDT	135	5,071	2,126	1,700	13,600
CGPA	Scale of 4.00	135	3.41	0.26	2.75	3.92
SSC	Scale of 5.00	135	4.88	0.25	3.5	5
HSC	Scale of 5.00	135	4.85	0.24	3.75	5
Hours of Study	Hour/day	135	1.86	1.81	0.5	14
Class Participation	Percentage	135	89.81	11.44	35	100
Years of Facebook Use	Year	135	4.69	1.89	1	10
Cost of Facebook Use	BDT/month	135	248	175	50	1,000
Time of Facebook use	Hour/day	135	3.63	2.13	0.5	8

N.B.: Std. Dev.= Standard Deviation, Min.= Minimum, Max.= Maximum

According to summary statistics, the average monthly expenditure of the respondents is BDT 5,071. The average CGPA attained by the respondents is 3.41, while the standard deviation is 0.26. The minimum CGPA of the respondents is 2.75 and the maximum CGPA is 3.92. The average GPA of the SSC and HSC exam results of the respondents are 4.88 and 4.85, respectively. The average hours of study of the respondents are 1.86 hours daily while the standard deviation is 1.81. The minimum study hour is 0.5 hours daily and the maximum is 14 hours daily. The average class participation of the respondents is 89.81 percent while the standard deviation is 11.44. Respondents' average years of Facebook use is 4.69, with a standard deviation is 1.89.

According to summary statistics, the average per month cost of Facebook users of the respondents is BDT 248, which deviates from the average value with a standard deviation of 175. The respondent's average time per day Facebook use is 3.63 hours, which deviates from the average value with a standard deviation of 2.13. The minimum time for Facebook is 0.5 hours per day, and the maximum time for Facebook is 8 hours per day. The average time of Facebook use is almost double the average study hours of the students per day.

Cross tabulation: Cross-tabulation helps to consider more than one variable at a time irrespective of dependent or explanatory variables. From Table 2, it is observed that 5-row variables are considered with 1 column variable. Here the row variables are gender, hometown, relationship status, monthly family income, and CGPA. The column variable is the duration of Facebook use which has four categories.

Table 2. Cross-tabulation

Name of Row of Variables	Duration of Facebook Use (in hours/day)				Total
	0.1-2.0	2.1-4.0	4.1-6.0	6.1-8.0	
Gender					
Male	32	27	9	3	71
Female	11	27	19	7	64
Hometown					
Rural	38	31	7	0	76
Urban	5	23	21	10	59
Relationship Status					
Single	40	26	0	0	66
Having Relationship	3	28	28	10	69
Monthly Family Income (in BDT)					
0-20,000	28	23	3	4	58
20,001-40,000	13	17	22	4	56
40,001-60,000	2	12	3	2	17
60,001-80,000	0	2	0	0	2
CGPA					
2.74-2.99	0	0	2	3	5
3.00-3.24	0	12	12	6	30
3.25-3.49	10	10	12	0	42
3.50-3.74	21	20	2	1	44
3.75-4.00	12	1	0	1	14

Table 2 shows that male respondents dominate the data set. The duration of Facebook use is different in both male and female groups. Among all the male respondents, 32 use Facebook for 0.1-2.0 hours. Most females use Facebook in the range of 2.1-4.0 hours. The majority of the respondents are from rural areas. The majority of the respondents in rural are used Facebook for a range of 0.1-2.0 hours. On the other hand, most of the respondents from urban areas use Facebook for 2.1-4.0 hours. The respondents having relationships use Facebook more compared to the single respondents. The monthly family income of the respondents is divided into four categories. The majority of the respondent's monthly family incomes were less than 20,000 BDT. The duration of Facebook is different across different levels of family income groups. The CGPA of the respondents is divided into five categories. The duration of Facebook use differs across the different ranges of CGPA. In the higher range of CGPA, the duration of Facebook use is less. Therefore, the cross-tabulation gives a clear hint of the duration of Facebook use among the students of Khulna University.

Factors affecting facebook use: In this OLS regression model, the dependent variable is the hours of Facebook users per day.

Table 3 shows that the current living status of the students positively affects the hours of Facebook use. If other things remain the same, then the student living in the hall or student mass uses Facebook 0.65 hours more than those living with their family. It is statistically significant at the 10 percent level. Students in the student hall use Facebook more than those who stay with their families because the guardians and family members do not like their children spending more time on Facebook (Moghavvemi et al., 2017). The hometown of the students also affects the hours of Facebook use. If other things remain the same, then the students who come from urban areas use Facebook 0.51 hours more compared to those students who come from rural areas. It is also statistically significant at the 10 percent level. Because urban people seem to be aware of the SNS compared to rural people (Hofstede et al., 2005). Participation in co-curricular activity is an important factor that negatively affects the hours of Facebook use. The students who participated in co-curricular activity used Facebook 0.94 hours less than those students who did not participate in co-curricular activity. It is statistically significant at a 1 percent level. According to Skiera et al. (2015), people involved in part-time jobs or co-curricular activities have less time for Facebook use.

Table 3. OLS Regression Model on Determinants of Facebook Use

Variable	Unit of Measurement	Co-efficient
Age	Year	0.03
Gender	0=Male and 1= Female	-0.16
Family Income	in BDT	-0.00
Hall	0=With Family and 1= Hall	0.65*
Hometown	0= Rural and 1= Urban	0.51*
Co-curricular Activity	0= No and 1= Yes	-0.94***
Tuition	0= No and 1= Yes	-0.33
Watching TV	0= No and 1= Yes	0.43
Relationship	0= No and 1= Yes	1.19***
Other Social Networking Sites	0= No and 1= Yes	0.74**
Hours of Study	Hours	-0.14**
Parent's Facebook Use	0= No and 1= Yes	0.98***
Number of Friends	Number	0.00
Constant		1.77
Observations		135
R-squared		0.66

N.B.: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Relationship status has a significant positive impact on the hours of Facebook use. According to Table 3, if other things remain the same, then the respondents having a relationship use Facebook 1.19 hours more compared to single people. It is statistically significant at a 1 percent level. Sanchez et al. (2014) also revealed that people who are in a relationship are more frequent Facebook users to connect or communicate with his/her partner. The use of other SNSs also positively affects the hours of Facebook use. The users of other SNSs use Facebook 0.74 hours more than those who do not use other SNSs, which is statistically significant at a 5 percent level. When students use multiple SNSs, consequently they left less available time for Facebook use. According to Table 3, the study hours are negatively related to the hours of Facebook use. Other things remain the same, a 1-hour increase in study hours can result in a 0.14-hour decrease in Facebook use. It is statistically significant at the 5 percent level. These findings align with a previous study that found that students who spend more time on Facebook consequently gives less time for study, for this reason, many educational institutions especially school authorities oppose Facebook use (Karpinski & Duberstein, 2009). On the other hand, the parents' Facebook use positively affects the respondent's hours of Facebook use. The respondents whose parents are using Facebook, use Facebook 0.98 hours more compared to those whose parents do not use Facebook. It is statistically significant at a 1 percent level.

Furthermore, the R^2 value is 0.66, which implies that almost 66 percent variation of the dependent variable 'hours of Facebook use' can be explained by the explanatory variables. VIF test is conducted in this model to check the multicollinearity among the explanatory variables (Annex-A: Table A1). The VIF values for each variable are greater than 1 and less than 10. It indicates that there is no existence of multicollinearity among the explanatory variables.

Factors affecting academic performance: The main objective of this study is to analyze the impact of Facebook use on students' academic performance. Academic performance is not influenced by Facebook use alone. Besides Facebook use, many other factors affect academic performance. Censoring mainly occurs when there is a limit in the data set, and in this study, the maximum value of CGPA is 4. As the data set satisfies the assumptions of the Tobit model, hence Tobit model is used to identify the significant factors that affect academic performance. Thus, the Tobit regression model includes the explanatory variables that influence academic performance. In Table 4, the dependent variable is the CGPA of the students and the significant explanatory variables are hours of study, class participation, time of Facebook use, Facebook use in the class, and following course materials.

Table 4. Tobit Regression on CGPA

Variables	Unit of Measurement	Coefficient
Hours of Study	Hour/day	0.04***
Family Income	BDT/month	-0.00
SSC Result	Scale of 5.00	0.12
HSC Result	Scale of 5.00	0.02
Class Participation	Percentage	0.01***
Participation in Co-curricular Activities	0= No and 1= Yes	0.02
Time of Facebook Use	Hours	-0.04***
More Frequently Facebook Use during the Class	0=Less frequently FB used during class (Sometimes, Seldom, Never) 1= More frequently FB used during class (Always, almost always)	-0.14*
Follow Course Materials	0= No and 1= Yes	0.18***
Tuition	0= No and 1= Yes	0.03
Constant		2.24***
Observations		135
R-squared		0.59

N.B.: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

From Table 4, it is observed that study hours are positively related to the CGPA of the students. If other things remain the same, then for a one-hour increase in study hours per day, CGPA is also increased by 0.04 units. It is statistically significant at a 1 percent level. Mehmood and Taswir (2013) also found that study hours positively affect CGPA. That means the students with high CGPA study more than those who study relatively few hours (Morallo, 2014; Ahmed & Qazi, 2011). The variable class participation is positively related to CGPA. Because class participation helps the students to better understand the lecture, which ultimately helps for better results. If other things remain the same, then with a 1 percent increase in class participation, CGPA is increased by 0.01 unit. It is statistically significant at a 1 percent level. This finding matches the findings of Eitle and Eitle (2002) because they also found a positive relationship between class participation and academic success.

In contrast, a one-hour increase in Facebook use may decrease CGPA by 0.04 units. Khan & Ahmed (2018) also found that more time spent on Facebook reduces academic performance and vice versa. It is statistically significant at the 1 percent level. More frequently Facebook use during class also negatively affects the CGPA. Because of Facebook use during class, students do not concentrate on teaching-learning, so their academic performance is affected. According to this study, if other things remain the same, then the more frequent Facebook users during the class get 0.14 units less CGPA than those who use Facebook less frequently during class. It is statistically significant at a 10 percent level.

The variable following course materials is a factor that has a positive impact on CGPA. If other things remain constant, then the follower of course material will get 0.18 unit higher CGPA than the non-follower of course materials. This result is also statistically significant at the 1 percent level.

Thus, this study identifies a significant negative impact of Facebook use on students' academic performance. The average time of Facebook use is almost double of the average study hours of the students per day. According to Moghavvemi et al. (2017), using Facebook might be handy for students to save and manage their time, but uncontrolled use of Facebook harms academic performance. Chou and Edge (2012) found that excessive Facebook users face difficulties in their academic and official lives. Most of the students started Facebook use for academic purposes but later they diverted from their purpose. Students pay more attention to Facebook than their studies. As a result, their academic performance is negatively affected (Khan & Ahmed 2018; Alwagait et al., 2015).

Furthermore, the R^2 value is 0.59, which implies that almost 59 percent variation of the dependent variable CGPA can be explained by the considered explanatory variables. VIF test is conducted in this model to check the multicollinearity among the explanatory variables (Annex-A: Table A2). The VIF values for each variable are greater than 1 and less than 10. It indicates that there is no existence of multicollinearity among the explanatory variables.

Conclusion

Social media can be used as a tool for learning through student interaction, but the problem arises when it becomes a curse for academic performance. Most of the students started using Facebook for academic purposes but later they diverted from their purpose. Students who spend more time on Facebook consequently have less time for study. This study identifies a significant negative impact of Facebook use on students' academic performance. The average time of Facebook use is almost double of the average study hours of the students per day. Participation in co-curricular activities and an increase in study hours are some suggestions for controlling Facebook use. Allowing more time for study, following course materials, reducing Facebook use time and class participation are recommended by this study to improve academic performance. With the increasing popularity and use of Facebook, it also becomes a common concern for parents, guardians and administrators that students spend a considerable amount of time on Facebook. Facebook can be beneficial if used for educational objectives, but its use for socializing may have a negative impact on students' performance in the classroom. Using Facebook as a study tool, and especially for sharing study materials, could assist distance learners in developing the skills they need to succeed in their chosen field of study. This study is done only considering Facebook, but there is scope for further study considering the other SNS.

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Conflicts of interest

There is no conflict of interest in publishing this work.

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Annex -A

OLS Regression Model on Determinants of Facebook Use

Table A1. Variance Inflation Factor and Tolerance Test

Variable	VIF	1/VIF
Watching TV	1.90	0.526024
Social Networking Sites	1.89	0.528724
Relationship Status	1.84	0.544843
Hall	1.82	0.549602
Parents Facebook Use	1.80	0.555142
Hometown	1.80	0.556095
Tuition	1.65	0.606191
Co-curriculum Activity	1.60	0.625056
Family Income	1.49	0.670159
Gender	1.47	0.681310
Age	1.42	0.705049
Number of Facebook Friends	1.33	0.749311
Study Hours	1.22	0.816464
Mean VIF	1.63	

Tobit Regression on CGPA

Table A2. Variance Inflation Factor and Tolerance Test

Variable	VIF	1/VIF
Time of Facebook Use	1.80	0.555373
SSC Result	1.77	0.566262
HSC Result	1.74	0.574819
Co-curriculum Activity	1.57	0.637160
Follow Course Materials	1.31	0.766278
Study Hours	1.27	0.790336
More Frequently FB use in Class	1.23	0.810219
Class Participation	1.21	0.827983
Family Income	1.18	0.847829
Tuition	1.16	0.862907
Mean VIF	1.42	



ACADEMIC EXPERIENCES, CHALLENGES AND COPING STRATEGIES IN COVID-19 SITUATION: A CASE STUDY ON A RURAL SECONDARY SCHOOL IN BANGLADESH

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Abstract

The first case of the COVID-19 virus in Bangladesh was confirmed on March 8, 2020 and due to this pandemic the government announced closure of all educational institutions on March 17, 2020. This study aimed to investigate the academic experiences, challenges, and coping strategies of a secondary school situated in a rural region of Bangladesh. For this study, a case study within a qualitative framework was conducted. Interviews of all the teachers and interviews as well as focus group discussion (FGD) of twenty-four students who were selected by convenience sampling were undertaken. This study finds that the entire academic experience was extremely hard and new for both teachers and students. They experienced a sense of alienation during the school closure. In September 2020, online classes started but both teachers and students encountered a variety of obstacles, such as lack of proper devices and required skill-sets, excessive cost of mobile data, poor network. The institution also tried assignment method which was challenging as it was a completely new task. The school resumed partially on September 12, 2021, with a reduced number of active school days. All the participants felt that partial resuming did not enable effective learning. This study also finds that both teachers and learners have tried several coping strategies. Teachers have assisted one another and contacted with the students through phone calls and in-person visits. Students also sought help from their family-members and peers. This study has implications for policymakers, teachers and learners. Policymakers can mitigate future extreme circumstances by fixing network faults, offering financial aid to teachers and students, and organizing skill-building programs. Teachers and learners from schools with similar context can consider coping strategies like asking for assistance from peers and family members, being innovative for getting connected with each other for continuing academic activities during tough time.

Keywords: COVID-19, Academic experience, Challenges, Coping strategies, Secondary school

Introduction

This study explored the overall academic experience, challenges and coping strategies of a 55-year-old secondary school situated in rural area of the south-west part of Bangladesh during the COVID-19 pandemic. The considered timeline for this study is March, 2020 to March, 2022. World Health Organization (WHO, n.d.) defined the COVID-19 pandemic as a global outbreak of an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of the novel virus was recorded in China in December 2019 and then the virus was spread rapidly to other areas across the world. World Health Organization declared a public health emergency of international concern on January 30, 2020 and characterized the outbreak as a pandemic on March 11, 2020. On March 8, 2020, the first case of this virus was confirmed in Bangladesh. Because of the pandemic, the government of Bangladesh announced the closure of all educational institutions on March 17, 2020.

According to World Health Organization (WHO, 2023), as of April 2023, the pandemic had caused more than 762 million confirmed cases and 6.89 million deaths which has made it one of the deadliest in history. United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022b) reported that besides causing health hazards, the COVID-19 pandemic affected the education sector significantly across the globe. UNESCO (2022a) also reported that it affected more than 1.5 billion students while the most vulnerable learners were hit the hardest. Most governments around the world temporarily closed educational institutions in an attempt to contain the spread

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of the virus and these closures affected over 90% of the world's student population (UNESCO, 2022c). Tadesse et al. (2020) found that during school closure the level of anxiety, depression and stress were high among students.

According to Tadesse and Muluye (2020), the COVID-19 pandemic has affected schools, students, teachers, and parents and this crisis has contributed in increasing social inequality among the learners as students do not have equal access to technology and educational materials required for continuing education in pandemic time. They also claimed that there is a significant difference among schools in terms of technology and educational resources while schools in disadvantaged, rural areas lack the appropriate digital infrastructure required to deliver teaching at the remote. Students from more advantaged parents attend schools with better digital infrastructure and better teachers having higher levels of digital technology skills while disadvantaged students are attending schools with lower ICT infrastructure and other educational resources (Di Pietro et al., 2020).

In Bangladesh, a large number of students live in rural area. According to United Nations Children's Fund (UNICEF, 2021), the future of 37 million children in Bangladesh is at risk as their education has been severely affected by the COVID-19 pandemic. The pandemic negatively impacted the overall welfare of adolescents in several ways (The World Bank, 2021). In Bangladesh, around half of the adolescents spent less time on education than before the pandemic and 94 percent increased time on household chores or childcare which may result in dropping out from school (The World Bank, 2020).

During the pandemic, the investigator of this study mostly stayed in her village home which is around 2 kilometers away from the school which has been investigated in this study. Every child in her neighborhood was enrolled at the school. Through informal interactions with them, she got several basic information regarding the academic experiences of the school during the pandemic which made her aware of some issues faced by them. Besides, different aspects of academic experience were very frequent in electronic and online media during the pandemic time. All of these factors made the investigator inquisitive about this case and motivated her to carry out this study. The research questions of this study focus on the overall academic experiences of the school during the COVID-19 pandemic with special attention to the challenges faced by the stakeholders and their coping strategies and innovation for the new situation.

Methods

Research Approach: For this study, a case study within a qualitative framework was conducted. Academic experience of a rural Bangladeshi secondary school during the COVID-19 pandemic is the central phenomenon of this study. Creswell (2012) asserted that qualitative research is the most suitable approach for exploring and developing a detailed understanding of a central phenomenon. And Yin (2014) stated that case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context.

Sources of Data and Sampling technique: Data was collected from all the ten teachers of the school including the head teacher and twenty-four students, four from each grade (grade six, seven, eight, nine, ten and SSC candidates). Participant students were selected by using convenience sampling. Available and willing data sources were needed for conducting this study. According to Johnson and Christensen (2008) convenience sampling allows it. Gender balance among the students has been tried to be maintained consciously while selecting student participants.

Collection and Analysis of data: As mentioned earlier, the considered timeline for this study is March, 2020 to March, 2022. The data collection occurred in two phases; first in June 2021 and subsequently in March 2022. In both phases, interviews of all the teachers including the head teacher were conducted for understanding the teachers' perspective. For exploring the students' perspective, interviews as well as a focus group discussion (FGD) were conducted. According to Bell (2010), interview is one of the most frequently used tools for conducting case studies and it allows following up ideas, probing responses and investigating motives and feelings which were needed for this study. Bell (2010) also argues that FGD is useful when participants have a shared interest, concern or experience and in-depth information is needed 'about how people think about an issue'.

The approach of conducting the interviews was open-ended guided or focused interview. A framework containing some key topics (over all experience, academic activity, assessment, communication among the

stakeholders, challenge, coping strategy, innovation etc.) were prior determined, based on which certain open-ended questions were asked. Respondents were given the freedom to talk and give their views in their own time. There were scopes for asking supplementary questions as well. According to Bell (2010), a guided or focused interview fulfills all these requirements.

After collecting data, qualitative data analysis was done. Following inductive coding, codes were generated by directly examining the data (Johnson & Christensen, 2008). Similar coding pieces of data were grouped into minor themes from which finally major themes emerged. According to Creswell (2012), it is useful to see that researchers have several minor themes subsumed under the major theme.

Results and Discussion

Description of the case

The school studied in this research is a 55-year-old secondary school situated in a rural region of the south-west part of Bangladesh. It is 30 and 12 kilometers away from the district and upazila town respectively. The school was established in 1968 and went under Monthly Payment Order (MPO) by Bangladesh government in 1984. At present there is no practice of multiple shifts and multiple sections in the school. At the time of data collection, it had 368 students and 10 teachers. There are two academic buildings. One of them is three-storeyed and the other one is single storeyed which is quite old. There is a digital lab having 3 laptops and 7 desktops. Two classrooms of the school have got multimedia projector. There is no Wi-Fi connection in the school while the cellular data connection is extremely poor. For getting moderately good cellular data connection, teachers have to go to the roof top of the three-storeyed building. Because of the COVID-19 pandemic, the government of Bangladesh announced closure of all educational institutions on March 17, 2020. This school followed government order and was closed for 543 days from March 17, 2020 to September 11, 2021. The school resumed partially on September 12, 2021, with a reduced number of active school days. In response to a notable increase in COVID-19 transmission, the government again closed all schools on January 21, 2022, until resuming normal operations on February 22, 2022. During the pandemic time, the school has always attempted to comply with government directives. Detailed findings on the academic experiences, challenges and coping strategies of this school in the COVID-19 pandemic situation are discussed below. Pseudo names of the participant teachers and students have been used in the following section.

Academic Experiences and Challenges in COVID-19 Situation

The entire academic experience during the COVID-19 pandemic time was extremely hard and novel for both teachers and students

The head-teacher expressed that he struggled much for getting timely instruction from the government. As the pandemic was a completely new situation for him to deal with, he felt lost at times. Several other factors made it worse. In his words:

It was tough, very tough actually. As a head-teacher I was completely lost at the beginning. I was trying to cope up with the new situation but there were times when I was completely clueless. Later, government directives guided me. But there were several factors which made my task harder.

This study finds that all the other teachers (both male and female) also felt the same. Continuing academic activities during the COVID-19 pandemic was very challenging and completely new for them. One of the teachers of the school, Mr. Sarker said:

It was completely new for all of us. We didn't have any prior experience regarding this. Directions from the government and our head-teacher guided us but I feel that those were not enough (for continuing academic activities). And the fear of the pandemic made all these lot more difficult. I was scared; we were very scared.

The participant students of this study described their experience during the pandemic time in a similar way. They expressed that the entire academic experience during the COVID-19 pandemic time was extremely hard and novel for them. During the first phase of the data collection, Abir who is one of the participant students said, "The school has been closed for several months. I don't know when everything will be normal again. No...I don't study at all. My friends do the same. We don't know what to do." This finding is applicable for both male and female

students. Tripti who is one of the female student participants said, “The school has been closed for many days. This is quite new for me. I don’t know what to do.”

These findings are consistent with literatures as UNESCO (2022b) reports that the COVID-19 pandemic has significantly affected the education sector across the world. UNESCO (2022a) also reports that it affected more than 1.5 billion students and the most vulnerable students were hit the hardest.

The school was closed from March 17, 2020 to September 12, 2021 for 543 days which is one of the longest school closures in the world

The government of Bangladesh declared the closure of all educational institutions and like all other schools in the country this school followed this order. The head-teacher said:

From the beginning of the month of March, 2020 almost everyone was discussing about the closure of schools. There were several news regarding this. At last, our government declared the closure; I heard it from television news. Though our students also got the news from television and other sources, I along with my other teachers and staffs tried to convey the message to all of them.

Most governments around the world did the same in an attempt to minimize the spread of the virus and these nationwide closures have affected over 90% of the world’s student population which is over 1.5 billion learners in 165 countries (UNESCO, 2022c). This closure has seriously interrupted the functioning of the education system such as reducing learning, and restricting the activities of authorities, parents, and decision-makers (UNESCO, 2022b). UNICEF (2021) asserted that the associated consequences of such continuous school closures are learning loss, mental distress, missed routine vaccinations, drop out, increased rate of dropout, child labor, child marriage etc. and many of these consequences are already visible and many will continue to be felt in the years to come. This study also finds the same. Six among the twenty-four student participants have shared that they were not sure whether they would be able to continue their schooling after the pandemic is over. This study finds that the reasons of dropping out from school during the pandemic are not same for boys and girls. Student participants of this study asserted that a significant amount of their male peer have already engaged themselves in income-generating program outside of their home while at least 15-16 girl students from the school had been married off during the school closure which they felt may restrict them from coming back to school.

Both teachers and students experienced a sense of alienation during the school closure

Both the participant teachers and students have admitted that they have felt some sorts of disconnection throughout the time. The study finds that this finding is not gender specific, both male and female participants (teachers and students) felt the same. During the first phase of the data collection, Sumona who is one of the participant students said, “We are disconnected.we haven’t met our teachers and friends except who live in the neighborhood for a long time. I feel lost at times.”

This finding is consistent with literatures. According to Donnelly et al. (2021), school closure created lack of personal interaction between teacher and student. Tadesse et al. (2020) also finds that during this time the level of anxiety, depression disorders, and stress were high among the students.

The school has always attempted to comply with government directives though it faced difficulties in getting updated information regarding government orders because of poor cellular network connection

The government of Bangladesh took the decision of closing all the educational institutions temporarily from March 17, 2020 because of the pandemic. After a few months, a government order was made to organize online classes for the students. Then towards the end of the year 2020, order was made regarding subject-specific assignment. Then government finally took the decision of partial resuming of the schools from September 12, 2021. In response to a notable increase in COVID-19 transmission, the government again declared the closure of all the schools on January 21, 2022 and finally took the decision of resuming normal operations from February 22, 2022. This study finds that the school studied in this study has tried to follow all the mentioned directives from the government. The head-teacher said:

We have been following the government orders from the very beginning. I got to know about the orders from online meetings and through formal letters. I tried to disseminate the orders to my teachers, staffs and students in earliest possible time.

But due to various challenges, the school found it difficult to execute all the directives effectively. The head-teacher along with other teachers faced difficulties in getting updated information regarding government orders because of poor cellular network connection. In the words of the head-teacher:

But initially I suffered a lot in getting updated information due to poor cellular network. Sometimes I went to the rooftop of the school building and sometimes I went to the upazila town for getting better network. I also frequently contacted with head-teachers of other schools so that I can be updated. Poor network issues restricted me from getting regular access to official online meetings. Besides it kept interrupting me during the meetings. All of these were quite humiliating for me.

A report in *The Daily Star* by Islam (2023) reported that the status of mobile internet in rural Bangladesh is poor in general. Moreover, internet performance was negatively affected in Bangladesh during the pandemic while slow browsing (56 percent), low download speed (51 percent), and frequent disconnection (48 percent) were the most common underlying problems with internet access and users became more dissatisfied with the speed, reliability, and steadiness of their connections (Internet Society, 2022).

Online class started from September, 2020 but it was mostly ineffective due to several obstacles

Each and every teacher of this school organized online classes as per the directions from the government. The number of online classes was smaller in comparison to regular face to face classes. A shortened syllabus as well as a routine was provided centrally. Some of the teachers organized online classes from their home while the rest felt comfortable in organizing classes from the classrooms in the school. Initially, live classes on virtual platform like Zoom and Facebook were attempted. But due to very poor attendance, later decision was taken to switch to pre-recorded online classes. The participant teachers revealed that there was lacking in the dissemination of online classes. Mostly it was generalized dissemination through emailing to district secondary education office and submitting to central dashboard while targeted dissemination among the students of this school was unsuccessful. Using Facebook page of the school as the platform was tried but the reach was very low. This study finds that the teachers including the head-teacher felt that online classes were mostly ineffective in terms of ensuring learning of the learners. One of the teachers Mr. Karim said, “No...it (online class) was not very successful. I am afraid that only 5-10% students attended these classes. There were other challenges as well.”

Students expressed their experience regarding online classes in a similar way. None of the participant students attended live online classes while only three of them (two female students and one male student) viewed recorded online classes and the number of classes viewed by them is 2, 1 and 6 respectively. None of them except the last one searched for the classes rather watched it as it popped up in front of them while scrolling casually. All participant students acknowledged that online classes were mostly ineffective as it was tough for them to access and there was limited scope of teacher-students interaction.

This study finds that while engaging or intending to engage in online classes, both teachers and students encountered a variety of obstacles, such as lack of proper devices and required skill-sets, excessive cost of mobile data, poor network etc. Twenty-one students among the twenty-four student participants do not have smart devices needed for attending online classes in their home while three of the teachers do not possess smart devices. According to them, the most common reason of not having smart devices is financial constraints. This study finds that gender issue might be relevant here as the three students possessing smart devices are all male and two among the three teachers who do not possess smart devices are female.

All the participant teachers and students stated that they lack in the skills required for participating effectively in online classes. All of them agreed that the cost of mobile data is very high. In response to ‘why don’t you attend online classes regularly?’ one of the participant students named Anita said:

I do not have smart phone at my home. Sometimes I try to borrow devices from others. The cost of mobile data is also very high; my family can’t afford that. Moreover, I am not very skilled in this regard.

Teachers stated that in online class, unlike face-to-face class there was limited scope of teacher-students interaction which was completely new for them. Teachers also emphasized on their lacking in the required skills for arranging online classes and poor network issues. This study finds that there might be gender issues here as all female participant teachers expressed that they lacked in ICT skills and confidence in comparison to their male colleagues. Ms. Moumita who is a female teacher said, “Actually I don’t have any smart phone, I also don’t possess any laptop in my home. Besides, I don’t have much interest in digital devices. That’s why I am not very confident (regarding organizing online classes).”

All the participant teachers admitted that they just merely organized online classes and could not think about ensuring the effectiveness of the classes as the whole scenario was not supportive. They had to limit the duration of a class to 10-15 minutes as longer span of time would lead to larger file size which will be difficult to upload for poor network. Besides, they faced regular interruption during the class for network issue.

These findings are consistent with a number of contemporary literatures. Literatures show that along with different modes of distance learning, online class was used frequently during COVID-19 pandemic time and the findings regarding the challenges and effectiveness of it are quite similar for rural area of different developing countries (Tadesse & Muluye, 2020). Different studies by Datta (2022), Das (2021) and Khan et al. (2021) found that though online education was practiced on a large scale in Bangladesh during COVID-19 pandemic, but mostly it failed to achieve the desired level of effectiveness for several reasons. According to Ministry of Education (2019), ICT skills of the teachers and students in Bangladesh are not up to the mark yet. A report on the Daily Star titled ‘54% Bangladeshi rural households lack internet accesses: survey’ (2020, September 13) reported that majority of the households in rural areas of Bangladesh lack internet access for various reasons. A report in The Daily Star by Islam (2023) also asserted that there are complaints about poor mobile internet speed in rural Bangladesh. Meanwhile, Haq (2022) claimed that education during COVID pandemic cannot happen without robust and resilient internet infrastructure. He also added that low speed and poor internet quality results in putting people at risk of being left behind.

Telecasting distance learning classes on the National Television Channel was attempted but it failed to connect with the learners

In the later part of the year 2020, besides online classes, the government of Bangladesh took initiatives for telecasting grade and subject based classes on television channel. This study finds that though the teachers of this school informed the students about the classes, students hardly engaged themselves in it. This finding is similar for both male and female students. The main reasons are lack of motivation and not having access to the television. Besides, the schedule of these classes was unknown to majority of them. All the participant students knew that classes were being telecasted on television but they revealed that majority of them did not attend these classes. This study finds that almost half of the participant students don not have television set in their home which restricts their access to classes telecasted on television. A study by The World Bank (2021) found similar result. It found that 55 percent of grade nine stipend recipients did not have access to television while only 43 percent of children who had the access, chose to watch television learning programs. Literatures show that along with other modes, television class as a mode of distance learning was frequently used during COVID-19 pandemic and the findings regarding the challenges and effectiveness of it are quite similar for rural area of developing countries (Tadesse & Muluye, 2020).

Students submitted subject-specific assignments to the school which assured the participation of almost every student though it was completely new and challenging for both students and teachers

Towards the end of the year 2020, the ministry of education took the decision of using assignment method for the secondary level. A comprehensive schedule of submitting the assignments was provided centrally and the students were asked to submit subject-specific assignments to their school. The school studied in this study followed the same. It tried to disseminate the instructions regarding this method. Though the government tried to guide the teachers by providing instruction about it, it was challenging because it was a completely new task for them. All the participant students submitted a good number of assignments to the school. This study finds no significant difference among boys and girls in this regard. At the beginning while doing assignments, the students struggled much because it was a completely new task for them as well and they have not done this earlier. But later on, almost

all the participant students just copied from the readymade answers available in online and other sources when writing assignments. Both teachers and students acknowledged that doing assignments was not effective in terms of ensuring effective learning as it was mostly plagiarized. But they feel that assignment was a better strategy in comparison to online class as it succeeded to ensure the participation of almost every learner. However, almost all the participant students have admitted that they submitted the assignments as they heard that it was the requirement for getting promoted to the next grade. Literatures show that assignment as a learning method was frequently used during COVID-19 pandemic and the findings regarding the effectiveness and challenges associated with it are quite similar for rural area of different developing countries (Tadesse & Muluye, 2020).

The school resumed partially on September 12, 2021 but reduced number of classes did not enable effective learning

The school opened partially as directed by the Government order with a reduced number of active school days. All the participant teachers and learners felt that this curtailed number of classes was not enough for ensuring effective learning. Ms. Chowdhury, one of the teachers of the school said:

Reduced number of active school days means reduced number of classes which indicates less teacher-student interaction. It was not enough for ensuring learning of the learners. Besides, because of reduced number of school days there was lack of regularity and seriousness in the students.

Each grade had one or two offline school days weekly and only SSC candidates got four active days weekly. According to the Dashboards on the Global Monitoring of School Closures Caused by the COVID-19 Pandemic, partial opening of school was practiced in almost every country in some point of these pandemic days (UNESCO, 2022b).

Under government directives, the school schools on January 21, 2022 in response to a notable increase in COVID-19 transmission until resuming normal operations on February 22, 2022.

Coping Strategies and Innovations in COVID-19 Situation

This study finds that both teachers and learners of this school have tried several coping strategies and innovations during the tough period of COVID-19 pandemic

Teachers have assisted one another when they faced difficulties while organizing online classes. They lent their smart phones to their colleagues and if someone was having technical issues, others tried to help him/her. They revealed that in search of better network connection they went to rooftop of the school building and even to the upazila town for several times. In addition, they attempted to contact with the students and their parents through phone calls and in-person visits. They divide the students among them, collect phone numbers from school database and then made phone calls. All most all the teachers tried to monitor and motivate learners regarding online and TV class by visiting the students' home in his/her own and neighbor villages. Though they are not sure about the positive impacts from their efforts, they claimed that they tried to be connected with their learners in any form. Besides, even before getting the government order, when live online classes were having very low reach to the learners, the teachers of this school thought of switching to pre-recorded class. Moreover, when students were submitting assignments, the teachers of this school tried to ask relevant questions to the students so that they increased their seriousness regarding this.

The students of this school also practiced various coping strategies during this pandemic time. At the beginning of the pandemic as they were lost about their academic activities, they made some extra effort for continuing their learning. They also attempted to support one another in getting necessary information and doing academic activities. Besides, whenever they faced any difficulty while doing any academic activity, they sought assistance from their parents, elder siblings and other family-members. Sumon, a grade 7 student, who is one of the participants said, "Generally, I study on my own. But whenever I faced difficulties, my elder sister and my peers who lived in my neighborhood helped me. Sometimes I also contacted with my other peer through phone calls."

Tadesse and Muluye (2020) has got similar findings regarding teacher's efforts for contacting students during school closure and students' tendency to seek help from family members for continuing their academic activities during COVID-19 pandemic time.

Conclusion

The findings of this study have implications for policy maker, teachers, learners and other stakeholders. Any other educational institution having similar context can get insight from the findings. As discussed in the previous section, this study finds that both the teachers and the students experienced a sense of alienation during the school closure. So this study recommends that the policy makers as well as every respective school authority should take measures for ensuring the wellbeing of their mental health during such tough period.

This study also finds that both teachers and students faced a variety of obstacles such as lack of proper devices and required skill-sets, excessive cost of mobile data, poor network etc. while engaging in academic activities during the pandemic time. So this study recommends that policy makers may make efforts to minimize the challenges by offering financial aid to the teachers and students so that they can afford required digital devices and cellular data package. Policy makers may also take necessary steps for fixing network faults in the rural areas. This study also recommends that Government may take initiatives for organizing skill-building programs for both teachers and students focusing on the knowledge and skills needed for continuing academic activities in extreme situation like COVID-19.

As discussed in the previous section, this study finds that sometimes male and female participants' experiences were different from each other during the pandemic time. Policy makers may consider making some gender specific interventions like organizing counselling and training program, providing financial aids etc.

Besides, this study finds that both the teachers and learners have tried several coping strategies like asking for assistance from peers and family members, being innovative for getting connected with each other and for continuing academic activities during the tough time of this pandemic. If in future we have to face another wave of COVID-19 or different extreme situation like this, the findings can guide in assuming the probable challenges and coping strategies that can be considered.

Some findings of this study are based on recall of the situation by teachers and learners, which may create recall bias. To minimize this, data was collected in two phases. Some findings of this study are similar for both male and female participants while some are different. This study finds that gender issues might be relevant here which needs to be investigated more deeply in a future research. In this study, academic experiences, challenges and coping strategies of a rural Bangladeshi secondary school during the COVID-19 pandemic have been explored by conducting a case study. Further studies may be carried out on a larger scale. Besides, future research can be done focusing on schools situated in the urban areas of Bangladesh.

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**DOES FARMERS' EDUCATION AFFECT THE PROFITABILITY OF SHRIMP FARMING?
EVIDENCE FROM THE COASTAL REGION OF BANGLADESH**

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Abstract

This study explores the impact of farmers' level of education on the profitability of shrimp farming. The authors have collected data from a sample of 200 shrimp farmers in three districts in the southwest region of Bangladesh, namely Khulna, Bagerhat, and Satkhira, using a proportionate random sampling technique. The shrimp farmers' education and productivity status are investigated through descriptive statistics. The authors estimated a Cobb-Douglas Production Function (CDPF) to examine the effect of farmers' level of education on the profitability of shrimp farming. Using a Tobit regression model, this study tried to investigate the association between the educational attainment of farmers and their degree of knowledge in farm management. The study finds that the average level of shrimp production in southwestern Bangladesh is 425 kg per hectare, resulting from the absence of modern farming methods and a deficiency in adequate farming knowledge. The activity budget equation illustrates that farmers with higher education levels exhibit greater profitability compared to their less educated counterparts. The analysis of efficiency factors of production (EFP) indicates that farmers with higher education levels exhibit greater efficiency than their counterparts with lower education levels. The break-even point (BEP) analysis reveals that the average production volume, price, and the gher size in the study area outstrip the BEP threshold, suggesting that shrimp farming in this region is economically feasible. The analysis of field-level data reveals a strong association between farmers' level of education and their profitability, suggesting that higher levels of education among farmers have a substantial positive impact on their financial gains. It is evident from the study findings that knowledge of farm management plays a significant role in shrimp productivity. Therefore, the degree of farm management knowledge is affected by the education of the farmers. Consequently, this research suggests augmenting the accessibility of contemporary technology-driven farming methods and effectively utilizing information via a training initiative targeting shrimp farmers. Additionally, this study recommends offering incentives or credit opportunities to newly participating educated farmers.

Keywords: Farmers' education, Shrimp, Profitability, Farm management knowledge, Farming method.

Introduction

The shrimp farming practice has made remarkable strides worldwide, more intensively in Asian countries than in non-Asian countries due to favorable climatic conditions (Garlock et al., 2020). The aquaculture sector is experiencing rapid growth, accompanied by several transformations and stumbling blocks triggered by climate change and the expansion of international trade (Hossain et al., 2022). Shrimp farming plays an indispensable part in driving the economic growth of the coastal region of Bangladesh (Azad et al., 2009). The time frame from 2000 to 2020 experienced a substantial upsurge in the cultivation and export of shrimp in Bangladesh (Washim et al., 2020). Approximately 203,071 hectares of coastal shrimp farms produced an annual average of 75,167 metric tons of shrimp, or 235 kilograms per hectare (DOF, 2021). As Alam et al. (2005) indicated, shrimp production holds the second position in Bangladesh's economic sectors regarding its capacity to generate significant foreign currency, following the garment sector. The shrimp industry in Bangladesh is an important source of employment for rural people and plays an essential part in sustaining households across the country (Mondal et al., 2013; Ahmed et al., 2021; Tikadar et al., 2022). The shrimp industry has undergone significant transformations in terms of geographical

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coverage, output, and improvements in quality and marketing strategies (Hossain et al., 2013; Dhar et al., 2020). According to Hossain et al. (2013), it is evident that more extensive operations have the capacity to offer relatively high-paying employment possibilities.

Aquaculture is a rapidly expanding industry that offers an opportunity to improve livelihoods, ensure food security, and generate export earnings in several Asian nations (Washim et al., 2020; Hein, 2002). In the opinion of Feder et al. (1985), the education process promotes the development of a receptive mindset towards innovative methodologies. Numerous scholarly investigations, such as those conducted by Panda (2002), Alene and Manyong (2007), Adhiguru (2004), Ali and Kumar (2011), and Begum et al. (2013), have consistently demonstrated a worthwhile and preferable association between farmers' level of education and their propensity to accept new farming methods. According to Borthakur et al. (2015), the adoption behavior of a significant portion of farmers with lower education and skills is negatively affected by the degree of technical complexity.

According to Ali and Kumar (2011), the coastal region of Bangladesh exhibits a substantial proportion of educated individuals within the working-age population who are now experiencing unemployment. In the context of a developing nation, there is a persistent endeavor to generate job prospects for the substantial percentage of the educated working-age population that remains unemployed (Begum et al., 2013; Chowdhury et al., 2006). The proliferation of sustainable shrimp farming is a necessary prerequisite for the goal of sustainable socioeconomic development. The implementation of various technological advancements, the establishment of appropriate institutional frameworks to facilitate knowledge acquisition, and the systematic monitoring of environmental and social specifications are essential for addressing the identified challenges (Dierberg & Kiattisimkul, 1996; Primavera, 1997; Stonich & Bailey, 2000; Hein, 2002; Alam et al., 2005; Macusi et al., 2022).

The prevailing body of research on the beneficial impacts of education has mainly centered around agricultural yield, while the investigation of informal educational approaches remains relatively limited. There is an inchoate of comprehensive studies about the precise impact of farmers' education and farm management knowledge. The researchers have synthesized the knowledge acquisition process components by reviewing relevant literature (Paltasingh & Goyari, 2018; Marenya et al., 2003). The level of participation among educated farmers in shrimp farming in Bangladesh is comparatively lower than in other countries engaged in shrimp farming. This can be attributed to the limited productive efficiency and the absence of modern technology, resulting in lower profitability (Hein, 2002; Paez-Osuna et al., 2003; Chowdhury et al., 2006; Azad et al., 2009). Furthermore, it is essential to consider that farm productivity is significantly influenced by the level of farm management knowledge (Hossain et al., 2013; Nazu et al., 2021).

Recognizing the said gap, this study aims to analyze the effect of farmers' education on the profitability of shrimp farming. All kinds of visible and invisible education have been covered in the study concerning shrimp productivity. It is necessary to mention in this context that education has two components: (a) education for shrimp cultivators, which improves their skills and replaces their traditional attitudes with modern ones, which improves their innovative and allocative capabilities, and (b) research and training, contact with educated farmers and regular communication with local fisheries extension officer about shrimp production improves their new techniques of cultivation and new input as well (Begum et al., 2013; Ali & Kumar, 2011; Appleton & Balihuta, 1996; Devi & Ponnarasi, 2009). The broad aim was divided into two specific research questions, which are as follows:

- i) What is the association between farmers' education and the profitability of shrimp farming?
- ii) Does farmers' education enhance the level of farm management knowledge of the shrimp farmers?

Materials and Method

Sampling Technique and Data Description

The practice of shrimp farming in Bangladesh brings about a substantial influence on the socioeconomic status of coastal people. The majority of shrimp farms, accounting for 70 percent, are situated in the southwestern region of Bangladesh, specifically in the districts of Bagerhat, Khulna, and Satkhira. These farms contribute 77 percent of the nation's total shrimp production (DOF, 2021; Joffre, 2018). Farmers who are directly linked with shrimp cultivation are included in the sampling frame in the present study. The authors collected a list of all farmers from the fisheries extension office. The authors used the proportionate random sampling technique for collecting data from shrimp farmers that indicates each farmer has an equal chance to be a respondent concerning their numbers (Dhar et al.,

2020). A total of 200 sample farmers have been chosen from a population of 1,298 by following the proportionate random sampling equation (i).

$$n = \frac{NZ^2P(1-P)}{ND^2+Z^2P(1-P)} \dots \dots \dots (i)$$

In this context, the variables are defined as follows: n represents the sample size, N denotes the total number of farmers in the population, Z represents the confidence level, with a value of 1.96 for a 95% confidence level, P represents the estimated population proportion, set at 0.5 to maximize the sample size, and D represents the error limit, which is 10% or 0.1. The authors employed proportionate random sampling to select the necessary number of samples from the population, as indicated by Equation (i). The apportion of the sample size is presented in Table 1.

Table 1. Sample distribution

Districts	Upazila	Union	Population	Sample size
Khulna	Batiaghata	Batiaghata	52	35
Bagerhat	Rampal	Rampal Sadar	922	90
Satkhira	Assasuni	Shriula	324	75
Total	03	03	1,298	200

Source: Fisheries Extension Office, 2022

Analytical Techniques

This paper incorporates descriptive and econometric analysis to achieve its purpose. Descriptive statistics are employed as an initial approach to delineate and characterize socioeconomic status and production. The investigation of the factors that influence shrimp profitability is conducted through the utilization of the Cobb-Douglas production function (CDPF). Furthermore, the study applied a Tobit regression model to analyze the factors affecting farm management knowledge.

Cobb-Douglas Production Function

The authors used the Cobb-Douglas production function (CDPF) to examine the influence of production factors and farmers' education on shrimp productivity. The literature recommends utilizing a linear production function to assess the linear correlation between inputs and outputs (Asadullah & Rahman, 2009; Begum et al., 2013). The coefficients of a linear function exhibit a presumption of constant marginal productivity, indicating a limited degree of interaction between the inputs. Therefore, in order to address the limitations of the linear production function, the Cobb-Douglas production function emerges as a more favorable alternative (Reimers & Klasen, 2013; Pinckney, 1997). Equation (ii) depicts the production function of shrimp cultivators.

$$Q = f(X_i, \beta_i) + \varepsilon_i \dots \dots \dots (ii)$$

Where, Q = Farm Output, X_i = explanatory variables for i^{th} observation, β_i = estimated coefficient of the explanatory variables for i^{th} observation, ε_i = stochastic error terms

The empirical model of the Cobb-Douglas production function is represented in Equation (iii).

$$Q_i = \alpha_0 X_{1i}^{\alpha_1} X_{2i}^{\alpha_2} X_{3i}^{\alpha_3} X_{4i}^{\alpha_4} X_{5i}^{\alpha_5} X_{6i}^{\alpha_6} X_{7i}^{\alpha_7} X_{8i}^{\alpha_8} X_{9i}^{\alpha_9} e^{\varepsilon_i} \dots \dots \dots (iii)$$

The considered variables for the CDPF model are presented in Table 2.

Table 2. Variables for Cobb-Douglas production function

Variables	Symbol	Unit of Measurement
Explained Variable		
Farm Output	Q_i	BDT (Last year)
Explanatory Variables		
Gher size	X_1	Hectare
Pumping	X_2	BDT (Last year)
Fingerling's cost	X_3	BDT (Last year)
Insecticide cost	X_4	BDT (Last year)
Labor cost	X_5	BDT (Last year)
Lime cost	X_6	BDT (Last year)
Feed cost	X_7	BDT (Last year)
Transportation cost	X_8	BDT (Last year)
Farmer's Education	X_9	Year of Schooling

Source: Authors' Compilation based on literature survey, 2022

Activity Budget Equation

The measurement and comparison of profitability among various farm households and technologies is commonly conducted through an activity budget, as demonstrated by Rahman et al. (2013). Profit can be defined as the numerical outcome obtained by subtracting the total cost from the total revenue. To ascertain the profitability per hectare for each of the specified shrimp farming methods, as perceived by individual farmers, an algebraic equation might be formulated, which is as follows (equation iv):

$$\pi = TR - TC \dots\dots\dots (iv)$$

$$\pi = \sum (Q_y \cdot P_y) + \sum (Q_b \cdot P_b) - \sum_{i=1}^n (X_i \cdot P_{xi}) - TFC \dots\dots\dots (v)$$

Where, TR = Total Revenue; TC = Total Cost, π = Net returns from shrimp (BDT/ha); Q_y = Total quantity of (shrimp) outputs (kg/ha); P_y = Per unit prices of the shrimp (Tk/kg); Q_b = Total quantity of the concerned byproduct (kg/ha); P_b = Per unit prices of the relevant byproduct (Tk/kg); X_i = Quantity of the concerned i^{th} inputs; P_{xi} = Per unit price of the concerned input; TFC = Total Fixed Cost.

Efficiency Factors of Production

The authors used the allocation of efficiency factors of production (K_i) to examine the allocative efficiency of production factor utilization in the context of shrimp production. This analysis was conducted using the formula proposed by Marsudi and Zikri (2020):

$$K_i = \frac{\beta_i \cdot Y \cdot P_y}{X_i \cdot P_{X_i}} = \frac{\text{Marginal Production Value (MPV)}}{\text{Marginal Production Cost (MPC)} \dots\dots\dots (vi)$$

Where, β_i = coefficient of production inputs generated from Cobb-Douglas production function; Y = average shrimp production; P_y = average shrimp price; X_i = average quantity of production inputs, and P_{X_i} = average cost of production inputs. $K_i = 1$ demonstrates that the utilization of production factors is efficient; $K_i < 1$ refers to the inefficient utilization of inputs; and $K_i > 1$ means that the applied inputs are not efficient yet. In order to measure the surface area of a pond under break-even point (BEP) conditions, the authors relied on a break-even methodology as suggested by Marsudi and Zikri (2020):

$$\text{BEP of production volume} = \frac{\text{Total Production Costs}}{\text{Selling Price of Shrimp}} \dots\dots\dots (vii)$$

$$\text{BEP of production price} = \frac{\text{Total Production Cost}}{\text{Total Production}} \dots\dots\dots (viii)$$

$$\text{BEP of land pond scale} = \frac{\text{BEP of production volume}}{\text{Total production/Bigha}} \dots\dots\dots (ix)$$

Tobit Regression Model

In an effort to explore the second research question, several studies have suggested that obtaining knowledge of farm management has a beneficial effect on productivity (Huq et al., 2007; Kumar et al., 2012; Samal et al., 2011). The accumulation of knowledge related to farm management encompasses various aspects such as gher preparation, monitoring water quality, disease surveillance, disease control, post-larvae collection, and stocking density (Paltasingh & Goyari, 2018; Marenya et al., 2003; Alene & Manyong, 2006). The measurement of farm management knowledge is usually carried out using a three-point Likert scale, where a rating of 3 indicates high knowledge, 2 indicates medium knowledge, and 1 indicates low knowledge. To assess the farmers' degree of farm management knowledge, the study determined their rank by calculating the obtained score and maximum score for the individual households. The estimated Equation is measured as follows:

$$\text{Level of Farm Management Knowledge} = \frac{\sum \text{Obtained Score}}{\text{Maximum Score}} \times 100 \quad (\text{x})$$

Oladele (2005) used the Tobit model to find the determinants of farmers' discontinued technology adoption behavior. In this study, the Tobit regression model was constructed to examine factors that influence farm management knowledge in shrimp farming. Here, the dependent variable is farm management knowledge, and it is censoring data. Equation (xi) expresses the Tobit regression model.

$$y^* = \beta_i X_i + \mu_i \dots \dots \dots (\text{xi})$$

Where, $y = y^*$ if $y^* \geq 0$, $y = 0$ if $y^* < 0$,

Here, X_i = Explanatory variables, β_i = Coefficient of the explanatory variables, and μ_i = stochastic error term. The functional form of the Tobit model for estimating the determinants of farm management practice is illustrated in Equation (xii).

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \mu_i \dots \dots \dots (\text{xii})$$

The considered variables for the Tobit regression model are presented in Table 3.

Table 3. Variables for Tobit Model

Variables	Symbol	Unit of Measurement
Explained Variable		
Farm Management Practice	Y_i	Index value (Percentage)
Explanatory Variables		
Farming Method	X_1	Traditional = 1; Extensive = 2; Semi-Intensive = 3; Intensive = 4
Educational Status	X_2	Year of Schooling
Farming Experience	X_3	In years
Contact with Educated Farmers	X_4	Yes = 1, 0 = Otherwise
Training	X_5	Yes = 1, 0 = Otherwise
Access in FEO	X_6	Yes = 1, 0 = Otherwise

Source: Authors' Compilation based on literature survey, 2022

Marginal Effect

The marginal effect helps to understand the exact degree of relationship among variables. Using the marginal coefficient, the precise probability of the success variables was determined. The marginal effect was estimated by using Equation (xiii).

$$\frac{dp_i}{dX_i} = \frac{e^{\beta x_i}}{(1 + e^{\beta x_i})^2} \beta_i \dots \dots \dots (\text{xiii})$$

Results

Socioeconomic Characteristics of the Shrimp Farmers

Table 4 illustrates the socioeconomic status of the 200 shrimp farmers within the specified study area. The analysis of the age distribution shows that a majority (54.00 percent) of the farmers scrutinized are between the ages of 21 to 40, but a significant proportion (44.50 percent) are within the age range of 41 to 60 years. The mean age of the individuals engaged in shrimp farming is 42 years. The primary focus of this study is to deal with education. Extensive study indicates that education exerts a tangible as well as noticeable effect on productivity (Dhar et al., 2020).

The distribution of 200 individuals engaged in shrimp farming is portrayed in Table 4, categorized based on the level of education they have obtained. Out of 200 respondents, 55 percent of farmers were literate, and the remaining 45 percent were illiterate. The farmers, who were literate, only completed the primary level (1-5 classes) of formal education. Narrowly, we found that a large number of shrimp farmers are deprived of education due to the lower standard of living and poverty.

Table 4. Socioeconomic characteristics of the shrimp farmers

Variables	Frequency	Percentage	Mean	Standard Deviation
Age (in Years)				
21 – 40	108	54.00		
31 – 60	89	44.50	42.12	8.50
60 and above	3	1.50		
Educational Status (Year of Schooling)				
0	90	45.00		
1 – 5	32	16.00		
6 – 10	46	23.00		
11 – 12	19	9.50	4.58	5.06
13 – 16	10	5.00		
17 and above	3	1.50		
Family Size (in Numbers)				
1 – 3	61	30.50		
4 – 6	124	62.00	4.28	1.40
7 – 9	15	7.50		
Household Income (in BDT/Month)				
5,000 – 25,000	171	85.50		
25,001 – 45,000	28	14.00	19,345	7,809
45,001 and above	1	0.50		
Household Expenditure (in BDT/Month)				
5,001 – 20,000	169	84.50		
20,001 – 35,000	28	14.00	15,125	6,525
35,001 – 50,000	3	1.50		
Primary Earning Source of the Household (Dichotomous Choice)				
Shrimp Farming	176	88.00		
Otherwise	24	12.00		
Agricultural Land (in Hectares)				
0.00 – 0.75	138	69.00		
0.76 – 1.50	58	29.00	0.59	0.40
1.51 – 2.25	4	2.00		
Livestock Ownership (in Numbers)				
Yes	94	47.00		
No	106	53.00		
Engagement in Non-farming Activities (Dichotomous Choice)				
Yes	121	60.50		
No	79	39.50		
Observations (n)				200

The size of a household has a contingent impact on productivity. Table 4 shows that more than half (62.50 percent) of the shrimp farmer's family size varies between 4 to 6 members. The average shrimp farmer's household size consists of 4 and above members. Income is an essential factor determining shrimp farmers' socioeconomic status and Purchasing Power (PP). This proposition is supported by Rahman et al. (2013) and Dhar et al. (2020). The study findings indicate that the livelihood of shrimp farmers is far lower due to their sole dependency on shrimp farming which yields lower profitability resulting from lower production.

The research findings indicate that a significant majority (85.50 percent) of the shrimp farmer's earnings fall within the BDT 5,001 to BDT 25,000 monthly range. This can be attributed to factors such as reduced productivity and a high percentage of unemployment. This research conducted an analysis to determine the mean income of households involved in shrimp farming, which was found to be BDT 19,345, accompanied by a standard deviation of BDT 7,808.

It was noticed that approximately 50% of families do not possess any animals. The remaining 50% of households possess between 1 and 5 cattle. The average land ownership of shrimp farming households is 0.59 hectares, with a significant proportion of farmers possessing less than one hectare of agricultural land. Prior research has asserted that the size of a farm has a noteworthy influence on its output. The combination of constrained savings and limited access to credit facilities is likely to diminish the ability to make substantial investments, which in turn is often associated with lower levels of productivity. The presence of non-agricultural land contributes positively to the enhancement of household living conditions. On average, the shrimp farmers in the research area possessed 28 decimals of land.

As a consequence of curtailed shrimp production, a significant proportion of shrimp farmers derive their primary income from non-farming sources. It is found that 39.50 percent of the shrimp farmers rely only on shrimp production as their primary means of family income, without any additional non-farming income. On the other hand, it is noteworthy that the remaining 60.50 percent of shrimp farmers within the research region evolved their income from non-farming sources. It was noted that seasonal farmers were generally interested in a variety of non-farming professions due to the elevated levels of subsistence that they were required to maintain. (Paul et al., 2018).

Moreover, it is worth noting that a significant number of individuals involved in shrimp farming also partake in diverse agricultural practices, as evidenced by studies conducted by Goswami et al. (2002), Rahman et al. (2016), Hossain and Hasan (2017), and Islam et al. (2017). According to the study of Ali et al. (2014), the level of individuals' standard of living is decisively affected by factors such as the adequate sufficiency of their savings, their level of schooling, their non-agricultural occupations that generate income, and their possessions in the form of livestock.

Farming Methods and Productivity

The farming method constitutes an essential component of the differences in production perceived among the shrimp producers. In the study area, four distinct farming systems are observed. Semi-intensive and intensive farming practices represent contemporary technological advancements compared to conventional and extensive farming systems. The productivity level exhibits considerable variation due to variations in farming methods. Table 5 shows that 59 percent of the shrimp farmers cultivate shrimp based on traditional farming methods, while 10 percent have extensive farming methods. About 17.50 percent of farmers follow semi-intensive farming methods in their cultivation process, while 13.50 farmers have experienced intensive farming methods.

Table 5. Farming method and productivity

Farm Type	Frequency	Percent	Production (in KG/Hectare)	Profit (BDT/Hectare)
Traditional	118	59.00	261	61,927
Extensive	20	10.00	270	1,18,642
Semi-intensive	35	17.50	900	1,52,488
Intensive	27	13.50	642	1,54,114
Total	200	100.00	425	95828

Table 5 shows substantial productivity and profit differences among farming methods. Traditional farming methods exhibit comparatively lower output levels, with an average yield of 261 kilograms and a corresponding monetary value of BDT 61,927 per hectare. The farmers, who were engaged in extensive farming methods, achieved a per-hectare production of 270 kilograms and generated an annual profit of BDT 1,18,642. Farmers who implemented intensive farming methods achieved a per-hectare output of 642 kg and an annual profit of BDT 1,54,114. In this regard, farmers who adopted Semi-intensive farming methods maintained superior productivity compared to their counterparts, predominantly by using advanced technology, resulting in a per-hectare production of 900 Kg and an annual profit of BDT 1,52,488. The association between farming methods and productivity is bidirectional, and modern technology-based farming methods are more profitable than traditional farming methods (Asadullah & Rahman, 2009; Begum et al., 2013).

Differences in Net Returns between Educated and Less educated Farmers

An activity budget is widely used to portray the differences in profit or return between various entities. The authors provided evidence of the disparities in net returns between farmers with higher levels of education, defined as educated farmers, and those with lower education levels as less educated farmers. Table 6 demonstrates that farmers with higher education levels benefit more than those with lower education levels.

Table 6. Activity budget equation result

Variables	Less educated Farmers	Educated Farmers	Differences
Shrimp Production (Kg)	129	353	224##
Concerned Byproduct	0	0	0
Price of per Kg shrimp (BDT)	751	743	8#
Total Revenue (BDT)	97,231	2,67,463	1,70,232##
Total Variable Cost (BDT)	28,849	1,49,140	1,20,290#
Total Fixed Cost (BDT)	0	0	0
Net Returns (BDT)	68,381	1,18,322	49,941##

[Note: # = Less educated farmers gain; ## = Educated farmers gain]

Table 6 shows, there is a substantial difference in production between educated and less educated shrimp farmers. For less educated farmers, per hectare production is 128 kg, while educated farmers have 353 kilograms. The difference in productivity is 224.25 kg which is educated farmers gain. Shrimp farmers produce no byproduct. The price difference is BDT 8, which is less educated farmers gain. From the total revenue earning side, less educated farmers earn BDT 97,231 while educated farmers earn BDT 2,67,463 yearly. The difference between total revenue earned is BDT 1,70,232 which is gained by educated farmers. On the other hand, less educated farmers have a lower cost than educated farmers which is BDT 1,20,290. Less educated farmers gain the cost difference because most of them are traditional farming method adopters. The traditional farming method has low cost and low production, accompanied by no fixed cost.

In a nutshell, farmers with higher levels of education obtain net returns of BDT 1,18,322, while farmers with lower levels of schooling attain BDT 68,381. Educated farmers have achieved a net gain of BDT 49,941, signifying a disparity in returns. The data indicates that farmers with higher levels of education have a net return of BDT 49,941 greater than that of farmers with lower levels of education. The study's findings indicate that farmers with higher levels of education tend to achieve more profitability than their less educated counterparts. This assertion is substantiated by the research conducted by Pinckney (1997), Akber et al. (2017), Duy et al. (2022), Folorunso et al. (2021), and Huq et al. (2007).

Farmers' Education and Adopted Farming Methods

Farmers' education has various roles in shrimp production. Education helps farmers to understand diagnostic and implementation information of discovered technology in aquaculture. An educated farmer has more understanding of farm management knowledge in terms of gher preparation, disease monitoring, and water quality monitoring through decoding information about farm management practices. There exist four types of farming methods in the study.

Table 7 reveals that 59 percent of the respondents followed the traditional farming method last year. Regarding traditional farming, 66.1 percent are less educated among 118 farmers. In contrast, 33.9 percent of farmers are educated. For the extensive farming method, 10 percent (20 farmers) of farmers practiced extensive farming methods. In this study, 55 percent of the farmers were educated, while 45 percent were less educated. Furthermore, semi-intensive farming methods were practiced commercially in the Khulna district by 17.5 percent of the total respondents. They reported that 97.14 percent of farmers are educated, while only 2.86 percent are less educated. For intensive farming, 13.50 percent of farmers practiced intensive farming among the respondents, especially in the Satkhira districts, 100 percent of whom are educated.

Eventually, less educated farmers have faced myriad problems to cope with the modern technology-based farming method. Education is the staple requirement to understand written documents and farm management practices. However, illiterate farmers may be productive through the knowledge-sharing process of farm management knowledge. Training or cooperation with the fisheries extension office may meliorate illiterate farmers' perception to follow profitable farming methods.

Table 7. Education and adopted farming methods

Farming Methods	Less educated Farmers		Educated Farmers	
	Frequency	Percentage	Frequency	Percentage
Traditional	78	66.10	40	33.90
Extensive	11	55.00	9	45.00
Semi-intensive	1	2.86	34	97.14
Intensive	0	0.00	27	100.00
Total	90	45.00	110	55.00

Determinants of Shrimp Profitability

According to Table 8, there exists a significant relationship between the size of the gher and the productivity of farms. Assuming all other variables remain identical, a one-hectare increase in the size of the gher is associated with 0.64 percent increase in farm output per hectare, with a significance level of 1 percent. The subsequent studies support the conclusions. The studies conducted by Paltasingh and Goyari (2018), Marsudi and Zikri (2020), and Abdulai and Huffman (2014) are relevant to the topic under consideration. The variable of pumping cost exerts a favorable influence on shrimp productivity. Assuming all other factors remain the same, a 1,000 Bangladeshi Taka (BDT) rise in pumping costs is associated with a 0.12% increase in farm output per hectare. The statistical significance of the finding is observed at a significance level of 1 percent. Duy et al. (2022), Paltasingh (2016), Pinckney (1997), Paltasingh & Goyari (2018), Marsudi & Zikri (2020), and Abdulai & Huffman (2014) have all reported comparable findings. Pumping costs are typically associated with semi-intensive and intensive farming practices.

Table 8. Estimated parameters of Cobb-Douglas production function

Explanatory Variables	Coefficient	Standard Error
Ln (Gher size)	0.640***	0.084
Ln (Pumping)	0.124***	0.037
Ln (Fingerlings)	0.086*	0.045
Ln (Insecticide)	-0.037	0.027
Ln (Labor)	0.106**	0.043
Ln (Lime)	0.127**	0.049
Ln (Feed)	0.172***	0.035
Ln (Transportation)	0.017	0.045
Ln (Education)	0.121***	0.039
Constant	7.381***	0.478
Observations		200
R-squared		0.73

[N.B.: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, Ln = Logarithm]

The variable corresponding to the cost of fingerlings exhibits a statistically significant positive impact on overall shrimp productivity. Under the assumption that all other variables remain unchanged, a one percent increase in the cost of fingerlings leads to a statistically significant 0.09 percent increase in output per hectare, with a significance level of 10 percent. Marsudi and Zikri (2020), Nyagaka et al. (2009), Begum et al. (2013), and Kumar et al. (2012) have reported equivalent results. The variable representing the cost of lime is commonly utilized in the production process. The Cobb-Douglas production function (CDPF) estimates demonstrate that, under the assumption of other factors remaining constant, a one percent rise in lime cost leads to a 0.13 percent increase in farm output per hectare. The statistical significance of the result is observed at a significance level of 5 percent. The variable cost associated with feed is a factor in the production process from the initial to the final output stage. According to the Cobb-Douglas production function (CDPF), with other factors held constant, a 1,000 BDT rise in feed costs leads to a 0.17% increase in farm output per hectare. The observed results exhibit statistical significance at a level of 1 percent. The validity of this research's findings is supported by the works of Pinckney (1997), Akber et al. (2017), Duy et al. (2022), Folorunso et al. (2021), and Huq et al. (2007).

The primary independent variable in this model is the level of education among farmers, which has a statistically significant positive effect on agricultural output. In the context of the CDPF, with other variables held constant, a one percent increase in farmers' education is associated with a 0.121 percent increase in farm output per hectare. The statistical significance of the finding is established at a significant level of 1 percent. Previous empirical research has extensively investigated the notion of the influence of education on production, yielding consistent results. These findings are substantiated by the works of Duy et al. (2022), Folorunso et al. (2021), Nyagaka et al. (2009), Serin et al. (2009), Paltasingh (2016), Asadullah & Rahman (2009), Alene & Manyong (2007), Paltasingh & Goyari (2018), and Abdulai & Huffman (2014). The CDPF model has produced results free from multicollinearity, as confirmed by the VIF test. Additionally, any heteroscedasticity error has been addressed by the utilization of robust standard error estimates.

Efficiency Factors of Production

Farm productivity narrowly depends on its efficiency. When a farm needs lower inputs to produce a higher outcome, it is called efficiency. In this study, the degree of efficiency was measured by efficiency factors of production. Table 9 shows the degree of efficiency factors of production for both educated and less educated farmers. Furthermore, the Break-even Point (BEP) analysis is also presented in Table 9.

Table 9. Result of efficiency factors of production

Factors of Production	Coefficient (β)	Educated Farmers (EFP)	Less educated Farmers (EFP)
Pumping cost	0.11***	6.01	109.63
Fingerlings cost	0.09**	0.87	1.29
Insecticide cost	-0.043*	-1.98	-2.62
Labor cost	0.057	1.90	4.18
Lime cost	0.089*	8.30	13.39
Feed cost	0.178***	1.36	2.89
Transportation cost	-0.003	-0.16	-0.17
Mean EFP		2.33	18.37
BEP of Production Volume (Kg)			214.83
BEP of Production Price (BDT)			377.23
BEP of Gher Size (Hectare)			0.51

[N.B.: EFP>1 = Not efficient; EFP<1 = Not efficient yet; EFP=1 = Efficient; EFP = Efficiency Factor of Production; BEP = Break-even point]

According to the data in Table 9, it is evident that the marginal production and efficiency levels associated with the variables of pumping, fingerlings labor, lime, and feed exhibit positive values. This finding implies that the shrimp production within the designated study region has a positive association with adding each unit of production input. Conversely, insecticide and transportation costs exhibit a negative association denoting inefficiency.

Pumping cost is essential when a farmer follows a semi-intensive farming method. It is observed that most of the traditional farmers are less educated. This finding indicates that pumping cost is not significant for traditional farming. Previously, CDPF analysis shows that pumping cost is statistically significant at a 1 percent level. Still, it has

an impact on educated farmers who have followed semi-intensive or intensive farming methods. Overall, the pumping variable is not efficient in the study area.

The relationship between farm output and the cost of fingerlings is statistically significant at the 5% level, as shown in Table 9. However, the cost of fingerlings is inefficient for farmers with less education and is not yet efficient for farmers with more education. When insecticide cost has an unfavorable association with farm output, it is inefficient for producers of all levels of education. The variable labor is inefficient for educated and less educated farmers, but educated farmers tend to be more efficient than less educated farmers. The major factor is that variable feed is inefficient for educated and less educated farmers. However, educated farmers are more efficient than less educated farmers. The efficiency Factors of Production value of educated farmers is about nine times lower than less educated farmers' efficiency value. That indicates educated farmers are more efficient than less educated farmers.

The break-even Point (BEP) indicates that the study area's production volume is 214.83 kg per hectare. This production level does not benefit farmers economically, as the revenue generated is sufficient to support production costs. This condition is referred to as the break-even point. If a farm's produce falls below 214.83 kilograms, it will incur losses. In contrast, if a farm's output exceeds 214.83 kilograms, it will be profitable. In the region under study, the average farm output outweighs the break-even point. The BEP of production price also indicates that if a farmer sells their shrimp BDT 377 per kg, then they will not earn profit. This price-induced revenue is only able to cover the production cost. If a farmer sells below the breakpoint, then the farmer will suffer losses. If a farmer sells above the break-even point, then the farmer will earn a profit. The study inferred that the average market price for shrimp is above BDT 700 per kg. These findings indicate that the farmers sell their products twice the break-even point product price.

The break-even point of gher size of the study area is 0.51 hectares. Suppose a farmer cultivates in a gher size greater than 0.51 hectares. In that case, the farmer is economically benefitted compared to the farmers whose gher size is below 0.51 hectares, which asserts that it is an existing condition with traditional technology. Technology has upgraded rapidly. The semi-intensive and intensive farmers are more profitable in the study area.

Determinants of the Farm Management Knowledge

In this study, the authors try to find out the determinants that affect farm management knowledge in the study area. In this aspect, the authors introduced a Tobit regression analysis and considered the farm management practices as the explained variable. The result is illustrated in Table 10.

Table 10. Estimated parameters of the Tobit Regression Model

Explanatory Variables	Marginal Effect
Farmers' Education	0.677**
Farming Experience	-0.292
Contact with Educated Farmers	0.527
Access in FEO	14.750***
Participation in Fisheries Training	8.629***
Observations	200

[N.B.: *** $p < .01$, ** $p < .05$, * $p < .1$]

Table 10 illustrates the positive relationship between the level of education among farmers and their knowledge of farm management. Assuming all other variables remain constant, a one-year increase in education level is associated with a 0.667 percent rise in the score of farm management knowledge. This study suggests a noteworthy positive association between the level of education among farmers and their knowledge of farm management. A farmer with a higher level of education is more likely to comprehend and assimilate production-related information than a farmer with a lower level of education. The degree of significance for the farmers' education is statistically significant at a 5 percent level. Within the designated research area, it has been observed that farmers who had access to the fisheries extension office exhibit a farm management knowledge score that is 14.75 percent higher in comparison to those farmers who had no access to that office. The observed result reveals statistical significance at a level of 1 percent. Plausibly, the fisheries extension office may exert necessary information

regarding gher management, water quality monitoring, Stocking density, and other farm-related information which are beneficial to shrimp farming.

In a similar vein, farmers who have access to fisheries extension offices exhibit greater agricultural productivity compared to farmers who do not have such access. Ultimately, the farmers who underwent training exhibited a significant increase of 8.629 percent in their farm management knowledge scores, in contrast to their counterparts who did not receive any training. The observed results exhibit statistical significance at a significance level of 1 percent. This model has considered the factors of farmers' education and farming experience. The omission of additional variables was attributed to the issue of multicollinearity. In the field of aquaculture, the practice of farming is closely associated with the acquisition of farm management knowledge. The findings are corroborated by prior pertinent research conducted by Marsudi and Zikri (2020), Duy et al. (2021), Nyagaka et al. (2009), Begum et al. (2013), and Kumar et al. (2012).

Conclusion

Shrimp farming has emerged as the primary source of income for rural communities residing in the coastal region of Bangladesh. Shrimp aquaculture plays a substantial role in the sustenance of local communities and the advancement of regional economies. During the period known as the demographic dividend, a significant proportion of the working-age population with educational qualifications experienced unemployment. The government is endeavoring to establish work possibilities for its citizens. In contemporary times, farmers have increasingly engaged in cultivating shrimp on a greater scale, facilitated by comprehensive training and the acquisition of knowledge about environmental management strategies. According to the proposed hypothesis, a substantial positive association exists between levels of education and shrimp productivity. The authors endeavored to assess whether there was an association between the level of education among farmers and the productivity of shrimp. This study revealed that the level of education among farmers positively impacts both farm output and farm management knowledge. Following this, farmers who have received an education demonstrate a strong inclination to embrace farming techniques that yield significant profits.

Based on the research findings, the authors have proposed strategies to enhance shrimp productivity and farm management skills to foster socioeconomic growth and generate employment opportunities in the study area. To improve profitability, it is imperative to augment productivity and enhance farming techniques in the domain of shrimp farming. The government has the potential to offer incentives and establish training facilities for newly involved shrimp farmers with a higher education level, aiming to optimize their financial gains. The employment prospects of educated individuals will be enhanced by heightened awareness. Shrimp farming has a significant opportunity for generating employment possibilities on a broader scale. It is recommended that non-governmental organizations and investors prioritize their efforts toward developing shrimp farming by offering state-of-the-art technological infrastructure to enhance the capabilities of shrimp farmers.

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Conflict of Interest

The authors declare no conflicts of interest.

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