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Unveiling the nexus of macroeconomic factors on bank performance in Bangladesh

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ABSTRACT

The present study examines the nexus of macroeconomic factors on the banks performance in Bangladesh. It encompasses an analysis of 25 commercial banks, including both Islamic and conventional banks, spanning the period from 2012 to 2021. Employing the ordinary least square regression model, the study considers return on assets as the dependent variable, while the independent variables include GDP growth, inflation, and unemployment. The regression analysis reveals that the unemployment rate exerts a significant impact on the return on assets of banks in Bangladesh. In contrast, GDP growth and inflation do not exhibit a significant effect on the return on assets. Consequently, policymakers should account for the influence of unemployment rates on bank performance when formulating economic policies, emphasizing measures to reduce unemployment rates to enhance bank performance. This consideration is especially pertinent in the context of the COVID-19 pandemic, where policies aimed at preventing widespread unemployment could positively affect bank performance.

I. Introduction

When it comes to allocating a country's economic resources, commercial banks play a crucial role (Ongore and Kusa, 2013). Commercial banks play a crucial role in economic growth by supplying capital to investors and enhancing the country's financial development. (Otuori, 2013). Bangladesh, as a developing economy, has actively promoted the growth of its banking industry to foster economic development. Over the past thirty years, the country has experienced significant growth in its banking sector (Mahmood, 2019). The scheduled banks in Bangladesh are classified into four categories based on ownership structure: state-owned commercial banks (SCBs), specialized banks (SBs), private commercial banks (PCBs), and foreign commercial banks (FCBs). As of the fiscal year 2022, there were 61 scheduled banks were running in the country. By the end of December 2021, the total assets of the banking sector reached BDT 20,429.3 billion, marking an 11 percent increase from the previous year. Additionally, total deposits in the banking sector grew to BDT 20,429.3 billion in 2021, representing a 10.03 percent rise from BDT 13,797.93 billion in 2020. (Bangladesh Bank, 2023).

Although the growth of Bangladesh's banking sector is evident, understanding the factors that affect bank performance is crucial. It is widely acknowledged that macroeconomic factors play a significant role in determining the performance of banks (Akani et al., 2016; Combey & Togbenou, 1916; Guerrieri and Harkrader, 2021; Ishioro, 2023). The effectiveness of commercial institutions is influenced by a blend of internal and external factors. These factors are categorized as either bank-specific (internal) or macroeconomic variables (Ongore and Kusa, 2013). Internal factors pertain to the distinct attributes of individual institutions and are shaped by the decisions made by management and the board. Conversely, external factors encompass broader sector-wide or country-wide elements that lie beyond the control of any specific bank and impact the overall profitability of banks. (Ongore and Kusa, 2013).

Macroeconomic factors encompass the broader dimensions of the economy, including inflation, gross domestic product (GDP), national income, per capita income, exchange rates, interest rates, unemployment, and financial crises (Ozatac et al., 2018). This study explores how macroeconomic factors influence the performance of banks in Bangladesh, specifically examining GDP growth, inflation, and the unemployment

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rate. It places emphasis on Return on Assets (ROA) as the dependent variable, which is a critical measure of bank profitability and performance (Al-Mamun et al., 2014; Hong and Abdul Razak, 2015; Kanwal and Nadeem, 2013; Kiganda, 2014; Samad and Hassan, 2006; Simiyu and Ngile, 2015). Gross Domestic Product (GDP) growth stands as one of the prevailing macroeconomic indicators utilized to gauge cyclical output fluctuations within an economy (Sufian and Habibullah, 2009; Vejzagic and Zarafat, 2014). It is anticipated to affect a number of variables relating to the supply and demand for loans and deposits (Zhang and Daly, 2014). Higher GDP often results in increased savings, allowing banks to mobilize more resources and finance a greater number of investment projects, which could generate greater profits (Bashir, 2003). Inflation, defined as the rate of increase in the general level of prices for products and services, is another important macroeconomic factor. Banks frequently benefit from higher inflation rates through increased loan rates and subsequent revenue growth (Muda et al., 2013). Accurate inflation forecasting enables bank managers to adjust lending rates, potentially increasing profits more rapidly than operational expenses (Davydenko, 2010). This study also examines the unemployment rate, a crucial macroeconomic indicator and predictor of employment success (Jo et al., 2023). Numerous macroeconomic variables, including GDP growth, labor force dynamics, and inflation rates, exert long-term influences on the prevailing unemployment rate (Folawewo and Adeboje, 2017; Sahoo and Sahoo, 2019). Through its effect on operating expenses, particularly salaries, and the credit system of banks, unemployment can impact the performance of banks (Klein, 2013; Naruševičius, 2018).

This study endeavors to make a significant contribution to the existing body of knowledge by scrutinizing the present performance of commercial banks in Bangladesh while shedding light on notable pandemic-related occurrences. According to Islam et al. (2021), the COVID-19 pandemic led to a surge in prices across all goods. Long et al. (2022) conducted research investigating the correlation between the escalation of inflation and unemployment rates and the considerable downturn in GDP growth, industrial output, and investment. The study underscores the direct or indirect influence of macroeconomic variables on bank performance, particularly during periods when the COVID-19 pandemic exerts a similar impact. Consequently, the researcher aims to elucidate the repercussions of the post-pandemic macroeconomic environment on bank performance in this study. Findings of the research can significantly impact policymakers and stakeholders in the financial sector. When formulating economic policies, policymakers should consider the impact of unemployment rates on bank performance, with an emphasis on reducing unemployment rates to enhance bank performance. This observation holds particular relevance within the context of the COVID-19 pandemic, wherein policies crafted to mitigate widespread unemployment may yield favorable outcomes for the performance of banks.

The remainder of this study is organized as follows: Section 2 provides an extensive literature review. In Section 3, the conceptual framework and hypotheses are outlined. Section 4 delineates the methodology employed. Section 5 presents the empirical findings, while Section 6 concludes the paper.

2. Literature Review

The empirical literature thus far has yielded a plethora of divergent conclusions regarding the determinants of bank performance and the influence of macroeconomic variables on such performance. This study focuses on macroeconomic variables, with particular emphasis on unemployment, GDP, and inflation. The ensuing research offers substantiation supporting the conclusions of this work. Recent studies elucidate how macroeconomic factors, including GDP, unemployment, inflation, and Return on Assets (ROA), impact a bank's operational efficacy.

Banks are critical economic institutions in developing countries, and their performance is critical for a country's overall economic development (Eyüboğlu, 2016; Haralayya and Aithal, 2021). Assessing bank performance entails examining how effectively resources are used to achieve desired goals, and it uses a set of indicators to evaluate a bank's current state and ability to meet goals (Rengasamy, 2012).

A variety of research on economic elements, some of them including macroeconomic variables, influence bank financial performance (Asif et al., 2023; Brahmaiah, 2018; Kirimi et al., 2020; Petria et al., 2015; Işık et al., 2021, 2024a, 2024b, 2024c, 2024d, 2024e; 2024fIslam et al., 2024; Mamun et al., 2022; Islam et al., 2020; Islam et al., 2021; Islam et al., 2022; Islam et al., 2023a; Islam et al., 2023b; Rana et al., 2023; Işık et al., 2024c; Işık et al., 2024d Hasan et al., 2019; Rahman, 2019). Inflation, gross domestic product (GDP), national income, per capita income, exchange rates, interest rates, unemployment levels, and financial crises are all macroeconomic factors that affect banks performance (Bhattarai, 2017; Cetin et al., 2023; Neupane, 2020; Ozatac et al., 2018; Saeed, 2014; Simiyu and Ngile, 2015). These elements have a substantial impact on bank performance and success, and in times of crisis, they may exert influences beyond the organization's control (Dewi et al., 2019).

Several studies have been conducted to investigate the relationship between macroeconomic conditions and bank performance. Studies investigating the relationship between GDP and bank profitability have generally found a strong and positive correlation (Kosmidou et al., 2006; Kosmidou et al., 2005; Pasiouras and Kosmidou, 2007; Sufian and Chong, 2008). However, Khrawish (2011) reported a negative correlation between ROA and GDP in the Jordanian banking sector, while Sastrosuwito and Suzuki (2012) found an insignificant correlation between bank profitability and annual growth rate in the Indonesian banking industry.

Another key macroeconomic issue influencing bank performance is the rate of inflation. It was discovered to have a large negative influence on ROA and a significant favorable impact on ROE (Al-Homaidi et al., 2018; Brahmaiah, 2018; Keo, 2020). Molyneux and Thornton (1992) and Aburime (2008) discovered a positive and statistically significant relationship between interest rates, inflation rates, and bank profitability in their analysis. However, Bourke (1989) study found a negative association between inflation and bank profitability, implying that banks' ability to foresee the incidence of inflation plays a part in this inverse relationship. Other factors such as Social media marketing and inflation are interconnected in ways that influence both economic conditions and business performance. Effective social media marketing can drive consumer demand by increasing product visibility and desirability, which can contribute to inflation if demand outpaces supply. This increased demand can lead to higher prices, further driving inflationary pressures. On the flip side, inflation affects social media marketing by raising advertising costs, as platforms adjust prices in response to higher operational expenses (Asif et al., 2023; Dogru et al., 2023; Işık et al., 2021).

Additionally, inflation impacts consumer behavior, making them more price-sensitive and potentially reducing engagement with ads for higher-priced items. For businesses, this means that inflation not only raises marketing costs but also affects their overall performance by altering consumer purchasing power and demand, necessitating more strategic and efficient use of social media marketing to maintain profitability and consumer engagement (Alim et al, 2023; Ghosh et al, 2021; Ghosh et al, 2023; Ghosh et al, 2024).

The unemployment rate is gaining prominence in evaluating the financial performance of banking organizations. While previous research has suggested that the unemployment rate has a negative impact on financial performance (Baba and Nasieku, 2016), Dewi et al. (2019) discovered that the unemployment rate had no meaningful impact on performance. However, a particular study by Horobet et al. (2021) analyzed that, higher unemployment rates suggest decreased purchasing power, which might lead to a slowdown in economic activity, impacting bank financial performance.

Given these considerations, the interplay between macroeconomic variables and bank performance emphasizes the significance of knowing and controlling the larger economic landscape to ensure bank stability and success in supporting economic growth.

3. Framework Development
3.1 Dependent/response variable

Rao and Lakew (2012) assert that ratios, being unaffected by fluctuations in the general price level, are frequently utilized in banking literature as substitutes for the real value of earnings, with particular emphasis on evaluating bank profitability.

***Return on Assets*:** As described by Davydenko (2010), return on assets represents a financial ratio employed to gauge a bank's profitability concerning its total assets. This metric is derived by dividing the bank's post-tax profit by its overall asset base (Flamini et al., 2009). Return on assets, commonly denoted as ROA, stands as a prevalent measure for assessing a bank's performance or profitability (Al-Mamun et al., 2014; Hong and Abdul Razak, 2015; Kanwal and Nadeem, 2013; Kiganda, 2014; Samad and Hassan, 2006; Simiyu and Ngile, 2015; Rana and Al Mamun, 2024; Hasan et al., 2019; Rahman, 2019).

3.2.Independent/explanatory variables

GDP: Gross Domestic Product (GDP) stands as one of the most popular and extensively utilized macroeconomic indicators, serving as a comprehensive measure of all economic activities within a country (Sufian and Habibullah, 2009; Vejzagic and Zarafat, 2014). Positive economic conditions are anticipated to positively impact the demand and supply of financial services (Sufian and Habibullah, 2009).

Inflation: The current inflation rate, representing the rise in the consumer price index from the previous quarter, is employed as a proxy for anticipated inflation. A higher inflation rate is linked to increased costs and revenues (Muda et al., 2013). Inflation is characterized as a sustained general uptick in prices across an economy. The researcher predicts that in Bangladesh, where inflation is pervasive, this factor will play a crucial role in determining profitability. The impact of inflation on bank profits hinges on the bank's ability to anticipate it. By accurately forecasting inflation, managers can adjust loan rates more rapidly than operating expenses, thus enhancing profitability (Davydenko, 2010).

Unemployment: As indicated by Naruševičius (2018), the unemployment rate influences banks' operating costs since salary payments constitute a significant portion of these expenses. In situations of high unemployment, banks may delay or reduce salary payments. In low unemployment scenarios, workers may seek higher wages or commissions. Conversely, a high unemployment rate could lead to a downturn in the demand for bank loans.

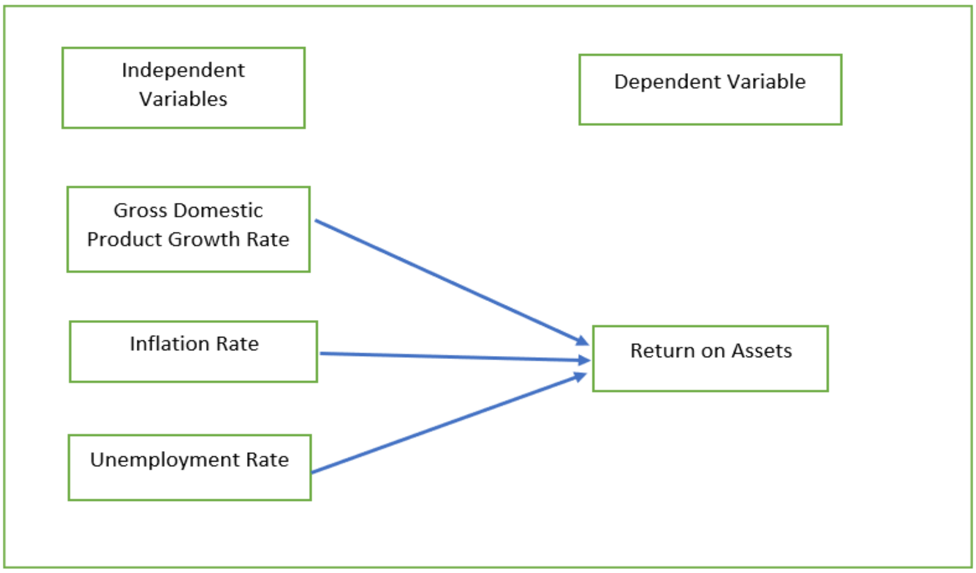

Figure 1: Conceptual Framework

3.3. Hypothesis

Based on the research questions defined in the study, the researcher developed the following hypothesis:
H1: There is a significant relationship between GDP and Return on Assets
H2: There is a significant relationship between Inflation rate and Return on Assets
H3: There is a significant relationship between Unemployment rate and Return on Assets

Hypotheses		Decision
H1	There is a significant relationship between GDP and Return on Assets	Not Supported
H2	There is a significant relationship between Inflation rate and Return on Assets	Not Supported
H3	There is a significant relationship between Unemployment rate and Return on Assets	Supported

4. Methods
4.1. Variable selection

Secondary data served as a pivotal source for conducting this study. The convenience sampling method was employed for data collection, with information sourced from the websites of 25 banks in Bangladesh, encompassing both Islamic and conventional institutions. The study's sample period extended from 2012 to 2021. Panel data extracted from the financial statements of the selected banks was utilized for analysis, with Return on Assets serving as the dependent variable and unemployment, inflation, and GDP growth as independent variables. The correlation between variables was assessed using the Pearson product-moment correlation. To determine the most appropriate regression model for the investigation, the researcher conducted the Durbin Wu-Hausman test as an endogeneity test (Durbin and Watson, 1951). After analyzing Durbin Wu-Hausman test researcher found no endogeneity problem. So, the researcher used Ordinary least squares (OLS) regression model because it will be applicable when there is no endogeneity problem exists (Wooldridge, 2010). The researcher utilized STATA and SPSS environments to analyze the data.

4.2. Regression Model

$$ROA = \beta0 + \beta1GDPG + \beta2INF + \beta3UNEP + \varepsilon$$

Where

- ROA is the dependent variable, representing the return on assets.
- GDPG, INF, and UNEP are the independent variables, representing the GDP growth, inflation, and unemployment rate, respectively.
- $\beta0$ is the intercept or constant term.
- $\beta1$, $\beta2$, and $\beta3$ are the regression coefficients or slopes of the independent variables.
- ε is the error term or residual.

5. Results
5.1. Descriptive Statistics

The descriptive statistics (Table 1) provides statistics for four variables: ROA, GDPG, INF, and UNEP, which were observed in a sample of 250 units. Descriptive statistics are essential for providing insights into the distribution of the variables in the sample, as well as for understanding their central tendency and variability.

The mean ROA was found to be 0.931, indicating that the typical return on assets for the sample is approximately 0.93. The standard deviation of 0.408 suggests that the returns on assets vary around this mean value and provides a measure of the variability of the ROA values in the sample. For the GDPG variable, the mean was found to be 6.44, with a standard deviation of 1.14. These values indicate that the average growth rate of GDP for the sample is around 6.44, and that the actual growth rates for the units in the sample may vary significantly around this value. The mean value for the INF variable was found to be 6.05, with a standard deviation of 0.66. This suggests that the average inflation rate for the sample is around 6.05, and that the inflation rates for the units in the sample may vary significantly around this value. Finally, for the UNEP variable, the mean value was found to be 4.55, with a standard deviation of 0.40. This suggests that the average level of unemployment for the sample is around 4.55, with the actual unemployment rates for the units in the sample varying around this value. In conclusion, the descriptive statistics table provides essential information for understanding the distribution of the variables in the sample, as well as for making inferences about the population from which the sample was drawn. These statistics can also be used for comparing the variables and understanding their relative magnitudes.

Table 1: Descriptive Analysis

	Minimum	Maximum	Mean	Std. Deviation
ROA	.00000	2.0200	.93100	.4082
GDPG	3.44800	7.8819	6.4440	1.1369
INF	5.5135	7.5304	6.0521	.66353
UNEP	4.12000	5.4100	4.5509	.3966

5.2. Regression and Correlation Results
5.2.1. Endogeneity Test

Durbin (score) chi2(1) = .117296 (p value = 0.7320)
Wu-Hausman F(1,220) = .114749 (p value = 0.7351)

The endogeneity tests conducted aim to discern whether certain variables within our model are endogenous or exogenous. Endogenous variables are those influenced by other variables in the model, whereas exogenous variables operate independently of other variables in the model. The null hypothesis (Ho) for these tests posits that the variables are exogenous, indicating they are not affected by other variables in the model.

The Durbin (score) test and the Wu-Hausman test are commonly utilized to assess endogeneity. Based on the provided results, both tests indicate a failure to reject the null hypothesis that the variables in the model are exogenous. Specifically, the Durbin (score) test statistic is 0.117296, with a corresponding p-value of 0.7320, which exceeds the significance level of 0.05, leading to the retention of the null hypothesis of exogeneity. Similarly, the Wu-Hausman test statistic is 0.114749, with a corresponding p-value of 0.7351, again surpassing the significance level of 0.05, resulting in the retention of the null hypothesis of exogeneity.

Overall, these findings suggest that the variables in the model are likely exogenous, indicating independence from other variables in the model and absence of endogeneity bias. This implies that no endogeneity exists.

5.2.2. Ordinary least squares (OLS) regression model

Table 2: OLS Regression Model

ROA	Coefficient	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
GDPG	-.024	.031	-0.76	.446	-.086	.038	
INF	.071	.046	1.54	.126	-.02	.161	
UNEP	-.255	.092	-2.77	.006	-.437	-.074	***
Constant	1.82	.775	2.35	.02	.294	3.347	**
R-squared	0.081		Prob		0.000		

**** p<.01, ** p<.05, * p<.1*

The findings from the regression analysis, as presented in Table 2, highlight a statistically significant correlation between the independent variable UNEP (unemployment rate) and the dependent variable ROA (return on assets) at a significance level of 1%. The negative coefficient (-0.255) suggests that an uptick in the unemployment rate corresponds to a decline in return on assets. This outcome resonates with previous research, which consistently demonstrates an adverse association between unemployment and bank performance (Biddle et al., 2009; Feldmann, 2012).

In contrast, the independent variables GDPG (GDP growth) and INF (inflation rate) do not exhibit statistically significant coefficients in the model, indicating a lack of significant relationship with return on assets in this particular analysis. However, it is noteworthy that the R-squared value of 0.081 implies that the independent variables included in the model explain only a small fraction of the variability observed in the dependent variable.

5.2.2. Correlation Analysis

The results of the correlation analysis in table 3 indicate that there are statistically significant relationships between the variables in the study. The correlation coefficients are reported in the correlation matrix below. The variable ROA (return on assets) has a positive correlation with itself (r = 1.000), as expected. This suggests that ROA is a reliable and consistent measure of the performance of the banks. The variable GDPG (real GDP growth) has a weak positive correlation with ROA (r = 0.052), indicating that there is a slight tendency for higher GDP growth to be associated with higher profitability. However, this correlation is not statistically significant at the 0.01 level. The variable INF (inflation) has a statistically significant positive correlation with ROA ($r = 0.205$, $p < 0.01$). This suggests that inflation may have a small but meaningful impact on profitability, such that higher inflation rates are associated with higher ROA. The variable UNEP (unemployment rate) has a statistically significant negative correlation with ROA ($r = -0.244$, $p < 0.01$), indicating that higher unemployment rates are associated with lower profitability. The negative correlation between UNEP and GDPG ($r = -0.583$, $p < 0.01$) suggests that higher unemployment rates are associated with lower GDP growth as well.

Overall, the results of the correlation analysis suggest that inflation and unemployment may have important impacts on profitability and economic growth in the context of the study. However, further research is needed to fully understand the nature and magnitude of these relationships, as well as any potential causal mechanisms that may be at play.

Table 3: Correlation Analysis

Variables	ROA	GDPG	INF	UNEP
ROA	1.000			
GDPG	0.052	1.000		
INF	0.205**	-0.220**	1.000	
UNEP	-0.244**	-0.583**	-0.304**	1.000

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

5.2.3. Discussion

The regression model outcomes reveal that among the three macroeconomic variables considered, only the unemployment rate (UNEP) exhibits a statistically significant negative impact on banks' return on assets (ROA). The negative coefficient associated with UNEP implies that an escalation in the unemployment rate is linked with a decrease in banks' return on assets. However, the model's R-squared value of 0.081 indicates that merely 8.1% of the variation in ROA can be explained by the included variables, suggesting the potential influence of unaccounted factors.

Conversely, the non-significant coefficients for GDP growth (GDPG) and inflation rate (INF) suggest that they do not exert a significant effect on banks' return on assets. These findings align with certain previous studies exploring the relationship between macroeconomic variables and bank performance. For instance, Feldmann (2012) observed a significant negative impact of the unemployment rate on bank performance, while the effect of GDP growth and inflation rate remained insignificant. Similarly, Demirgüç-Kunt and Huizinga (1999) found a negative effect of the unemployment rate on bank profitability, while the impact of inflation rate was deemed insignificant. To evaluate the hypotheses, t-values and p-values from the regression analysis were utilized. With a significance level of 0.05, failure to reject the null hypothesis (indicating no significant association) required a p-value greater than 0.05. Accordingly, the regression analysis supports the null hypothesis for GDP growth and inflation rate, signifying no significant association with ROA. Conversely, the regression analysis rejects the null hypothesis for the unemployment rate, indicating a significant association with ROA.

However, contrasting studies have identified a significant positive relationship between GDP growth and bank performance. For instance, Salas and Saurina (2002) demonstrated a positive impact of GDP growth on bank profitability, while Eichengreen and Gibson (2001) noted a positive effect on banks' credit quality. Several factors may account for the significant negative effect of the unemployment rate on bank performance. Firstly, a high unemployment rate can curtail consumer spending, subsequently reducing the demand for credit and financial services. Secondly, it can lead to a deterioration in loan quality as borrowers face heightened default risks. Thirdly, an elevated unemployment rate may escalate non-performing loans, adversely impacting banks' profitability.

In conclusion, the regression model underscores the significance of the unemployment rate in elucidating the variation in banks' return on assets. While these findings corroborate some previous studies, others have reported a positive effect of GDP growth on bank performance. The adverse impact of the unemployment rate on bank performance may stem from various economic factors, necessitating further investigation for a comprehensive understanding of underlying mechanisms.

6. Conclusion

In conclusion, this study delved into the correlation between bank performance, as measured by return on assets, and three key macroeconomic variables: GDP growth, inflation rate, and unemployment rate. The findings underscore that while the unemployment rate exerts a significant negative influence on bank performance, no significant impact was observed for GDP growth rate and inflation rate. These outcomes resonate with prior research on the interplay between macroeconomic factors and bank performance, although there have been discrepancies in findings across studies. The implications of these findings for policymakers and banking institutions are noteworthy. Policymakers may need to take into account the effects of macroeconomic factors on bank performance when devising monetary and fiscal policies. Similarly, banking institutions might need to adapt their strategies and risk management approaches in response to evolving macroeconomic conditions. However, it is important to acknowledge certain limitations of this study. The analysis is confined to a cross-sectional dataset, which limits the ability to establish causality. Moreover, the study only considers three macroeconomic factors, overlooking other variables such as interest rates, exchange rates, and governmental regulations that could also impact bank performance. Future research should strive to encompass a more comprehensive array of factors and employ longitudinal data to better ascertain causality.

In summary, this study offers valuable insights into the relationship between macroeconomic factors and bank performance. By gaining a deeper understanding of how macroeconomic factors influence bank performance, policymakers and banking institutions can make more informed decisions and enhance risk management practices.

6.1. Policy Implication

The study suggests that policymakers should consider the impact of macroeconomic factors, particularly the unemployment rate, on bank performance when making monetary and fiscal policy decisions. Policies that aim to reduce unemployment rates could potentially improve bank performance. On the other hand, policies that lead to high unemployment rates could negatively affect bank performance. For instance, during the COVID-19 pandemic, many countries have implemented policies to mitigate the negative impact of the pandemic on the economy, including measures to prevent widespread unemployment. These policies could potentially have positive effects on bank performance.

6.2. Practical Implication

Banking institutions can adjust their strategies and risk management practices in response to changes in macroeconomic conditions. For instance, during a period of high unemployment rates, banks could tighten their lending standards and reduce their exposure to risky borrowers. In contrast, during a period of low unemployment rates, banks could relax their lending standards and increase their exposure to borrowers with higher credit risk. Additionally, banks can hedge against macroeconomic risks by diversifying their portfolios across different economic sectors and asset classes.

6.3. Limitations

This study has some limitations that should be considered. First, the analysis is based on cross-sectional data, which limits the ability to establish causality. Longitudinal data would be required to establish causal relationships between macroeconomic factors and bank performance. Second, the study only considers three macroeconomic factors, and other factors such as interest rates, exchange rates, and government regulations may also have an impact on bank performance. Finally, the study only focuses on the banking sector in one country, and the findings may not be generalizable to other countries or industries.

Abbreviations

GDPG = GDP growth rate
INF = Inflation rate
UNEP = Unemployment rate
ROA = Return on Assets

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Visitors’ perception towards heritage museum management: An empirical study on Varendra research museum

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ABSTRACT

Assessing visitors' knowledge in heritage museums in Bangladesh is vital for enhancing cultural preservation, boosting tourism engagement, and improving educational outreach. The primary goal of this study is to assess the effectiveness of museum management based on visitors' knowledge. This paper presents a conceptual framework for visitors’ knowledge of museum in the eyes of management. It then examines a heritage museum in Bangladesh. In this quantitative research, we have collected data from 235 students who have visited Varendra Research Museum (VRM) at least once using random convenient sampling technique and the questionnaire is designed in structured way using 5-point Likert scale. The data was analyzed by conducting regression analysis and ANNOVA test using SPSS 22.0 version. It is concluded that management support, management communication, guide efficiency and display of objects play most important role to increase knowledge of the visitors. But the presence of a security system does not exert a noteworthy impact on visitors’ knowledge when integrated into the model. The current study will aid key stakeholders like museum administrators and policymakers in developing a clear understanding and practical application of the concept. Lastly, this study provides some valuable future research directions relating with museum management and knowledge perspective context.

I. Introduction

Tourism appeals on a number of authors’ consideration to look at its numerous apparatuses from local as well as intercontinental standpoints (Alim et al., 2022). It is a diverse area encompassing the artistic and scenic allure of a location, along with paleontological and historical sites, socio-political aspects, and infrastructure development. Museums, integral to artistic heritage, play a crucial role as heritage destinations and significant attractions for both domestic and international tourists in various destinations (Williams & Kelly, 2001; Jee, Ting, and Alim, 2019; Alim et al., 2021). The widely recognized definition of a museum, as provided by the International Council of Museums (ICOM), characterizes it as a non-profit, permanent institution serving society's development, accessible to the public. It acquires, preserves, researches, communicates, and exhibits the tangible and intangible heritage of humanity and its environment for educational, study, and enjoyment purposes (ICOM, 2007). Museums contribute substantially to the socio-economic development of a country by enhancing foreign exchange earnings and creating employment opportunities. In this line of discussion, Bangladesh has its unique paleontological and artistic heritage. Many historical places are the instances of its artistic and archaeological heritages. Such as Mahastangar, Paharpur Buddhist Vihar and so many historical places and paleontological museums witnessed the pride and achievements of the nation. Similar to museums in numerous other nations, those in Bangladesh can have a crucial impact on the economic development of the country, in addition to their artistic and historical importance. An extraordinary growth is observed in the revenue from tourism & travel sector in Bangladesh between 2001 and 2010 which is intended as 110%. More evidently, revenue earning in 2010 and 2001 was intended as 5562.70 million (BDT) taka and 2653.80 million (BDT) respectively (WTTC, 2010). Among others Varendra Research Museum, Bangabandhu Memorial Museum, National Museum, Ahsanmanzil Museum, Folk Art Museum, Zia Memorial Museum, Science Museum, Ethnological Museum, and Shilaidaha Kuthi Bari Museum are the imperative as well as prevalent museums in Bangladesh.

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The museums in Bangladesh have artistic and historical significance although most of them are suffering from diversified constraints. To get rid of the insignificant economic outcomes, the authorities should address the internal managerial issues as well as improve the commercial aspects by mediating, protecting, preserving all the entities of heritage museums with proper financial support to enhance the heritage values in this updated society (Shaw, 1992; Knudson, 2001; Mason, 2008; Russo, 2002; Schwab, 2011; Olinsson and Fouseki, 2019). The ability to attract new visitors is the vital constraint among others. To save the museums and many historical places, Bangladesh government has to develop appropriate policies and strategies to overcome the barriers and attract new visitors. Exploration of the influencing factors can contribute in the formulation of sustainable policy guidelines. In recent years, numerous research studies have been launched to investigate the factors influencing museum visit behavior (Kelly, 2001; Morris, 2007; Chan and Yeoh, 2010; Ranjanthran, and Mohammed, 2010; Brida, Disegna and Scuderi, 2013; Brida, Disegna and Vachkova, 2013; Dragicevic, Letunic and Pisarovic, 2013; Rajesh, 2013). Previous research generally indicates that psychological and attitudinal factors predominantly shape museum visit behavior (Brida, Disegna and Vachkova, 2013; Williams, 2009; Morris, 2007), along with physiological factors (Williams, 2009; Morris, 2007). Interestingly, studies comprehensively exploring this aspect by integrating a range of variables and dimensions of individuals' visit behavior are relatively scarce. Therefore, the heritage museum experience starts before the visit on the actual site and ends with the knowledge and reflections gathered from visiting the site (Kuflik, Wecker, Lanir, and Stock, 2015; Alabau-Montoya and Ruiz-Molina, 2019). This research thus looks at the present status of the individuals' museum visit behavior in Bangladesh with a particular focus on the exploration of the influencing factors which will help develop appropriate policy guidelines. This study analyses a recent data set of Bangladeshi individuals to examine museum visit behavior. The collection at the Varendra Research Museum includes stone and metal sculptures, paintings, epigraphs, terracotta plaques, coins, pottery, periodicals, books, weapons, as well as Bangla and Sanskrit manuscripts.

In Bangladesh, Museums are relatively underrated to consider management as an important part of their services which outlines three different activities such as recruitment system, entry motivation and the 'qualities of the incumbents' (Fopp, 1988). Therefore, museums tend to ignore to strengthen their managerial system to be legitimated because the concept still hides in museum dissertation that management is some outlandish action (Janes and Sandell 2007). The objectivity to the management scientifically should be appeared as the indicators of their performance by using statistics deceptively (Knell, 1999). So, a new management culture should be undertaken to overcome the problem. On the other hand, previous studies show that the effect of managerial activities on visitors' knowledge are examined in different context except Bangladesh (Gilmore and Rentschler, 2002; Moser, 2010; Davies, 2001; Alberti, 2005; Goulding, 2000; Cappa, Rosso, Capaldo, 2020). Therefore, the effect of heritage museum management on visitors' knowledge development in the context of Bangladesh is unexplored.

The primary inquiry addressed in the study is that what perception the museum visitors have in order to develop knowledge on heritage museum. A couple of specific questions also have been set for the study i.e. (1) Does management effort create an impact on visitors' knowledge? and (2) What factors affecting the visitors' knowledge during museum visit in the context of museum management? The primary aim of this study is to assess the effectiveness of museum management based on visitors' knowledge. The study encompasses additional specific objectives aligned with its overarching goal, such as investigating the demographics and interests of museum visitors, exploring the challenges and opportunities experienced by visitors, assessing the satisfaction levels of respondents regarding their museum visits, recommending the implementation of new technology to enrich the public's learning experience (Alim et al., 2023; Ali et al., 2024).

2. Literature Review

Effective management of a heritage museum can influence a visitor's knowledge in a concurrent manner. Heritage museum management involves overseeing museum resources or directorial objectives by engaging in diverse internal and external activities, fostering both short-term and long-term interactions with markets through bidirectional communication (Chan, Shaffer, and Snape, 2004). Consequently, internal performance relies on internal communication, interdepartmental collaboration, staff expertise and proficiency, and feedback mechanisms (Işık et al., 2024a; Işık, Ongan, and Islam, 2024; Işık et al., 2024d; Işık et al., 2024c). On the other hand, external performance is reflected by education, accessibility and communication (Gilmore and Rentschler, 2002). So, a managerial body must perform both internal and external performance effectively so that they can offer the visitors the best possible experience. Therefore, the factors affecting visitor experience from management perspective are management support, management communication, display of museum objects and guide efficiency.

2.1 Management support

Visitor learning varies individual to individual as people perceive their experience at their own. Their learning depends on varied previous experience and the state of mind during their visits (Falk, Moussouri and Coulson, 1998). So, the managerial decision must be made on the basis of the museum's strength as well as weakness along with the opportunity and threat it has in the market to develop the entire environment of its own. It is the duty of the museum director to address all the dimensions and take the necessary decision within the time frame (Overman, 2020; Alvarado et al., 2022; Ongan et al., 2022İ Asif et al., 2023; Cetin et al., 2023; Han et al., 2024; Long et al., 2024). However, custodial management decisions help to manage and develop the museum collection, standardize opening and closing time, maintain proximity of the precious collections and engage visitors in a better way (Ghosh et al., 2023). And marketing management emphasizes on creating environment that is visitor friendly, making proactive relationship between staff and visitors and approaching personally and emotionally with the visitors (Gilmore and Rentschler, 2002). The entire program is designed to satisfy the needs of the visitors (Akter et al., 2020). The whole program is developed systematically with the aim of using visual cues like symbols for representing departments and collections to give navigation and orientation to the visitors in a museum (Işık et al., 2015, 2017, 2018, 2020, 2021, 2022, 2024f, 2024g, 2024i; Micoli et al., 2020; Das et al., 2023;

Dogru et al., 2019, 2023, 2024; Karagöz et al., 2021, 2023; Koscak et al., 2023; Yan et al., 2024a, 2024b). Separating the departments like ancient collections, crafts, world culture and paintings with individual symbol and collections increases the efficiency of the management team and results in enhancing visitors' experience (Davies, 2001).

Thus, (H1) management support at heritage museums is positively associated with the visitors' knowledge.

2.2 Management communication

Traditionally the management is more conscious about fund management, exhibition arrangement, creative object focused. But recently, the trend of museum management has been shifted towards fulfillment of visitors needs and more emphasis on visitors' experience (Luo, & Ye, 2020). For that reason, communication plays a vital role from managerial perspective. It is assumed by some researchers that visitors come to the museums to gather either education or entertainment. Often visitors want to know vast information regarding numerous objects. (Thyne, 2001) Being a service organization, a museum has to maintain its physical aspects to orient, interest and involve its visitor. Therefore, the service delivery process needs to be a phenomenal as it affiliates the visitors to promote or motive others to visit. As a consequence, the service delivery process depends on education, accessibility and communication. (Gilmore & Rentschler, 2002) According to Gilmore & Rentschler (2002), education mostly depends on the core service of a museum along with the collections and different exhibition. And accessibility is related with the opportunity to use the non-abstract values with best possible service and alternatives of antic objects as a memory of the visit. So, management must emphasis on the components to ensure desired outcomes from overall offerings. Therefore, the museum management must have an effective internal communication system along with knowledgeable and cooperative staff contacting with each other through two-way communication by which the workforces can create a network with each level management for any emergencies or for any queries (Gilmore & Rentschler, 2002). In addition, the museums record feedback from the visitors and improve their service quality to fulfill visitors' desire (Vesci, Conti, Rossato, & Castellani, 2020). However, the feedback from managerial bodies helps to maintain a good internal communication system. Overall, the management maintains both internal and external communication effectively to enhance the visiting experience (Gilmore & Rentschler, 2002).

Thus, (H2) management communication at heritage museums is positively associated with the visitors' knowledge.

2.3 Display of museum objects

The museum objects are the visible products of the organization. Although objects are soundless in generic term, they provide sustainable in-depth learning in details (Alberti, 2005). The objects are displayed in an organized manner by which visitors understand the objects easily. The objects should have the capacity to create visitor knowledge. They are often considered as document of artistic discipline and the revolution of ideas. So, the museum collections are the combination of objects, texts and pictures representing by space, light and color (Daher et al., 2020). The accessibility of the objects grows visitors' interest to learn more about the history, cultures, science and also the concept of civilization (Moser, 2010). Moser (2010) also focused on the architectural structure of the building where the objects are kept, and the physical setting and the location of the museum are crucial in term of evaluation museum displays. The visitors perceived the objects depending on the space within the exhibition. The color, design and light of the museum objects play significant role in visitors' experience. Also, the label of the object is the fundamental document by which the visitors come to know about the objects and it increase more interest to the visitors to experience other objects to learn more (Zhao, Gao, Lu, Sun, & Cheng, 2021). In developed cities, the display of objects is integrated with animation presentation where the main collections are highlighted and the visitors select the objects that they want to disclose and easily discover all the information regarding the object within a second (Davies, 2001). The museum authority also raises the awareness of the main collections of the museum through website (Sironi, Calosci, & Ceccarelli, 2020). The authority maintains long term interaction with the visitors that facilitates museum by increasing number of visitors and also helps the visitors to explore knowledge. So, the objects create networks among the manufacturers, collectors, curators, scientists and visitors by their existence (Alberti, 2005).

Thus, (H3) display of museum objects at heritage museums is positively associated with the visitors' knowledge.

2.4 Guide's efficiency

The museum guides interact with visitors through direct, in-person communication (Ghosh, Parven, & Sakib, 2024). They furnish details about the museum's collections as well as information about the museum as a whole. The guides are often considered as "Embodied Conversational Agents" (Kopp, Gesellensetter, Krämer, Wachsmuth, 2005). The proactive nature is found in guides' characteristic with cognitive approach (Chiscano, & Jiménez-Zarco, 2021). The engagement, involvement, inner reflection, imagination, variation of stimulus and authenticity of the guide enrich the visitors learning and experience (Işık et al., 2024e). The engagement and involvement with the visitors help the guide to understand the visitors need (Ghosh, Alim, & Hossain, 2021). Sometimes, inner reflection and imagination provide visitors required information and as a result the visitors' knowledge is developed (Yousaf, & Fan, 2020). Variation of stimulus creates a meaningful subject as a whole and authenticity is perceived (Goulding, 2000). So, knowledge and information about museum as well as museum collection is the pre-determined success factor for a guide particularly for the visitors who visit museum for the first time. Otherwise lack of knowledge and information discourages visitors to visit the museum (Davies, 2001). The capability to understand the visitors' information requirements to fulfill their learning is the inner strength of the guides. Online communication with the museum's expertise helps all visitors to make plan visit by knowing relationship between museum and its collections (Davies, 2001; Lee et al., 2020). Davies (2001) further discussed that use of metaphor while

describing the museum objects eases the visitors to understand the background information about the collections. The managerial bodies make use of metaphor while communicating with visitors about the collections to enhance visitors' experience (Mason, & Vavoula, 2021).
Thus, (H4) guide's efficiency at heritage museums is positively associated with the visitors' knowledge.

2.5 Security system

Museum security stands as a crucial responsibility for museums. While the country boasts around one thousand museums safeguarding millions of invaluable antique artifacts, their unparalleled importance to our artistic and natural heritage is disproportionately overlooked in the government's agendas and priorities. This undervaluation extends not only to their security but also encompasses various other aspects (Feldman, 2020). Typically, relevant authorities become attentive and express concern only in the aftermath of museum thefts. Once the media attention subsides, these authorities tend to neglect follow-up actions and overlook essential precautionary measures related to museum security (Feldman, 2020). Several instances of thefts in museums nationwide have brought to light the deficiencies in museum security. The prevailing conditions in museum management acknowledge the necessity for a shift towards a more entrepreneurial approach (Rentschler, 2001). Nevertheless, the responsibilities of directors should be broadened to harmonize the advancement and conservation of creative artworks with the innovative administration of the museum as an organization oriented toward the market (Md Abdul, Rafijul, & Tusher, 2020; Islam et al., 2023). Additionally, museum staff must be ready to overcome the impacts of professional bureaucracy to facilitate the development of meaningful management and a fresh culture centered on visitor service. Certain professional staff members may adhere to conventional roles, prioritizing the preservation of collections over addressing the needs of visitors (Gilmore & Rentschler, 2002; Islam et al., 2024a) Despite the availability of numerous tools and techniques for museum security, the majority of museums do not implement all security systems simultaneously to ensure comprehensive museum security. Consequently, adopting an integrated museum security system that incorporates all available methods, including modern gadgets, allows for the establishment of a multi-faceted security system to ensure the full security of museums (Ekinil, Gorgadze, Provotorina, & Petrenko, 2020).

Thus, (H5) security system at heritage museums is positively associated with the visitors' knowledge.

2.6 Visitors' knowledge

The focus has been shifting towards visitors' behavior and museum innovation in recent time (Lanir et al., 2017; Yoshimura et al., 2014; Cappa, Rosso, & Capaldo, 2020). So, visitor sensing is important for the management to ensure better visitors' knowledge. Visitors' sensing is developed by engaging visitors during their visit at their will and by providing insight depth knowledge about the collections through appropriate museum atmosphere inside as well as ensuring financial and artistic sustainability (Cappa, et al., 2020). The knowledge of the visitors varies individual to individual. The knowledge is the combination of both previous and new experiences. The visitor's knowledge can be measured by a new approach called 'Personal Meaning Mapping (PMM)' by which it is determined that one visits museum to increase his/her knowledge in four ways – they are extent, breadth, depth and mastery of knowledge (Falk, et al., 1998; Grácio, Coutinho, Falé, & Sobreira, 2020). It is highlighted that more satisfying experience encompasses to capture more knowledge. And the satisfying visit starts with a successful promotional effort on museum and its collections (Islam et al., 2024b). However, the other factors for a good experience are proper program content, display of object in a more visible way and the capabilities of the managerial bodies (Davies, 2001). Within our visitor-sensing framework, visitors are incentivized to share data with museum managers not only to enhance their future personal experiences but also to enable museums to enhance their offerings and thereby expand their audience, ultimately benefiting the entire society (Cappa, et al., 2020).

2.7 Conceptual framework

Visitors' knowledge can be affected by many issues. From the management perspective, the possible managerial factors to develop the knowledge are management support, management communication, display of objects and guide efficiency. All the factors are interrelated and have direct effect on visitors' knowledge (See Figure 1 for the conceptual framework).

3. Methodology

A quantitative survey suggested by authors (Muniz et al., 2021; Trunfio et al., 2022) was conducted to gather data and assess the significance of the proposed relationships outlined in the conceptual framework. The measurement items on the used constructs were adopted from previous related studies (Gilmore & Rentschler, 2002; Moser, 2010; Davies, 2001; Alberti, 2005; Goulding, 2000; Cappa, et al., 2020). Each measurement item is analyzed using a five-point Likert scale, where respondents can express their agreement on a scale from strongly disagree (1) to strongly agree (5). The data were collected from the students who visit Varendra Research Museum at least once and Varendra Research Museum is one of the oldest museums of Asian sub-continent area using convenience sampling technique suggested by previous studies (Akter et al., 2020; Trunfio et al., 2022). Most of the respondents were business students as they can understand the managerial perspective more than other discipline students. On the other hand, the respondents visiting VRM gives more authenticity of the data representing the visitors of heritage museum. We received 235 usable responses, and performed multiple regression analysis, success factors regression model, ANNOVA test and coefficient statics using SPSS software 22.0 version. This was done by performing factor leading, reliability test, composite reliability, and average variance extracted, using different suggested threshold values.

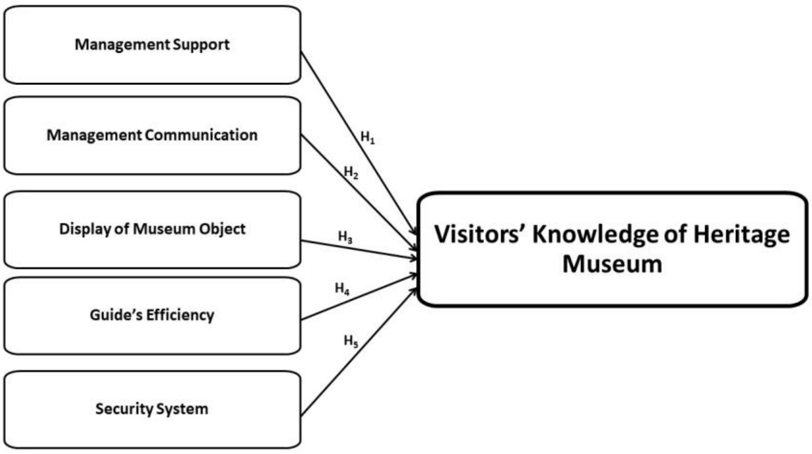

Figure 1: **Conceptual Framework**

4. Results and Discussions

4.1 Demographic profile

The survey inquired about respondents' demographic details, encompassing factors such as gender, age, education, profession, transaction history, and income. This data served to characterize and elucidate the sample under investigation, establishing a basis for the study's findings and conclusions. Subsequent sections delve into a comprehensive analysis of each demographic category.

Table 1: Demographic profile of the respondents

	Sex	Education	Age	Division	Last Visit	Number of Visit	Other Museum Visit	Study Group
Valid	235	235	235	235	235	235	235	235
Missing	0	0	0	0	0	0	0	0
Mean	1.34	1.33	2.09	2.79	3.67	1.91	1.24	2.03
Std. Dev.	.476	.479	.286	2.154	1.553	1.212	.427	.813
Variance	.227	.230	.082	4.638	2.411	1.470	.182	.662

4.2 Reliability test

The comprehensive reliability statistics reveals an overall instrument Cronbach's alpha of .850, surpassing the benchmark of .60, which is considered indicative of a reliable instrument (Gerber & Malhotra, 2008). Communalities, denoting the shared variance of variables, provide an overall estimate. It is anticipated that each variable's communality value should be .50 or higher, reflecting the explained variance in a variable through the extracted factors. The statistical and practical omissions of certain items are not unexpected. Given the dynamic nature of museum services, it is reasonable for not all tools to be statistically significant. As suggested by Gerber and Malhotra (2008), items with minimal loading or cross-loading may be omitted to enhance results in further analysis.

4.3 Multiple Regression Analysis

As previous scholars used regression analysis (Işık et al., 2024a; Işık et al., 2024b), we use multiple regression analysis so that we can demonstrate that when considering the success factors of management support, management communication, guide efficiency, display of objects, and security system as independent variables collectively, they seem to contribute to the development of visitors' knowledge. The correlation coefficient (r) is .557, indicating a moderate positive relationship. The coefficient of determination (r2) is .310, suggesting that 31% of the variance in visitors' knowledge can be explained by these factors. The adjusted r2, which accounts for the number of predictors, is .295. The regression model fits the data well, as evidenced by a significant F test = 60.121 at the $p < .001$ level.

Table 2: Model summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.557[a]	.310	.295	.60121
a. Predictors: (Constant), Display of Object, Management Support, Security System, Guide Efficiency, Management Communication				

Table 3: ANNOVA test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.254	5	7.451	20.613	.000b
	Residual	82.774	229	.361		
	Total	120.028	234			
a. Dependent Variable: Visitors' Knowledge						
b. Predictors: (Constant), Display of Object, Management Support, Security System, Guide Efficiency						

The coefficient statistics encompass the beta weights (slopes) of each variable and a constant reflecting enterprise success. The table presents both non-standardized and standardized coefficients, along with t values and significance levels. The collective impact of the independent variables can contribute to the development of visitors' knowledge in heritage museums in Bangladesh.

Table 4: Coefficients statics

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	All variables	.775	.285		2.723	.007
	Management Support	.167	.052	.188	3.226	.001
	Management Communication	.149	.059	.154	2.545	.012
	Display of Objects	.289	.062	.286	4.665	.000
	Guide Efficiency	.222	.057	.243	3.889	.000
	Security System	-.064	.055	-.073	-1.153	.250
a. Dependent Variable: Visitors' Knowledge						

In a combined model that considered the impact of all other factors, the data indicated that the presence of a security system was not a significant predictor of visitors' knowledge in a regression analysis which is not similar with the previous studies (Govindarajo and Khen, 2020; Chai-Arayalert, 2020; Zou and Yu, 2022). The probable reason behind this finding may be the history of the museum as the record of significant insecurity incidents are happened there. Management support, management communication, guide efficiency and display of objects are the best predicted for Visitors' knowledge in the museum which is similar with previous studies (Muniz et al., 2021; Trunfio et al., 2022).

Table 5: Result of the hypothesis

	Hypothesized paths	Coefficients Beta (β)	t	Sig.	Remarks
H1	Management Support & Visitors' Knowledge	.188	3.226	.001	Supported
H2	Management Communication & Visitors' Knowledge	.154	2.545	.012	Supported
H3	Display of Objects & Visitors' Knowledge	.286	4.665	.000	Supported
H4	Guide Efficiency & Visitors' Knowledge	.243	3.889	.000	Supported
H5	Security System & Visitors' Knowledge	.073	1.153	.250	Not Supported

Table 6: Rank of the Supported Factors

	Factors	Standardized Coefficients Beta (β)	t	Rank
H3	Display of Objects	.286	4.665	1
H4	Guide Efficiency	.243	3.889	2
H1	Management Support	.188	3.226	3
H2	Management Communication	.154	2.545	4

Previous studies have ranked the influencing factor on the dependent variable (Zoha et al., 2021). So, the data analysis reports that display of objects creates the most impact on visitors' mind to gain knowledge from the museums followed by guide efficiency, management support and management communication. So, the managerial bodies should emphasis on their efforts according to these priorities.

5. Conclusions and Recommendations

Upon evaluating the study's specific objectives and testing hypotheses through multiple regressions, several conclusions emerge, It is noteworthy that the study's findings align with the concept that visitors' knowledge in museums is influenced positively by all exogenous variables, both individually and collectively. However, in terms of significance, the standard regression weight indicates that management support, management communication, guide efficiency, and object display are the most crucial factors in enhancing visitor knowledge.

Beyond this, the current study will aid key stakeholders in developing a clear understanding and practical application of the concept. Furthermore, it has the potential to facilitate smoother museum operations, foster knowledge expansion, and enable the implementation of diverse marketing strategies to enhance visitors' knowledge. This understanding allows museums to better tailor their exhibits and programs to meet the specific interests and educational needs of their visitors, leading to more engaging and relevant experiences. Moreover, the study's findings can contribute to the expansion of public knowledge about heritage, fostering a more informed and appreciative audience. This is particularly important in the context of Bangladesh, where cultural heritage plays a critical role in national identity. Additionally, the study can inform the development of diverse marketing strategies that not only attract more visitors but also enhance their understanding and appreciation of the exhibits. These strategies can include targeted promotional campaigns, educational workshops, and interactive digital content, all aimed at enriching the visitor experience. Ultimately, this study has the potential to transform the way heritage museums operate, promote cultural heritage, and engage with the public, ensuring that they remain vibrant, educational, and culturally significant institutions.

5.1 Limitations and prospective avenue of future research

This study has some limitations. First of all, gathering information from individuals of all age groups is unfeasible. Therefore, the researchers have restricted the survey to include only students. The researcher has not conducted any interview with the managerial body of VRM. And the survey was conducted on only one museum while there are many more museums in Bangladesh. The study has delved into various issues that merit additional exploration. Subsequent research endeavors should aim to examine additional factors influencing visitors' knowledge within the realm of museum management. Future investigations could benefit from a blend of survey and case study methodologies.

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Empirical evaluation of the pollution haven hypothesis for seven largest emerging economies within the framework of the new global climate agreements

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ABSTRACT

This study aims to determine whether the Pollution Haven Hypothesis (PHavenH), which suggests the negative impact of the FDI on environmental quality (EQ), is valid in seven selected emerging market economies for the period 1990-2020. To achieve this goal, the CO2 emission (CE) model includes renewable energy consumption (REC) in addition to the FDI variable. The elasticity coefficients of the model, in which cross-sectional dependence (CSD) and slope heterogeneity were determined, were estimated by the Augmented Mean Group (AMG) method. The study found that FDI and REC positively influenced the EQ of the countries examined. The Dumitrescu-Hurlin (D-H) test results indicated a bidirectional causality relationship between FDI and CE. Additionally, a unidirectional causality was observed from REC to CE. These results suggest that both FDI and REC play a role in improving EQ. The results of the analysis show that the PHavenH, which expresses the view that FDI in the relevant countries causes environmental degradation (ED) in developing countries, is not valid. In other words, it confirms the Pollution Halo Hypothesis (PHaloH), which points to the finding that FDI improves EQ in the countries concerned. In this context, it has been concluded that REC has an important contribution to determining the validity of this hypothesis. The findings of the study suggest that it is essential to formulate policy recommendations aimed at boosting the production and utilization of renewable energy in the seven emerging market economies under investigation. Such initiatives can help enhance environmental sustainability and contribute to a cleaner and greener future for these countries.

I. Introduction

Within the framework of globalization, which refers to a process in which the transfer of capital, labor, and technology is free, as well as goods and services that have affected the world since the 1990s, countries have faced increasing competition (Zeibote et al., 2019). Adam Smith, who is considered the father of modern economics and whose competition is the basis of the capitalist system, mentioned in his book The Wealth of Nations written in 1776 that all countries would benefit through free trade and that countries should concentrate on what they can produce most appropriately (Chandra, 2004). International trade and FDI help in the formation of the global value chain by connecting all production processes from raw material extraction to manufacturing, design, R&D, and marketing. Therefore, a more efficient and competitive industrial structure is formed (Zhang, 2010). After the increasing production and trade in the global world, problems have started to be experienced in many areas.

The rapid increase in global air pollution and greenhouse gas emissions is having adverse effects on the climate. This situation has significant implications for environmental sustainability, ecosystem functionality, and societal well-being (Avcı et al., 2024). Energy is a crucial production factor in the process of economic development. However, growing concerns about global warming and climate change are exerting pressure to adopt an environmentally friendly approach to energy consumption. International initiatives highlight that the use of fossil fuels contributes to air pollution and greenhouse gas emissions, leading to environmental degradation. This situation can have adverse effects on the health and productivity of both current and future generations (Cetin and Yuksel, 2018). Therefore, it is critically important for global economies to develop innovative solutions to build a resilient and sustainable future in the face of environmental impacts, particularly with the rise of the Fourth Industrial Revolution. For example, policy measures aimed at renewable energy sources play a vital role in supporting sustainable development worldwide by reducing environmental pollution (Alvarado et al., 2022; Cetin et al., 2023a, 2024; Han et al., 2024).

In the face of many global challenges such as poverty, inequality, climate change, access to clean energy, and ED the world, the United Nations

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has set up Sustainable Development Goals (SDGs) to achieve a better and sustainable future for all. The interconnected 17 goals must be achieved by 2030 for a better world. Among these goals, climate change and ED caused by human activities threaten life on Earth, increase instability, and trigger global migrations if not urgently controlled. Since the first industrial revolution, new methods and inputs in production have increased production and welfare, but over time, excessive resource consumption and environmental pollution (EP) have started to create problems. In recent years, global issues like climate change, global warming, and EP have been integrated into the United Nations' SDGs, placing responsibilities on all countries. The Kyoto Protocol in 1997 (United Nations Climate Change) and the Paris Conference (UNFCCC) in 2015 are just a few of the agreements that aim to strengthen the worldwide effort to address the challenge of climate change to advance sustainable development. Protect the environment, and reduce all parties' greenhouse gas emissions. Therefore, the PHavenH, which is important for SDG and is based on the conclusion that FDI causes EP in developing countries, continues to be researched in the academic literature for different countries and periods. The validity of the PHaloH is confirmation of a win-win situation for developed and developing countries. On the other hand, the validity of PHavenH is a confirmation of a win-lose situation for developed and developing countries, while it points to a lose-lose situation for the whole world.

In this study, the PHavenH was tested using data from seven large emerging economies which are China, India, Brazil, Mexico, Turkey, South Africa, and Malaysia. Except for India, which is one of the countries with a low middle-income level, other countries are among the countries in the upper middle-income group. An emerging market economy refers to a country that wants to make investments that require large-scale financing to develop and industrialize rapidly. These countries need FDI in the development process and want to attract FDI to their countries by offering some advantages. Therefore, the validity of the PHavenH will be tested in these countries, which are in the process of becoming a developed economy. These countries are among the countries with both high growth rates and the highest CE in the world (Table 1).

Table 1: GDP growth (annual %) and CO2 emissions (kt)

	2000		2010		2022	2020
	GDP	CO2	GDP	CO2	GDP	CO2
Brazil	4,38	313670,8	7,52	397931,1	2,90	414138,8
China	8,49	3346525,8	10,63	8474922,7	2,98	10944686,2
India	3,84	937858,4	8,49	1659983	7,24	2200836,3
Malaysia	8,85	124355,9	7,42	199867	8,65	245139,3
Mexico	5,02	379176	4,97	462869,5	3,89	383131,4
South Africa	4,2	284463,3	3,03	425548,4	1,91	393241,6
Turkey	6,93	216396,5	8,42	297814	5,53	407406,2

Source: World Bank, World Development Indicators (WB-WDI).

Figure 1 shows the inflows of FDI to the countries included in the analysis over ten-year periods. Among these countries, FDI inflows to Malaysia, China, and Brazil are more common.

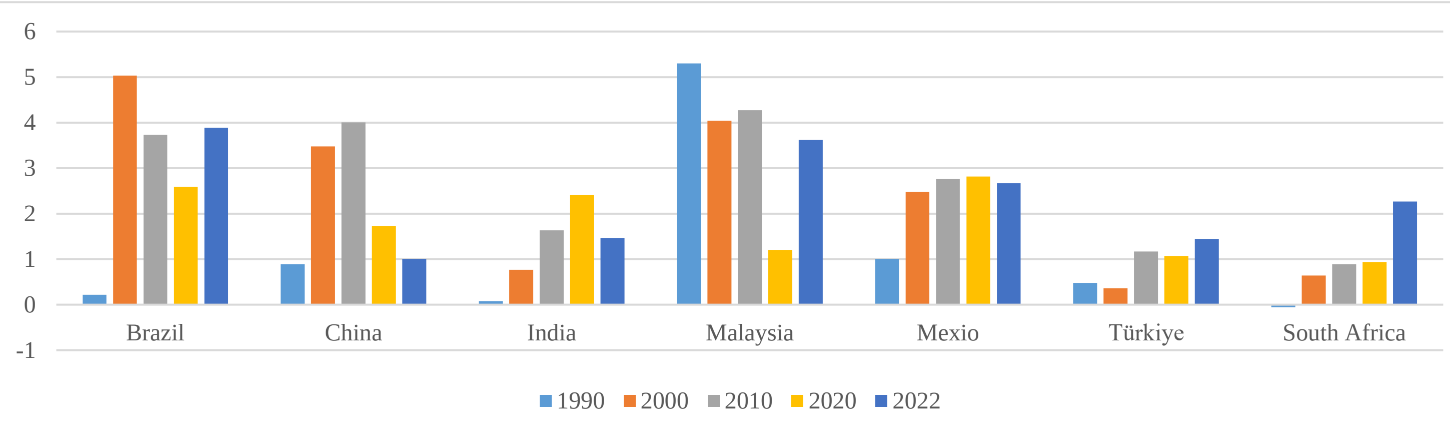

Figure 1: Foreign direct investment of Emerging Economies, net inflows (% of GDP)

Source: WB-WDI

The content of the study is as follows: First, the studies in the literature on this subject are included, and in the next section, the analysis results of the study and finally evaluation and policy recommendations are included.

2. Empirical Review of Literature

Countries that do not have sufficient technology, savings, and capital accumulation in the development process need foreign savings and technology. Although there is no clear conclusion on this issue in the literature (Goh et al., 2017), some empirical study results have established a positive relationship between FDI and economic growth (Sijabat, 2023; Ibhagui, 2020; Li and Liu, 2005). FDI has played an important role in the economic development of the ASEAN countries as a source of technological know-how and capital, especially in the 1990s (Diaconu, 2014).

Bashir et al. (2014) investigated the relationship between FDI and economic growth in their study of South Asian countries (Pakistan, India, Bangladesh, China, and Srilanka) and revealed the role of FDI in the rapid economic growth in China. Other countries, on the other hand, stated that if they develop their infrastructure, reduce their foreign debts, tax exemption, and create a stable political environment, they will accelerate their economic development like China by attracting FDI. For this reason, to attract FDI to their countries, they put forward more flexible practices, especially in terms of environmental regulations, to reduce costs. These countries, which provide incentives for foreign capital that wants to escape from environmental regulations in their own country and access cheap labor and natural resources, are referred to as pollution paradise or shelters.

The relationships between FDI and EP, often associated with CE, have been well-researched for different countries and different periods. Mixed evidence exists between FDI and carbon efficiency in the literature. We will review some of the existing literature summarizing the relationships between CE and FDI to explore the validity of the PHeavenH and PHaloH.

However, in recent years, global problems such as climate change and global warming, as well as EP, are included in the SDG of the United Nations and impose responsibilities on all countries. The Kyoto Protocol in 1997 (United Nations Climate Change) and the Paris Conference (UNFCCC) in 2015 are just a few of the agreements that aim to strengthen the global response to the threat of climate change to promote sustainable development, protect the environment, and reduce all parties greenhouse gas emissions. Therefore, the PHavenH, which is important for SDG and is based on the conclusion that FDI causes EP in developing countries, continues to be researched in the academic literature for different countries and periods.

Many previous studies have indicated a positive association between FDI inflows and EP (Ozkan et al., 2023) in China; Temurlenk and Logun (2022) in Turkey; Balsalobre-Lorente et al. (2022) in 5 EU countries; An et al. (2021) in 64 Belt the Road countries; Koksal and Cetin (2021) in Turkey. Shahbaz et al. (2019) found increased FDI to coincide with increased ED in the Middle East and North African countries. The result is also similar to that of Singhania and Saini (2021) for 21 developed and developing countries. The results also some studies found the validity of the PHaloH (Saqib et al., 2023) in 16 EU countries; and Balcılar et al. (2023) in 34 African countries. Finally, a stream of literature found mixed results between FDI flows and ED including Apergis et al. (2023) for BRICS countries, Ahmad et al. (2021) for Chinese provinces, Benzerrouk et al. (2021) for 31 developed and 100 developing countries. Finally, the relationship between FDI and ED has been investigated, yielding different results. Apergis et al. (2023) addressed this issue for BRICS countries, Ahmad et al. (2021) for Chinese provinces, and Benzerrouk et al. (2021) for 31 developed and 100 developing countries. The results of the empirical papers that investigate PHavenH in different countries and regions using different econometric methodologies are presented in Table 2.

Table 2: Literature review summary for PHavenH and PHaloH

Authors	Period of study	Country	Variables	Methodology	The main results
Ozkan et al. (2023)	1990-2019	China	Carbon efficiency, FDI, GDP, energy consumption efficiency, trade openness	Dynamic ARDL simulations approach	Verify PHavenH
Apergis et al. (2023)	1993-2012	BRICS countries	CO2, FDI, GDP, energy use, trade activities, total population, urban population, renewable energy consumption	GMM	Verify PHavenH for Denmark and the UK, and verify PHaloH for France, Germany, and Italy.
Saqib et al. (2023)	1990-2020	16 European countries	Ecological footprints, FDI, GDP, energy structure, renewable energy, human capital	CS-ARDL model	Verify PHaloH
Balcılar et al. (2023)	1990-2017	34 African countries	CO2, FDI, natural resource rents, GDP, renewable energy, government stability	SYS-GMM	Verify PHaloH
Balsalobre-Lorente et al. (2022)	1990-2019	Portugal, Ireland, Italy, Greece, and Spain	CO2, economic complexity index, FDI, renewable energy use, and urbanization	Dynamic OLS	Support PHavenH
Danish and Ulucak (2022)	1990-2017	China	CO2, energy innovation, FDI	Dynamic autoregressive distributed lag simulation method	Reject PHavenH
Danish et al. (2021)	1993-2010	China	CO2 emissions, per capita GDP, FDI, and nuclear energy	ARDL	Verify PHavenH
Ahmad et al. (2021)	1998-2016	28 Chinese provinces	CO2, FDI, GDP	CCE method	Support for PHaloH at aggregated levels and PHavenH at fifteen provinces
Singhania & Saini (2021)	1990-2016	21 developed and developing countries	CO2, GDP, energy consumption, trade openness, FDI, financial development, institutional framework	Panel GMM	Verify PHavenH, especially in developing countries

Koksal & Cetin (2021)	1985-2017	Turkey	Pollution limit, GDP, GDP squared, FDI, urbanization, financial development and ecological footprint	Multivariate regression analysis	Verify PHavenH
Balsolobre-Lorente et al. (2021)	1990-2019	PIIGS countries	FDI, renewable energy, urbanization, and carbon emissions	DOLS	Verify PHavenH.
Udeagha & Ngepah (2021)	1960-2016	South Africa	CO2 emissions, trade openness, FDI, energy consumption, industrial value-added, technological innovation	ARDL	PHavenH exists in South Africa.
Bulut et al. (2021)	1970-2016	Turkey	CO2, FDI, GDP electricity production	Cointegration	PHavenH is valid in Turkey.
Mike (2020)	1970-2015	Turkey	CO2, Nitrogen oxide, total greenhouse gas, FDI, GDP, energy consumption	ARDL	PHavenH exists.
An et al. (2021)	2003-2018	64 Belt the Road Host countries	CO2, GDP, Chinese outward FDI, people connectivity index, technology innovation	FMOLS, D-OLS, FE-OLS	Verify PHavenH
Benzerrouk et al. (2021)	1980-2016	31 developed and 100 developing countries	CO2, trade openness, FDI, and GDP	Panel GMM	PHavenH is valid in developing countries and PHaloH is considered for developed countries.
Sahin, Gokdemir & Ayyıldız (2019)	1990-2015	Turkey	CO2, FDI, industry value-added, trade	Cointegration- VECM	PHavenH is valid for Turkey.
Shahbaz, Balsalobre-Lorente and Sina (2019)	1990-2015	MENA countries	CO2, GDP per capita, FDI, and biomass consumption	GMM	Verify PHavenH
Mert et al. (2019)	2001-2014	26 European countries	CO2, GDP, renewable and non-renewable energy utilization, FDI	Panel ARDL approach	Verify PHavenH
Shao et al. (2019)	1982-2014	BRICS and MINT countries	CO2, GDP per capita, energy consumption, trade openness, and urbanization	Panel group mean fully modified ordinary least squares	Reject PHavenH
Destek & Okumus (2018)	1982-2013	Ten newly industrialized countries	Real income, FDI, energy consumption, ecological footprint	Panel data	There is a U-shaped relationship between FDI and ecological footprint.
Mike & Kardaslar (2018)	2000-2015	102 countries	Three different pollution indicators (CO2, NO2, and total greenhouse gas), FDI, GDP, and energy use	Panel GMM	PHaloH is valid for low-middle-income, upper-middle-income, and high-income countries. PHavenH is valid for low-income countries.
Shazbaz et al. (2015)	1975-2012	High-, middle-, and low-income countries	FDI, CO2, GDP, energy consumption	FMOLS	Verify PHavenH
Solarin et al. (2017)	1980-2012	Ghana	CO2, GDP, urban population, energy consumption, renewable energy consumption, fossil fuel energy consumption, institutional quality, urbanization and trade openness	ARDL	PHavenH does exist in Ghana.
Sun et al. (2017)	1980-2012	China	CO2, energy use, financial development, trade openness, economic freedom, FDI, GDP	ARDL	PHavenH is valid in China

Zeren (2015)	1970-2010	USA, France, United Kingdom, and Canada	CO2, FDI	FMOLS- CCR cointegration	PHavenH is only valid for Canada. PHaloH is valid for the USA, France, and the United Kingdom.
Merican et al. (2007)	1970-2001	The ASEAN-5 nations	CO2, GDP, manufacturing value-added, FDI	Time series ARDL	PHavenH is valid for Malaysia, Thailand, and the Philippines.

3. Dataset and Methodological Framework

This study investigated the effect of Foreign Direct Investment (FDI) and Renewable Energy Consumption (REC) on Carbon Emissions (CE) for the period 1990-2020, focusing on seven developing countries: China, India, Brazil, Mexico, Turkey, South Africa, and Malaysia. The analysis period was selected based on the availability of data for these countries. As indicated by the literature review, carbon emissions were chosen as the dependent variable due to their significant share in greenhouse gas emissions (Cetin and Ecevit, 2015) and their role as an indicator of environmental pollution. To test the Pollution Haven Hypothesis (PHH), REC was included as an independent variable alongside FDI. REC is a variable frequently encountered in the literature (Solarin et al., 2017; Mert et al., 2019; Balsalobre-Lorente et al., 2021; Balsalobre-Lorente et al., 2022; Cetin et al., 2023b). The predicted logarithmic model is as follows:

$$lnCO2_{i,t} = \beta_0 + \beta_1 lnFDI_{i,t} + \beta_2 lnREN_{i,t} + \varepsilon_{i,t} \quad (1)$$

The variables depicted in Equation 1 are defined in Table 3.

Table 3: Definition of Variables and Sources

Variable Name	Definition	Sources
$lnCO_2$	CO2 emissions (kt)	WB-WDI
lnFDI	Foreign direct investment, net inflows (% of GDP)	WB-WDI
lnREN	Renewable energy consumption (% of total final energy consumption)	WB-WDI

It is very important to detect the existence of CSD in panel data at the first stage of econometric analysis in order to decide which of the first or second generation unit root test. Pesaran (2004) CD statistics is used to detect the existence of CSD N(0,1) for N →∞ and T sufficently large. The CD test statistic is as follows:

$$\mathrm{CD} = \sqrt{\frac{2\mathrm{T}}{\mathrm{N}(\mathrm{N}-1)}}\left(\sum_{\mathrm{i}=1}^{\mathrm{N}-1}\sum_{\mathrm{j}=\mathrm{i}+1}^{\mathrm{N}}\hat{\rho}_{\mathrm{ij}}\right) \sim \mathrm{N}(0,1)\mathrm{i},\mathrm{j} \quad (2)$$

The term $\hat{\rho}_{ij}$ denotes the correlation for each residual series obtained from simple regression estimates.

Before proceeding with the model estimation, testing the homogeneity of the slope parameters is essential. Tests for homogeneity were conducted using the delta tests Blomquist and Westerlund (2013). This test can give stronger predictions against varying variance and serial correlation in regression errors. As a result of the test, the acceptance of the H_1 reveals that the series are heterogeneous. This test is shown in Equations 3, 4, and 5 (Shahbaz et al. 2023; Ullah et al., 2023):

$$\Delta_{HAC} = \sqrt{N}\left(\frac{N^{-1}S_{HAC} - k}{\sqrt{2k}}\right) \quad (3)$$

$$S_{HAC} = \sum_{i=1}^{N} T(\hat{\beta}_i - \hat{\beta})'(\hat{O}_{iT}V_{iT}^{-1}\hat{O}_{iT})(\hat{\beta}_i - \hat{\beta}) \quad (4)$$

$$\hat{\beta} = \left(\sum_{i=1}^{N} T\hat{O}_{iT}V_{iT}^{-1}\hat{O}_{iT}\right)^{-1} \sum_{i=1}^{N} \hat{O}_{iT}\hat{V}_{iT}^{-1}X_i'M_T y_i \quad (5)$$

This study utilized the CADF test developed by Pesaran (2007). The CADF regression is as follows (Baltagi, 2013):

$$\Delta y_{it} = \alpha_i + \rho_i^* y_{i,t-1} + d_0\bar{y}_{t-1} + \sum_{j=0}^{p} d_{j+1}\Delta\bar{y}_{t-j} + \sum_{k=1}^{p} c_k \Delta y_{i,t-k} + \varepsilon_{it} \quad (6)$$

The existence of cointegration between series was investigated by the residual-based cointegration methods of Kao (1999), Pedroni (2004), and Westerlund (2005). In addition, Westerlund's (2007) cointegration test was also used in this study. In this test, the H_0 that asserts there is no cointegration between the variables is tested against the the H_1 by determining whether the error correction coefficient is equal to zero. In this approach, the Pt and Pa statistics test the H_1 that the panel as a whole is cointegrated, as opposed to the H_0, which suggests that there is no error correction; The Gt and Ga statistics test the heterogeneous H_1 that error correction is involved for at least one of the constituent units of the panel the error correction model is as follows (Persyn and Westerlund, 2008):

$$\Delta y_{it} = \delta_i' d_t + \alpha_i(y_{it-1} + \beta_i' X_{it-1}) + \sum_{j=1}^{pi} \alpha_{ij}\, \Delta y_{it-j} + \sum_{j=0}^{pi} \gamma_{ij}\, \Delta X_{it-j} + e_{it} \tag{7}$$

After determining the CSD, slope heterogeneity, and cointegration relationship in the panel data, long-term estimation was made with the AMG estimator developed by Eberhardt and Teal (2010) and Eberhardt and Bond (2009). The two-stage process inherent in this method is shown in equations 8 and 9:

$$\Delta X_{it} = \delta_i + \beta_i \Delta Y_{it} + \gamma_i A_t + \sum_{t=2}^{T} \delta_i \Delta D_t + \varepsilon_{it} \tag{8}$$

$$\hat{\beta}_{AMG} = N^{-1} \sum_{i=1}^{N} \hat{\beta}_i \tag{9}$$

The causality test of D-H (2012) gives consistent results in heterogeneous panels with CSD. This test is shown in equation 10 (Dumitrecu and Hurlin, 2012):

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \beta_{ik}\, y_{i,t-k} + \sum_{k=1}^{K} \gamma_{i,k}\, X_{i,t-k} + \varepsilon_{it} \tag{10}$$

4. Empirical Findings and Evaluation

4.1. Summary statistics and correlation analysis results

In Table 4, the variable with the highest value in all of the summary statistics is lnCO2. The variable with the lowest value is the lnFDI variable, except for the skewness value. When the correlation between the variables is evaluated in Table 4, a positive correlation exists among lnFDI, lnREN, and lnCO2.

Table 4: Summary statistics and correlation matrix

	lnCO2	**lnFDI**	**lnREN**
Mean	13.166	1.378	2.796
Median	12.870	1.500	2.695
Maximum	16.208	2.866	3.969
Minimum	10.908	-.060	.672
Std. Dev.	1.183	.679	.820
Skewness	1.028	-.276	-.375
Kurtosis	3.426	2.108	2.449
Obs.	217	217	217
lnCO2	1.000		
t-Statistic	-		
lnFDI	.125	1.000	
t-Statistic	1.853***	-	
lnREN	.318	-.259	1.000
t-Statistic	4.926*	-3.943*	-

Note: *, **, and *** represent significance at 1%, 5%, and 10% levels, respectively.

4.2. CSD and slope homogeneity test results

The results of the CSD test concerning the variables analyzed are displayed in Table 5. According to the results of the CD test developed by Pesaran (2004) in Table 5, the H_0, which states that there is no CSD, is rejected. The results obtained show that there is CSD for all variables.

Table 5: CSD analysis results

Variables	CD-test	P-value
lnCO2	24.198*	.000
lnFDI	4.008*	.000
lnREN	16.441*	.000

The slope homogeneity test results of the estimated model are shown in Table 6. The results show that the H_0, which expresses the existence of slope homogeneity, will be rejected, so the slope coefficients in the model are heterogeneous at the 1% significance level.

Table 6. Blomquist and Westerlund test results

	Model 1
$\tilde{\Delta}$	3.870* (.000)
$\tilde{\Delta}$adj	4.193* (.000)

4.3. Unit root and cointegration test results

The results of the CADF panel unit root test in Table 7 indicate that all variables are stationary at the I(1) level for both models.

Table 7: CADF test results

Variables	CADF for constant		CADF for constant & trend	
	I(0)	I(1)	I(0)	I(1)
lnCO2	-1.913	-3.238*	-1.886	-3.156*
lnFDI	-1.741	-2.403**	-2.324	-2.896**
lnREN	-2.016	-2.341**	-2.464	-3.540*

Note: *, **, and *** denote significance at 1%, 5%, and 10% levels, respectively.

In the study, Kao (1999), Pedroni (2004), and Westerlund (2005) cointegration analysis were performed before moving on to the long-term prediction. In Table 8. It is seen that there is a cointegration relationship between the variables at the 1% and 5% importance levels for all tests in the Kao (1999) cointegration analysis. In the Pedroni (2004) analysis, only the Modified Phillips-Perron t-test confirms the cointegration relationship at the 5% significance level. In Westerlund's (2005) cointegration analysis, there is a cointegration relationship. Finally, in the Westerlund (2007) test, the Gt test statistic confirms the cointegration relationship.

Table 8: Cointegration analysis.

Westerlund (2007)	Z-value	P-value
Gt	-56.978*	.000
Ga	2.807	.998
Pt	4.686	1.000
Pa	1.353	.912
Kao (1999)	Statistic	P-value
MDF t	2.317*	.010
DF t	3.370*	.000
ADF t	3.521*	.000
UMDF t	1.834**	.033
UDF t	2.335*	.009
Pedroni (2004)	Statistic	P-value
MPP t	1.651**	.049
PP t	.616	.268
ADF t	1.102	.135
Westerlund (2005)	Statistic	P-value
Variance Ratio	2.209*	.013

Note: The cointegration tests lessen the effect of CSD structure.

4.4. Long-term and causality test results

AMG estimators provide unbiased and more efficient estimates in the presence of cross-section depenency and slope heterogeneity (Eberhardt and Bond 2009). Table 9 gives the AMG estimation results for the panel-wide. The effect of the lnFDI variable on the lnCO2 variable was negative and statistically significant. A 1% increase in FDI results in a 0.019% decrease in lnCO2. In other words, FDI in seven developing countries have an improving effect on EQ. According to the panel-wide results, the PHavenH does not apply in the countries concerned. This result has emerged parallel to the results of numerous studies conducted in the literature (Balcılar, 2023) for 34 African countries, Saqib et al. (2023) for 16 European countries, Shao et al. (2019) for BRICS and MINT countries and Mike and Kardaslar (2018) for different income group countries except for low-income group). On the other hand, the effect of the lnREN on the lnCO2 is negative. A 1% increase in lnREN indicates a 0.602% reduction in lnCO2. Therefore, REC improves EQ. Table 9 shows that the EQ improvement effect of REC is higher than FDI.

Table 9: AMG Estimation Results

	Coefficient	P-Value
lnFDI	-.019*	.008
lnREN	-.602*	.001
Constant	14.646*	.000
Wald $\chi 2$	18.83	
Prob > $\chi 2$	.000	
RMSE	.037	
Number of Observations	217	
Number of Countries	7	

In Table 10, when the country-specific AMG forecast results are evaluated, FDI reduces EP in the Indian, Brazilian, and Malaysian economies. Therefore, the PHaloH is valid in these countries. On the other hand, FDI causes ED in South Africa. Therefore, in this country, the PHavenH applies.

In Table 10, the country-specific AMG forecast results indicate that FDI reduces EP in the Indian, Brazilian, and Malaysian economies. Consequently, the PHaloH is valid in these countries. Conversely, in South Africa, FDI leads to ED, suggesting that the PHavenH applies in this context. These results are similar to those of Apergis et al. (2023) for BRICS countries, Ahmad et al. (2021) for Chinese provinces, and Zirverouk et al. (2021) are similar to the results of their analysis for 31 developed and 100 developing countries. Another country-specific result is that REC has an improving effect on EQ in all countries included in the analysis. It can be said that renewable energy is an important factor in reducing CE in these countries. As Çetin et al. (2023) pointed out, renewable energy is important in reducing EP. Similar results are found in this direction in the literature (Alvarez-Herranz et al., 2017; Magazzino et al., 2022; Chen et al., 2023; Karimi Alavijeh et al., 2023) and therefore the increase in environmentally friendly energy investments in terms of EP in a way that supports the PHaloH will have beneficial results for the sustainable development of all countries.

Table 10: Country-Specific AMG Estimation Results

Countries	lnFDI	lnREN	Constant
China	-.023 (.208)	-.668* (.000)	16.996* (.000)
India	-.031* (.015)	-1.183* (.000)	17.938* (.000)
Brazil	-.049* (.000)	-1.380* (.000)	17.546* (.000)
Mexico	.035 (.110)	-.553* (.000)	13.953* (.000)
Turkey	-.036 (.168)	-.254* (.000)	12.636* (.000)
South Africa	.025** (.042)	-.336* (.000)	13.355* (.000)
Malaysia	-.082* (.023)	-.302* (.000)	11.960* (.000)

Note: The *p*-values are given in parentheses.

The analysis from Table 11 using the D-H panel causality test revealed bidirectional causality between lnFDI and lnCO2, and unidirectional causality from lnREN to lnCO2.

Table 11: Dumitrescu-Hurlin test results

Hypothesis	W-Stat.	Zbar-Stat.	p-value	Causality
lnFDI⇔lnCO2	14.148	5.055*	0.000	lnFDI↔lnCO2
LnCO2⇔lnFDI	14.451	4.267*	0.000	
lnREN⇔lnCO2	16.513	5.630*	0.000	lnREN→lnCO2
lnCO2⇔lnREN	10.086	1.380	0.167	

The symbols →, and ↔ indicate a unidirectional and bidirectional, respectively.
The optimal lag length is selected by AIC.

5. Concluding Remarks and Policy Suggestions

In the process of globalization, the liberal idea of laissez-faire, laissez-faire, in line with the classical doctrine, has become the dominant view in the world after the 1990s. We observe that during this process, capital moves freely between countries to areas it finds profitable. Reasons such as cheap labor force, foreign capital incentives, and more flexible environmental regulations can be listed among the factors that create this profitable environment.

However, many reasons such as excessive use of resources due to production, energy use due to fossil fuels, trade openness, and urbanization lead to EP. Within the framework of global warming and climate change, global environmental agreements aim to encourage countries to be environmentally sensitive and focus on activities that will reduce global warming. Environmentally sustainable growth strategies hold significant importance, particularly within the United Nations' SDG framework. The laissez-faire, laissez-faire policy of liberal ideology may face restrictions in terms of environmental regulations. The PHavenH states that dirty production sectors shift their production to countries with more flexible practices in terms of environmental standards. The development of production technologies in these sectors will be an environmental gain both for the countries they go to and for the whole world, and the PHaloH will be valid.

Based on the analysis results, the impact of the lnFDI on the lnCO2 was found to be negative. A 1% increase in lnFDI results in a 0.019% reduction in lnCO2. In other words, FDI in seven developing countries have an improving effect on EQ. According to the panel-wide results, the PHavenH is not valid in the relevant countries. On the other hand, the effect of the lnREN on the lnCO2 is negative. A 1% increase in lnREN indicates a 0.602% reduction in lnCO2. In this study, when the AMG forecast results are evaluated on a country-by-country basis, FDI reduces EP in the Indian, Brazilian, and Malaysian economies. Therefore, the PHaloH is valid in these countries. On the other hand, FDI causes ED in South Africa. Therefore, in this country, the PHavenH applies. On the other hand, according to the results of the D-H panel causality test, a bidirectional causality relationship was determined between lnFDI and lnCO2, while a unidirectional causality relationship was determined from lnREN to lnCO2. To attract the FDI they need for sustainable growth, these countries will need to take measures that will not pollute the environment but will make the country attractive with different supports. In addition to increasing environmentally friendly FDI that will support environmentally sensitive growth, which is included in the SDG of the United Nations, policies to increase renewable energy investments, which are important in terms of climate change, will also create a win-win result for the whole world.

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Impact of account, transparency, and accountability indicators on economic growth: Evidence from South Asian countries

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ABSTRACT

This study examines the intricate relationships between Account, Transparency, and Accountability indicators and GDP growth across a panel of countries, focusing on the Current Account Balance (CAB), Net Capital Account (NCA), Net Financial Account (NFA), CPIA Transparency Rating, and Voice and Accountability (VA). Drawing on economic theory and empirical analysis, we investigate how these variables influence Economic (GDP) growth dynamics. Theoretical underpinnings suggest that positive CAB reflects trade surpluses, contributing positively to GDP through increased economic activity, while NCA inflows stimulate long-term productivity gains. Conversely, negative NFA indicates potential adverse effects on GDP from capital outflows. Empirical findings using fixed effects, random effects, and Feasible Generalized Least Squares (FGLS) regression reveal significant associations: positive CAB and NCA correlate with higher GDP growth, whereas NFA shows a negative impact. CPIA and VA, while important for governance, do not directly affect GDP growth in this context. This research contributes by providing nuanced insights into the drivers of economic growth, informing policy strategies for sustainable development and institutional enhancement.

I. Introduction

In recent years, understanding the dynamics between economic indicators and GDP growth has become increasingly crucial in economic literature and policy formulation. This study examines the relationships between key economic variables and economic growth across South Asian countries. The variables under investigation include the Current Account Balance (CAB), Net Capital Account (NCA), Net Financial Account (NFA), CPIA Transparency, Accountability, and Corruption in the Public Sector Rating (CPIA), and Voice and Accountability (VA). According to Sharma and Ranga (2014), factors such as saving deposits with commercial banks significantly influence GDP, with their impact reaching up to 20119.046 units if held constant. Ehimare's (2012) study on Nigerian banks highlights their pivotal role in capital formation, indicating that commercial banks contribute significantly to economic prosperity through capital accumulation. Mehmood's (2012) research in Bangladesh and Pakistan underscores the varied impacts of economic variables like national expenditures and exports on GDP. Aurangzeb (2012) explores Pakistan's banking sector and finds that deposits, investments, and profitability are critical drivers of economic growth. Singhal (2008), focusing on India, demonstrates the resilient relationship between GDP, interest rates, and domestic savings across different reform periods. Financial accounts, essential for GDP assessment, reflect crucial economic performance indicators (Sonkar and Sarkar, 2020; Valentin et al., 2020; Bobo, 2022). Studies across Azerbaijan, India, Indonesia, and Argentina reveal significant links between current account balances and GDP growth (Ayubova, 2022; Apparasu and Bhandari, 2023; Putri and Astuty, 2020; Güida, 2019). These findings underscore the interdependence of economic variables, influencing inflation, external stability, and economic growth. Transparency, accountability, and corruption perceptions shape governance landscapes globally, affecting public trust and policy effectiveness (Tavares and Romão, 2021; Mungiu-Pippidi, 2022). Voice and Accountability (VA) also play critical roles in societal development, influencing governance effectiveness and societal well-being through their impacts on economic and environmental indicators (Costantiello and Leogrande, 2023; Das and Chatterjee, 2022). The integration of Environmental, Social, and Governance (ESG) factors into economic frameworks has been shown to enhance sustainable development and economic resilience globally (Işık et al., 2024a). This body of literature underscores the multifaceted impacts of VA on governance, economic performance, and societal well-being, advocating for its incorporation into policy frameworks to foster holistic and sustainable development.

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The study contributes to the field by providing a comprehensive analysis of the relationships between key economic indicators and GDP growth, with a focus on the Current Account Balance (CAB), Net Capital Account (NCA), and Net Financial Account (NFA). By integrating theoretical frameworks and empirical evidence, the research sheds light on how these variables influence economic performance, highlighting their roles as critical drivers of GDP growth. Additionally, the examination of CPIA Transparency Rating and Voice and Accountability (VA) enriches understanding of governance factors in economic outcomes. Methodologically, the study employs robust econometric techniques such as fixed effects and random effects models, alongside Feasible Generalized Least Squares (FGLS) regression, ensuring rigorous analysis and enhancing the reliability of the findings. The study's insights are expected to inform economic policymakers and researchers, offering valuable implications for policy formulation aimed at fostering sustainable economic development and enhancing institutional quality.

The objectives of this study are to comprehensively analyze the intricate relationships between economic indicators and GDP growth, focusing on variables such as the Current Account Balance (CAB), Net Capital Account (NCA), and Net Financial Account (NFA). The study aims to provide a nuanced exploration through theoretical underpinnings and empirical findings, investigating how these variables influence economic growth. Additionally, the research seeks to explore the role of CPIA Transparency Rating and Voice and Accountability (VA) in shaping economic outcomes, aiming to contribute insights into methodological considerations and policy implications relevant to economic policy-making and governance.

2. Literature Review

According to Sharma and Ranga's (2014) research, other factors account for the GDP up to 20119.046 units if the impact of saving deposits with commercial banks stays constant. Similarly, Ehimare's (2012) investigation into the relationship between banks and economic growth in Nigeria reveals that commercial banks significantly contribute to capital formation in the country's economy. This suggests that through their operations, commercial banks have the ability to raise the capital formation of the country, playing a crucial role in the nation’s economic prosperity. Ehimare's findings also demonstrate that the deposit liabilities of commercial banks have an immediate effect on capital formation rather than economic expansion, yet they still support the idea that commercial banks act as catalysts for capital accumulation and economic growth. In his study, Mehmood (2012) examined the impact of thirteen independent variables on GDP in Bangladesh and Pakistan. He concluded that in Pakistan, GDP is positively impacted by gross national expenditures, exports, gross savings, and final consumption expenditure, while total stock exports, services exports, and external indebtedness negatively affect Pakistan's GDP. However, for Bangladesh, Mehmood's analysis shows that variables like gross national expenditures, the total amount of external debt, and goods imports and exports positively influence the country's GDP, whereas final consumption expenditure negatively impacts Bangladesh's GDP. Dr. Aurangzeb (2012) explored the banking industry's contributions to Pakistan's economic expansion, finding that deposits, investments, advances, profitability, and interest income all significantly contribute to the country's economic growth. His study also demonstrates a bidirectional causal link between deposits, advances, profitability, and economic growth in Pakistan. Moreover, Singhal's (2008) study on the impact of variations in GDP and interest rates on deposits in India examines the pre-reform (1980-1991) and post-reform (1991-2006) eras. Regression analysis from Singhal's study shows that despite fluctuations in the interest rate, Gross Domestic Savings grew steadily during both periods, indicating a resilient relationship between GDP, interest rates, and gross domestic savings in India. The financial account of a country is pivotal in comprehending its economic performance, particularly in relation to Gross Domestic Product (GDP). Various studies have underscored the significance of financial inclusion indicators, such as the number of credit accounts per 1,000 people, in influencing GDP per capita (Sonkar and Sarkar, 2020). These indicators provide insight into the extent of financial access and its impact on economic growth. Additionally, the quality of financial reporting practices has been shown to affect GDP growth estimates, highlighting the importance of accurate accounting standards in economic policy-making (Valentin et al., 2020). This underscores the need for robust financial reporting to ensure reliable economic assessments. Furthermore, the conventional GDP accounting method has faced criticism for its limitations in truly reflecting economic and social development needs. In response, alternative approaches, such as the GDP index financial accounting based on numerical simulation, have been proposed. These methods aim to offer more precise and comprehensive insights into economic operations, including considerations for green GDP (Bobo, 2022). Such innovative approaches provide a broader understanding of economic health by incorporating environmental and social factors. Understanding the financial sector's role in GDP calculations is crucial for policymakers and economists to make informed decisions and accurately assess a country's overall economic health. A critical component of this analysis is the relationship between the current account balance and GDP. Studies conducted in various countries, including Azerbaijan, India, Indonesia, and Argentina, have explored this connection in detail. In Azerbaijan, research has revealed a long-term relationship between the current account balance of the balance of payments and GDP, forming the basis for an error correction model (Ayubova, 2022). This finding indicates that deviations from the long-term equilibrium are corrected over time, underscoring the interdependence of these economic variables. In India, the current account deficit has been found to significantly impact inflation and economic growth, demonstrating the intricate interplay between these factors (Apparasu and Bhandari, 2023). Indonesian research has highlighted the determinants of the current account, with GDP showing a significant effect on the balance, thereby indicating its importance in assessing external economic stability (Putri and Astuty, 2020). Similarly, studies in Argentina have emphasized the strong correlation between the real exchange rate, terms of trade, and GDP growth with the current account balance, shedding light on the determinants of this crucial economic indicator (Güida, 2019). Overall, these studies illustrate the multifaceted relationship between financial accounts, GDP, and broader economic indicators.

Understanding these relationships is essential for developing effective economic policies and strategies aimed at promoting sustainable growth and stability. Transparency, accountability, and corruption in the public sector are pivotal factors influencing governance. Transparency

International data indicates that Brazil ranks 94th globally with 38 points in the Corruption Perceptions Index, whereas South Africa ranks 69th with 44 points. In their analysis of public governance perceptions in Brazil and South Africa, Tavares and Romão (2021) emphasize corruption, accountability, and transparency. While South Africa has a favorable view of corruption control, Brazil's perspective is more negative. To address economic and social issues, Tavares and Romão recommend fostering cooperative and systemic thinking, involving civil society, and encouraging new social behaviors. Engaging civil society is essential for reinforcing the value of public governance and social control. A novel global measure of transparency, the T-index, is based on five de jure and 14 de facto components. This index demonstrates reasonable precision and good internal and external validity. Both perception and objective measures of corruption, including perceptions of changes in corruption over time, are significantly influenced by the T-index. However, Mungiu-Pippidi (2022) notes that in countries with weak legal systems and low levels of human development, high levels of transparency alone are insufficient to effectively control corruption. The purpose of this article is to examine current research trends and potential directions for accountability and transparency. This review is significant as it provides a reference for researchers interested in these topics. The critical review analysis method employed in this paper reveals that most current research on accountability and transparency focuses on public services, financial management of village funds, and financial management of mosques. The author anticipates that these themes will persist and evolve over time. Additionally, it is intriguing to explore research on the accountability of humanitarian funds (Adil et al., 2022).

Voice and Accountability (VA) are fundamental to various dimensions of societal development. Empirical research indicates that VA is positively correlated with indicators such as "Maximum 5-Day Rainfall" and "Mortality Rate Under 5," while it exhibits a negative relationship with "Adjusted Savings: Natural Resources Depletion" and the "Annualized Average Growth Rate in Per Capita Real Survey Mean Consumption or Income" (Costantiello and Leogrande, 2023). These relationships underscore the intricate interactions between governance, environmental, and social metrics. Moreover, studies exploring the nexus between mental health and socioeconomic factors have demonstrated that the growth of per capita GDP, health expenditure, and VA are intertwined with long-term trends in depression rates within populations. Panel data analysis has revealed significant associations among these variables, suggesting that enhancing VA not only strengthens governance but also affects economic metrics like GDP through its impact on societal well-being and mental health (Das and Chatterjee, 2022).

In their study, Das and Chatterjee (2022) examined the interconnections between depression rates, per capita GDP, healthcare expenditure, and VA across four countries from 1995 to 2016. They found that current depression rates are influenced by long-term linkages among these factors, although the robustness of results varied by country. This finding highlights the need to consider VA in comprehensive evaluations of public health and economic development. To assess the value of VA, Costantiello and Leogrande (2023) analyzed World Bank ESG data from 193 countries between 2011 and 2021. Their study revealed a negative correlation between VA and both annualized average growth rates and adjusted savings, while a positive correlation was found with mortality rates and maximum 5-day rainfall. The study also identified the limitations of the k-Means algorithm due to low variance among countries and recognized polynomial regression as the most effective predictive method for VA, after evaluating eight machine-learning algorithms. For the nations considered in the study, an average growth of 2.92% in VA levels was anticipated. Furthermore, a growing body of research has shown that Environmental, Social, and Governance (ESG) factors significantly influence economic growth and the attainment of sustainable development goals. Research by Işık et al. (2024a, 2024b, 2024c, 2024d, 2024e, 2024f, 2024g, 2024h, 2024i, 2024j, 2023, 2021, 2019, 2018, 2017, 2016,2015), Islam et al. (2024a, 2024b, 2021, 2022, 2023, 2020), Hasan et al. (2019), Alvarado et al. 2024, 2023, 2022a, 2022b; Amin et al. 2024; Cui et al., 2024; Deng et al., 2024; Guo et al., 2024; Han et al., 2024, 2023a, 2023b; Jabeen et al., 2024; Shu et al., 2024; Tillaguango et al., 2024; Yan et al., 2024a, 2024b; Zhang et al., 2024; Ahmad et al. 2023a, 2023b, 2022; Anas et al., 2023; Baig et al., 2023; Bulut et al., 2023; Cetin et al., 2023; Das et al., 2023; Dogru et al., 2023; Ongan et al., 2023, 2022; Rehman et al., 2023, 2022; Umar et al., 2023; Zeng et al., 2023; Rahman (2019), and Gazi et al. (2024), Ahmadov et al. (2024) has consistently demonstrated the importance of ESG in promoting sustainable development and economic resilience. Overall, the body of literature underscores the multifaceted impact of VA on governance, economic performance, and societal well-being, advocating for its incorporation into policy frameworks to foster holistic and sustainable development.

Based on the Literature this study formulate various hypothesis.

- H1: There is a significant relationship between the Current Account Balance (CAB) and economic growth.
- H2: There is a significant relationship between the Net Capital Account (NCA) and economic growth.
- H3: There is a significant relationship between the Net Financial Account (NFA) and economic growth.
- H4: There is a significant relationship between CPIA Transparency, Accountability, and Corruption in the Public Sector Rating (CPIA) and economic growth.
- H5: There is a significant relationship between Voice and Accountability (VA) and economic growth.

3. Methods

3.1.Sample Selection

The methodology for selecting a sample of South Asian countries for economic analysis involves several steps. Firstly, identifying countries based on geographical boundaries (including India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and the Maldives) ensures comprehensive regional representation. Secondly, criteria such as economic diversity, development stages, policy contexts, and data availability guide the selection process to capture a broad spectrum of economic structures and policy environments. Thirdly, prioritizing countries with reliable and comprehensive data allows for robust analysis of economic indicators, trade dynamics, investment trends, and social metrics. This approach facilitates a nuanced understanding of regional economic interactions, developmental challenges, and policy implications, crucial for informing evidence-based policy recommendations and fostering sustainable economic growth and integration across South Asia.

3.2. Methodology

The sample period for the study spans from 2004 to 2020, utilizing panel data collected from the WB's website. The dependent variable in the analysis is economic growth, represented as GDP, while the independent variables include the current account balance, net capital account, net financial account, CPIA transparency, accountability, and corruption in the public sector rating, and Voice and Accountability: Estimate. The researcher employed the Hausman specification test to determine the suitability of the model, concluding that the fixed effects model is more appropriate than the random effects model. Additionally, the researcher utilized the feasible generalized least squares (FGLS) method to obtain robust estimates by addressing issues of heteroscedasticity and autocorrelation, ultimately identifying FGLS as the preferred model for the analysis.

3.3. Regression Model

$$EG = \beta0 + \beta1CAB + \beta2NCA + \beta3NFA + \beta4CPIA + \beta5VA + \varepsilon$$

Where

- EG: Economic Growth (proxy for GDP)
- β0: Intercept term
- β1: Coefficient for Current Account Balance (CAB)
- β2: Coefficient for Net Capital Account (NCA)
- β3: Coefficient for Net Financial Account (NFA)
- β4: Coefficient for CPIA Transparency, Accountability, and Corruption in the Public Sector Rating (CPIA)
- β5: Coefficient for Voice and Accountability (VA)
- ϵ: Error term

4. Results

4.1. Summary Statistics

The descriptive statistics for the variables provide insights into their distributions and central tendencies. GDP (EG) shows a high average ($312.8 billion) with substantial variability and a right-skewed distribution, indicated by a mean of $3.128e+11 and a skewness of 2.639. The Current Account Balance (CAB) has an average of -6.548% of GDP, suggesting a trend of deficits, and exhibits left skewness with a skewness of -1.135. Net Capital Account (NCA) has a mean of $310.1 million and is right-skewed, with a skewness of 1.798. The Net Financial Account (NFA) averages -$5.863 billion, showing a significant left skewness with a skewness of -3.227. CPIA ratings average 2.988, indicating moderate variability and a slight right skewness. Finally, Voice and Accountability (VA) has a mean of -0.476, a near-symmetric distribution with a skewness of 0.104, and moderate variability. These statistics highlight the diverse economic and governance conditions represented by these variables (See Table 1).

Table 1: Descriptive Statistics

	Mean	Median	SD	Min	Max	Skewness	Kurtosis
EG	3.128e+11	3.814e+10	6.511e+11	1.000e+09	2.974e+12	2.639	8.972
CAB	-6.548	-2.814	9.1	-35.755	10.043	-1.135	3.314
NCA	3.101e+08	1.655e+08	531033318	-1.156e+09	2.434e+09	1.798	8.082
NFA	-5.863e+09	-5.028e+08	1.541e+10	-9.024e+10	3.292e+10	-3.227	15.257
CPIA	2.988	3	0.711	1	4.5	.635	3.377
VA	-.476	-.471	0.497	-1.752	.462	.104	2.417

4.2. Fixed Effect Regression results

The fixed effect regression results indicate that the net financial account (NFA) is the most significant predictor of GDP (EG), with a negative coefficient of -4.742 and a highly significant p-value of 0.000, suggesting that increases in NFA are associated with decreases in GDP. The net capital account (NCA) shows marginal significance with a positive coefficient of 29.015 and a p-value of 0.056. The current account balance (CAB) and the CPIA transparency rating are not significant predictors of GDP, with p-values of 0.52 and 0.36, respectively. The model explains 30.2% of the variability in GDP (R-squared = 0.302) and is overall significant (F-test p-value = 0.000) (See Table 2).

4.3.Random Effect Regression Results

The random effect regression results reveal that several predictors significantly impact GDP (EG). The current account balance (CAB) has a

Table 2: Fixed Effect Model

EG	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CAB	4.400e+08	6.819e+08	0.65	.52	-9.130e+08	1.793e+09	
NCA	29.015	15.015	1.93	.056	-.779	58.808	*
NFA	-4.742	.746	-6.35	0	-6.223	-3.261	***
CPIA	1.885e+10	2.052e+10	0.92	.36	-2.186e+10	5.956e+10	
Constant	8.023e+10	6.142e+10	1.31	.195	-4.164e+10	2.021e+11	
Mean dependent var		165832038382.864	SD dependent var		337472393946.666		
R-squared		0.302	Number of obs		111		
F-test		10.717	Prob > F		0.000		
Akaike crit. (AIC)		5729.250	Bayesian crit. (BIC)		5742.798		

*** p<.01, ** p<.05, * p<.1*

positive coefficient of 3.433e+09 and is significant at the 5% level (p-value = 0.016), suggesting that higher CAB is associated with higher GDP. The net capital account (NCA) is also significant at the 1% level (p-value = 0.007) with a positive coefficient of 80.726, indicating a positiverelationship with GDP. The net financial account (NFA) shows a strong negative relationship with GDP, with a coefficient of -14.164 and a highly significant p-value (0.000). The CPIA transparency rating, however, is not a significant predictor (p-value = 0.144). The model's overall R-squared is 0.864, indicating that 86.4% of the variability in GDP is explained by the predictors, with within and between R-squared values of 0.293 and 0.992, respectively. The Chi-square value of 136.584 and its p-value (0.000) indicate the model's overall significance. The constant term is not significant (p-value = 0.926). These results suggest that CAB, NCA, and NFA are important determinants of GDP under the random effects model (See Table 3).

Table 3: Random Effect Regression results

EG	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CAB	3.433e+09	1.421e+09	2.42	.016	6.483e+08	6.217e+09	**
NCA	80.726	29.865	2.70	.007	22.192	139.259	***
NFA	-14.164	1.244	-11.38	0	-16.603	-11.725	***
CPIA	5.004e+10	3.424e+10	1.46	.144	-1.706e+10	1.171e+11	
Constant	-1.018e+10	1.095e+11	-0.09	.926	-2.248e+11	2.044e+11	
Mean dependent var		165832038382.864	SD dependent var		337472393946.666		
Overall r-squared		0.864	Number of obs		111		
Chi-square		136.584	Prob > chi2		0.000		
R-squared within		0.293	R-squared between		0.992		

*** p<.01, ** p<.05, * p<.1*

4.4.Hausman Test

The Hausman specification test results, with a chi-square value of 51.236 and a p-value of 0, indicate that the fixed effects model is more appropriate than the random effects model for this data set. The significant p-value (less than 0.05) leads to the rejection of the null hypothesis, suggesting that the unique errors are correlated with the regressors. Therefore, to obtain unbiased and consistent estimates, the fixed effects model should be used (See Table 4).

Table 4: Hausman (1978) specification test

	Coef.
Chi-square test value	51.236
P-value	0

4.5. **FGLS regression**

The cross-sectional time-series FGLS regression results indicate that all three predictors significantly impact GDP (EG). The current account balance (CAB) has a positive coefficient of 3.465e+09, significant at the 1% level (p-value = 0.005), suggesting that an increase in CAB is associated with higher GDP. The net capital account (NCA) also shows a positive relationship with GDP, with a highly significant coefficient of 113.579 (p-value = 0.000). The net financial account (NFA) has a strong negative impact on GDP, with a coefficient of -25.375 and a highly significant p-value (0.000). The model explains a substantial portion of the variance in GDP, indicated by the mean and standard deviation of the dependent variable (165832038382.864 and 337472393946.666, respectively). The Chi-square value of 967.999 and its p-value (0.000) confirm the model's overall significance. The Akaike Information Criterion (AIC) value is 6004.381, useful for model comparison. These results highlight the significant roles of CAB, NCA, and NFA in influencing GDP within the cross-sectional time-series context (See Table 5).

Table 5: Cross-sectional time-series FGLS regression

EG	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CAB	3.465e+09	1.232e+09	2.81	.005	1.051e+09	5.879e+09	***
NCA	113.579	20.594	5.52	0	73.216	153.943	***
NFA	-25.375	.833	-30.45	0	-27.008	-23.741	***

Mean dependent var	165832038382.864	SD dependent var	337472393946.666
Number of obs	111	Chi-square	967.999
Prob > chi2	0.000	Akaike crit. (AIC)	6004.381

**** p<.01, ** p<.05, * p<.1*

5. Discussion

Understanding the intricate relationships between economic indicators and GDP growth requires a nuanced exploration of both theoretical underpinnings and empirical findings. The regression results provided shed light on the dynamics between the Current Account Balance (CAB), Net Capital Account (NCA), Net Financial Account (NFA), and their impacts on economic growth (EG), while also exploring the role of CPIA Transparency Rating and Voice and Accountability (VA). To delve deeper into why these results occurred as observed, a comprehensive analysis can be structured around several key themes: economic theory, empirical evidence, methodological considerations, and policy implications.

Economic theory provides the foundational framework to understand why certain variables like CAB, NCA, and NFA might influence GDP growth. These variables are crucial components of a nation's balance of payments (BoP), reflecting its economic interactions with the rest of the world. The Current Account Balance (CAB), for instance, captures the trade balance, net income from abroad, and net current transfers. A positive CAB suggests a surplus, indicating that the country is exporting more goods and services than it imports, contributing positively to GDP through increased economic activity and income generation.

The Net Capital Account (NCA), on the other hand, records inflows and outflows of capital transfers and acquisitions of non-financial assets. A positive NCA implies net inflows of capital, which can stimulate economic growth by financing investments in infrastructure, technology, and human capital, all crucial for long-term productivity gains and GDP growth.

Conversely, the Net Financial Account (NFA) reflects net purchases of domestic assets by foreign entities and net sales of domestic assets to foreign entities. A negative NFA indicates that more assets are being sold to foreigners than acquired, potentially reducing domestic investment and economic growth. This negative relationship observed in the regression results (-4.742 coefficient with a significant p-value) underscores how capital flight or foreign divestment can adversely impact GDP.

The empirical findings from the regression models highlight several significant relationships between these economic indicators and GDP growth. The fixed effects model, preferred due to the Hausman test results suggesting unobserved individual effects, shows that increases in NFA are associated with decreases in GDP, reinforcing the negative impact of capital outflows or reduced foreign investment on economic output. In contrast, the random effects model underscores the importance of both CAB and NCA in driving GDP growth positively. A positive CAB (3.433e+09 coefficient, significant at 5%) indicates that countries with trade surpluses tend to experience higher GDP growth rates, supported by increased export revenues and economic activity. Similarly, a positive NCA (80.726 coefficient, highly significant at 1%) signifies that inflows of capital contribute significantly to economic expansion, supporting investments that enhance productivity and competitiveness. The non-significant findings for CPIA Transparency Rating and Voice and Accountability (VA) suggest that while governance and institutional quality are important for overall economic development, their direct impact on GDP growth in this context was not statistically significant. This highlights the complex interplay between economic fundamentals and institutional factors in shaping economic outcomes. Additionally, the use of FGLS (Feasible Generalized Least Squares) regression in the cross-sectional time-series analysis further validated the robustness of the findings. The significant coefficients for CAB, NCA, and NFA reaffirmed their roles as critical drivers of GDP growth across different econometric specifications, providing robustness checks and enhancing the reliability of the conclusions drawn from the regression analyses.

6. Conclusion and Policy Implications

The findings from this study underscore the critical roles of the Current Account Balance (CAB), Net Capital Account (NCA), and Net Financial Account (NFA) in shaping GDP growth dynamics, aligning with existing literature on external economic accounts and economic performance (Ayubova, 2022; Apparasu and Bhandari, 2023; Putri and Astuty, 2020; Güida, 2019). The positive association between a higher CAB and GDP growth reflects increased export competitiveness and economic activity (Ayubova, 2022; Apparasu and Bhandari, 2023). Similarly, a positive NCA stimulates GDP growth by fostering capital formation and investment in critical sectors (Apparasu and Bhandari, 2023; Güida, 2019).

Conversely, the negative impact of NFA on GDP growth highlights the vulnerability of economies to external financial flows, emphasizing the need for effective management of financial inflows and outflows (Putri and Astuty, 2020; Güida, 2019). These findings are consistent with previous studies that have explored the determinants of external economic balances and their implications for economic stability and growth (Ayubova, 2022; Apparasu and Bhandari, 2023; Putri and Astuty, 2020; Güida, 2019). The non-significant findings regarding CPIA Transparency Rating and Voice and Accountability (VA) suggest that while governance and institutional quality are essential for economic development, their direct impact on GDP growth in this context may be nuanced and require further investigation (Costantiello and Leogrande, 2023; Das and Chatterjee, 2022). These results highlight the complexity of translating institutional improvements into measurable economic outcomes and underscore the need for continued research to explore these relationships in depth.

The study's findings have significant policy implications for fostering sustainable economic growth and development:

1. Promoting Trade Surpluses and Foreign Investment: Policies aimed at enhancing export competitiveness and attracting foreign direct investment (FDI) should be prioritized to maintain a positive Current Account Balance (CAB) and stimulate economic growth (Ayubova, 2022; Apparasu and Bhandari, 2023).

2. Managing Financial Flows: Effective management of Net Financial Account (NFA) is crucial to mitigate the adverse effects of capital outflows and ensure financial stability (Putri and Astuty, 2020; Güida, 2019). Policymakers should implement measures to stabilize financial markets, enhance investor confidence, and regulate capital flows effectively.

3. Enhancing Institutional Quality: While governance indicators like CPIA Transparency Rating and VA did not directly influence GDP growth in this study, improving transparency, accountability, and governance remains essential for long-term economic development (Costantiello and Leogrande, 2023; Das and Chatterjee, 2022). Strengthening institutions can improve policy effectiveness, reduce corruption, and create an enabling environment for business and investment.

These conclusions are consistent with and build upon previous research that has examined the diverse factors influencing GDP growth and economic stability. Studies by Ayubova (2022), Apparasu and Bhandari (2023), Putri and Astuty (2020), and Güida (2019) have highlighted the complex interplay between external economic accounts, governance, and economic performance. By synthesizing these findings with the current study, a comprehensive understanding emerges of how external economic balances shape economic outcomes and the policy implications for fostering sustainable growth.

7. Limitations and Future Research Directions

This study, while offering valuable insights into the dynamics between economic indicators such as the Current Account Balance (CAB), Net Capital Account (NCA), Net Financial Account (NFA), and GDP growth, is constrained by several limitations. The use of aggregated national-level data may not capture regional disparities or sector-specific influences, potentially leading to oversights in the analysis. Additionally, while fixed effects and random effects models were employed to account for unobserved heterogeneity, the possibility of endogeneity and omitted variable bias remains, potentially affecting the robustness of the findings. Furthermore, the non-significant results for governance indicators like CPIA Transparency Rating and Voice and Accountability (VA) suggest that these variables may have more complex or delayed effects on economic growth, which the current models may not fully capture. These limitations underscore the need for a more nuanced exploration of the relationships between institutional quality and economic performance.

To build on these findings, future research should consider incorporating micro-level or sector-specific data to better capture the diverse impacts of economic indicators on different parts of the economy. Exploring non-linear relationships between the variables using advanced econometric techniques could also provide deeper insights into the complex dynamics at play. Additionally, extending the analysis over longer time frames and examining potential structural breaks or regime shifts would offer a more comprehensive understanding of the long-term effects of CAB, NCA, and NFA on GDP growth. Further investigation into the role of governance indicators, possibly through more nuanced measures or by exploring their indirect effects, could clarify their influence on economic outcomes. Finally, cross-country comparative studies that account for varying institutional contexts and levels of development would enhance the generalizability of the findings and provide broader insights into the relationship between external economic accounts and economic growth.

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Establishing brand loyalty in the fashion and lifestyle industry of Bangladesh: A qualitative investigation

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ABSTRACT

This qualitative study examines the factors driving brand loyalty in Bangladesh's fashion and lifestyle sector, focusing on three leading brands: Le Reve, Sailor, and Infinity. Through in-depth interviews with brand managers and both loyal and occasional customers, the research identifies key influences on brand loyalty, such as ethical practices, shopping experience, perceived value, and brand uniqueness. The findings highlight that customers prioritize product quality, affordability, and a positive shopping experience, with brands that offer personalized services, loyalty programs, and continuous innovation achieving stronger loyalty. Additionally, ethical practices and corporate social responsibility (CSR) emerge as significant differentiators, while the increasing importance of online presence and digital engagement is noted as crucial for fostering and sustaining loyalty. These insights provide valuable direction for fashion and lifestyle brands in Bangladesh aiming to enhance customer retention and solidify their market position.

I. Introduction

In today's highly competitive business environment, branding has become a critical priority for organizations. Brands serve as navigational tools for consumers, guiding them through a crowded marketplace and helping them choose from an array of options (Davis, 2005). While branding initially functioned as a symbol of ownership (Clifton, 2009), its role has significantly evolved. Modern brands now go beyond mere names or symbols; they embody ideas, emotions, and lifestyles (Jokinen, 2016).

The success of a brand is often closely linked to customer satisfaction with its products, as this satisfaction fosters brand loyalty. Given the strong correlation between brand loyalty and both growth and profitability, organizations must prioritize its cultivation. Many businesses strive to build a dedicated customer base, viewing it as the "Holy Grail" of business success (McAlexander et al., 2002). Achieving this loyal client base through satisfied customers remains a top priority for any organization.

Brand loyalty is defined by a customer's commitment to a brand, demonstrated through repeat purchases and positive behaviors such as word-of-mouth promotion, even when competitors offer alternatives. This loyalty becomes evident when consumers consistently choose a brand despite the availability of competing options. A strong emotional connection with a brand increases the likelihood of sustained consumer engagement and sales. Genuine brand loyalty is rooted in the consistent delivery of high-quality products and services, and recent studies have highlighted the challenges businesses face in maintaining this loyalty, sparking interest among both academics and industry professionals.

Despite its significance, the fashion and lifestyle sector lacks clear guidelines for fostering brand loyalty. Moreover, the development of brand loyalty within Bangladesh's fashion and lifestyle industry has often been overlooked in prior research. This paper aims to explore the factors influencing brand loyalty in the Bangladeshi market. To gain a deeper understanding of the dynamics driving Bangladeshi consumers' loyalty to fashion and lifestyle brands, both qualitative and quantitative research methods are required. The rise of online shopping has introduced new dynamics to consumer behavior. The convenience and flexibility of online retailing allow customers to easily adjust their preferences and take advantage of features like cash refunds, which are not typically available in physical stores (Farah et al., 2018). As a result, online retailing has become a strategic tool in the fashion industry contributing to organizational success and growth (Kawaf and Istanbulluoglu,

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2019). Research by McCormick and Ram (2022) suggests that women with higher levels of education and better career opportunities possess greater purchasing power, making them more inclined toward luxury brands.

In the fashion industry, brand awareness is crucial for success. Companies with strong brand identities tend to excel on a global scale, leading to increased sales and overall growth (Ibrahim et al., 2021). Multinational luxury fashion companies employ various strategies to enhance their global brand recognition. Guan et al. (2021) assert that consumers are more likely to remain loyal to brands that resonate with their values, especially when there is an emotional connection. Furthermore, Le et al. (2021) highlight that fostering customer loyalty can significantly impact business success, even without changes to the production process.

Consumer satisfaction is a key driver of brand loyalty, with successful companies often being those that manage to keep their customers happy. Retaining existing customers is not only crucial but also more cost-effective than acquiring new ones (Garfinkel, 2019). Loyal customers contribute to a brand's reputation through word-of-mouth, reducing the need for extensive marketing efforts. T

he relationship between brand loyalty and consumer satisfaction is essential for a company's success, with emotional connections to customers being key to maintaining a loyal client base (Devi and Yasa, 2021).

Frequent customer engagement, often facilitated through social media, where brands can share ongoing promotions and offers, enhances customer involvement and is an effective strategy for building brand loyalty (Rahman, 2023). Brand loyalty is characterized by positive consumer associations with a particular product or brand, as evidenced by repeat purchases despite competitors' efforts to attract the same customers (Bhardwaj et al., 2021). Companies invest heavily in marketing and customer service to create and sustain lasting brand loyalty (Bhardwaj et al., 2021). A strong brand identity and a memorable image are critical to a company's success (Bhardwaj et al., 2021). Effective branding not only increases organizational value but also differentiates the brand from competitors and enhances its reputation, positively influencing purchasing decisions (Bhardwaj et al., 2021).

Brand loyalty has always been vital to a business's sustainability and profitability, as retaining existing customers is less costly than acquiring new ones (Bhardwaj et al., 2021). Unlike previous generations, millennials, also known as Generation Y, represent a unique and distinct market segment (Bhardwaj et al., 2021). While some view millennials as disloyal, others argue that they are driven by the desire to project a fashionable social image and see brands as a means of expressing their identities (Bhardwaj et al., 2021). Therefore, brand identity plays a crucial role in analyzing the brand loyalty of this generation (Bhardwaj et al., 2021). Research by Işık et al. (2024a, 2024b, 2024c, 2024d, 2024e, 2024f, 2024g, 2024h, 2024i, 2024j, 2021, 2019, 2016), Islam et al. (2024a, 2024b, 2021, 2022, 2023, 2020), Gazi et al. (2024), Han et al., (2024, 2023), Yan et al. (2024a, 2024b), Zhang et al. (2024), Zeng et al. (2024), Baig et al. (2023), Cetin et al. (2023) and Alvarado et al. (2022) has consistently demonstrated the importance of ESG in promoting brand value.

The fundamental concept that underpins the investigation of customer brand loyalty in the context of fashion and lifestyle is that brand loyalty is the degree to which a consumer is attached to a particular brand. Brand loyalty pertains to the propensity of a consumer to transfer brands in response to a price or feature modification of a particular brand's product. Such research will result in virtuous educational outcomes.

How a business establishes a dependable reputation within its target market is of interest to us. Our interest lies in uncovering the tactics employed by a loyal brand to cultivate and maintain long-lasting connections with its clientele. We will then investigate the relationship between a customer's lifestyle and brand loyalty, as well as the brand's importance to the consumer. Furthermore, we are interested in comprehending the measures implemented by the organization to prevent consumers from defecting to a rival, as well as the advantages provided to its clientele. Finally, we wish to determine the value that a company places on its brand-loyal customers.

2. Literature review

Any business that wants to succeed in the long run needs to build a solid brand identity and an unforgettable reputation. Strategic branding can improve a business's worth, standing, and advantage over rivals. Despite its many obstacles, branding is becoming a crucial part of marketing as customers become more knowledgeable. A brand cannot be truly successful until it carves out a distinct niche for itself in its market and differentiates itself from rivals.

Traditionally, brand loyalty has been essential to the profitability and sustainability of businesses since it is less expensive to keep current customers than to get new ones. Building strong emotional connections with a brand is contingent upon brand loyalty, which is defined as persistent consumer behavior and attitudes toward a brand (Keller, 1993; Kotler and Gertner, 2002). Because they don't actively look for other companies, loyal customers are advantageous to the brand because their confidence and trust in it grows. To keep this loyalty, a brand must fulfill its commitments.

Customer retention is crucial in today's fiercely competitive industry, where newcomers regularly provide a wide range of goods and services. Organizations can benefit greatly from brand loyalty since it fosters enduring relationships with customers and boosts sales and profitability. Customer loyalty is a crucial field of study for marketing experts, academics, and students since it grows over time as a result of goodwill, brand awareness, and persistent effort (Akhter and Al Mamun, 2022; Diallo et al., 2021; Ledikwe, 2020; Rahman et al., 2023).

Customer and company relationships, which are shaped by social and historical contexts, lead to brand loyalty. Loyal consumers have the power to persuade friends and relatives to buy from the same company, which boosts sales and profitability. In an ever-changing marketing world, businesses must overcome formidable obstacles to guarantee client value and happiness. Although loyal consumers are more inclined to pay a higher price and stay with a company longer than unsatisfied ones, they may lose interest in time.

Brand loyalty increases profitability, growth potential, and shareholder value, which is beneficial financially, especially for small enterprises. The majority of research has looked at the connection between brand loyalty and trust, frequently in quantitative studies like those that focus on Bangladesh (Ledikwe, 2020; Rahman et al., 2023) and India (Jain et al., 2018). But a lot of things have been missed, including ethical business methods, in-store experience, positioning, and brand identification. Qualitative research is becoming more and more important in providing a thorough grasp of these elements and how they affect brand loyalty.

According to brands like Aarong, where customer perception is essential for loyalty, perceived quality has a big impact on customer happiness and loyalty (Showrav et al., 2020). By increasing transparency and trust, social media marketing also significantly contributes to the development of brand loyalty, making Facebook and Instagram platforms indispensable for customer interaction (Muhsina and Mou, 2023). To draw in and keep consumers, brands need to adjust to the digital environment (Rahman, 2023).

With the help of qualitative data collection, the Social Consumer Fashion Brand Engagement model provides insights into the relationship between consumers and brands. According to Faisal (2024), long-term success is contingent upon the implementation of successful marketing tactics, excellent products, and alignment with current trends. Businesses in Bangladesh's fashion sector can use social media marketing, perceived happiness and quality of service, and brand value to build client loyalty (Muhsina and Mou, 2023). Research on the subject of halal fashion brand loyalty emphasizes the significance of quality, reliability of information sources, and religion in boosting brand loyalty (Rafdinal, 2024).

In the Bangladeshi fashion sector, supply chain management also has a favorable impact on consumer loyalty; important aspects that influence this include customer perception and the retail environment (Showrav et al., 2020). In the East London luxury online clothes sector, Bangladeshi women's brand loyalty depends on consistent innovation and quality (Rahman, 2023). Customer loyalty, superior customer service, and distinctive brand names—bolstered by social media, advertising, and promotions—are essential components of building brand value (Rahman, 2020).

Studies reveal that consumers' brand choices are significantly influenced by perceived quality (Pappu et al., 2006), and that a favorable country-of-origin image boosts brand loyalty (Listiana, 2015; Pappu et al., 2007). Additionally, the nation of origin enhances overall brand equity and brand awareness (Arash et al., 2013; Yasin et al., 2007). Brand equity is greatly influenced by brand image (Gill and Dawra, 2010), and brand image works best when it is widely embraced by customers (Pullig, 2008).

Strong brand equity requires a high level of brand loyalty. According to Keller (2009), brand loyalty is the degree to which customers identify with a brand, indicating their propensity to transfer brands in the event that product features or costs alter (Shariq, 2018). Attitudes and behaviors are components of brand loyalty (Kabiraj and Shanmugan, 2011; Kim et al., 2008). While behavioral loyalty concentrates on a customer's actions in diverse contexts, attitude loyalty deals with the sentiments and views that a consumer has towards a company. According to Kim et al. (2008), behavioral loyalty is greatly influenced by attitudes, and this results in referrals and repeat business (Kabiraj and Shanmugan, 2011).

Brand loyalty is essential for brand management in Bangladesh's fashion and lifestyle industry (Akhter and Al Mamun, 2022; Faisal, 2024). It shows up as brand promotion, favorable internet evaluations, and recurring business—all of which raise the value of the brand. As a result, companies in this sector should place a high priority on creating and preserving brand loyalty via high-quality goods, successful marketing plans, and keeping up with the latest developments in the market (Faisal, 2024; Muhsina and Mou, 2023). Increasing customer retention, profitability, and long-term success are all correlated with improved brand loyalty.

2.1. Conceptual Framework

Discovering the factors that influence the loyalty of our prospective consumers is our top priority. Ethical practices, in-store experience, perceived value, brand distinctiveness, positioning, consistency, quality assurance, and brand identity and image are some of the interrelated aspects that we have built a conceptual framework around. The establishment of a strong and everlasting bond between the brand and its consumers is our primary goal in fostering brand loyalty.

In order to build and sustain consumer loyalty to a brand, it is necessary to comprehend and organize the basic components that go into building a conceptual framework for that loyalty. Brand loyalty seems to be a multi-faceted phenomena affected by a number of elements; the aforementioned diaphragm conceptual framework certainly helps in identifying, organizing, and analyzing these aspects. What makes a brand unique and what sets it apart from similar ones. Three separate brands stand out: Infinity, Sailor, and Le Reve. Influenced by advertising, communication, and personal experience, these brands impact buyers' perceptions. The extent to which consumers are familiar with and able to name the brand. How much the brand is thought of first when making a buying decision, the conviction that the company's products will reliably satisfy buyers. Ethical corporate methods, high-quality products, and excellent customer service all contribute to establishing trust. How well the brand's goods and services fulfill or surpass the expectations of its target market.

A devoted customer is one who has been satisfied. A customer's good associations with the brand shape their emotional investment in it. How much value consumers place on the brand in comparison to its price. The extent to which consumers engage with the brand. Brand consistency aids in trust-building, strengthens brand identification, and facilitates consumer recognition and emotional connection. Successful brand positioning aids in creating a distinct identity, conveys value to the intended consumers, and directs advertising campaigns. This is crucial for the people we've chosen to reach.

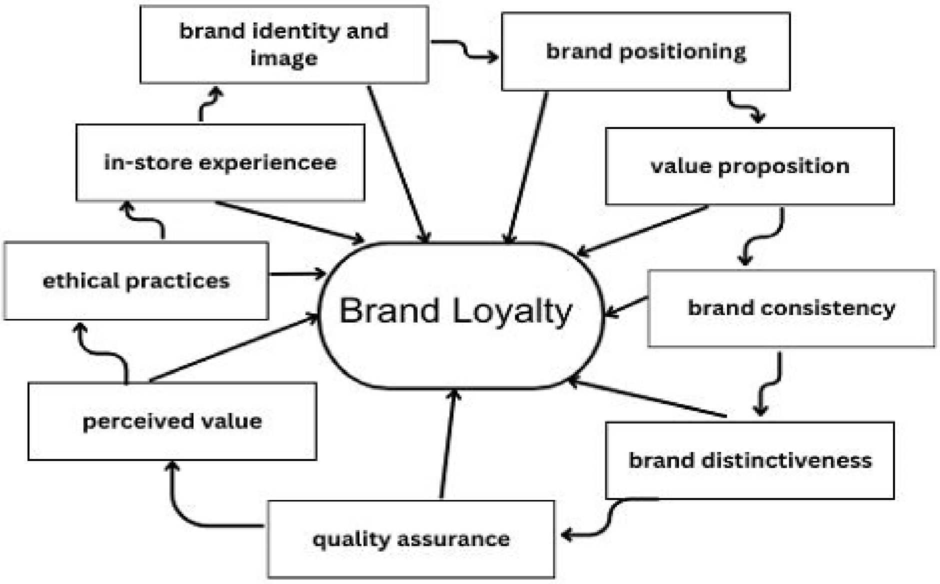

Figure 1: The Conceptual Framework

3. Methodology

The selection of Le Reve, Sailor, and Infinity as the focus brands for our study was strategically driven by their strong market presence and popularity within the Bangladeshi fashion and lifestyle sector. These brands are among the most prominent in the industry, providing a comprehensive representation of consumer behavior and brand dynamics. Their appeal to a broad and diverse customer base, encompassing various demographics and preferences, allows for a more nuanced understanding of the factors driving brand loyalty. Additionally, the distinct brand identities and business strategies of Le Reve, Sailor, and Infinity offer valuable insights into how different approaches to branding and customer engagement can influence consumer loyalty in a competitive market. These brands are also recognized for their efforts in integrating Environmental, Social, and Governance (ESG) principles (into their operations, which has become increasingly important in fostering brand loyalty. Consumers are more likely to remain loyal to brands that not only meet their personal preferences but also demonstrate a commitment to sustainability and ethical practices. By focusing on these three brands, our study aims to capture a wide range of consumer experiences and perceptions, ensuring that our findings are both relevant and applicable to the broader industry.

3.1. Data types

In this study we used two types of data: Primary data and secondary data.

3.2. Data source

Primary Source: Primary information is gathered from some informal interviews from the regular or irregular customers who promptly buy products from Le Reve / Sailor / Infinity. There were also some formal interviews with the manager and sales associates to have a proper insight about the brands. Secondary Source: Secondary sources had also used to collect information. We will go through many articles related to our topic, among them 3 or 4 are mostly related to our topic so we also try to discuss them.

3.3. Data collection techniques

Questionnaires: We conducted a survey, posing questions to three distinct groups of individuals: one with industry affiliations and the other two comprising regular and seasonal customers.

Secondary information: Secondary information has been collected by reviewing websites, Journals, and some other relevant documents.

3.4. Research design

For our research on 'Brand Loyalty,' we opted for a Qualitative research design. Throughout the research, we focused on two main factors:

customer loyalty towards their brands and what brands think about this loyalty. We treated them as an independent variable. The goal is to analyze the relationship between customer and brand perspectives on loyalty.

3.5. Rational of using qualitative research along with depth interview techniques

Qualitative research is a method of examining an event within its specific context and is valuable for exploring intricate, novel, or relatively uncharted domains. One fundamental principle of the qualitative approach is that researchers cannot maintain complete neutrality or detachment from the process of generating and analyzing data.

In-depth interviews are valuable for obtaining comprehensive insights into an individual's thoughts and behaviors, as well as for thoroughly examining novel topics. Interviews are frequently employed to furnish context to supplementary data, such as outcome data, thereby presenting a more comprehensive depiction of the program's occurrences and their underlying causes.

It is a crucial instrument for businesses and organizations to utilize in order to enhance decision-making and optimize their operations. Thorough examination is also crucial for scholarly research and writing. It enables scholars to conduct in-depth analysis of a subject and generate novel insights or perspectives.

3.6. Research Methods

This research on building brand loyalty among potential customers involves information from existing sources (secondary data) and direct feedback from customers and managers through interviews (primary data). We opted for qualitative techniques to gain deeper insights. The qualitative approach was deliberately chosen to explore the subject extensively, aiming to understand brand loyalty. Since my focus is on understanding customer perspectives, and not on numerical values, quantitative data analysis is not suitable for this study.

3.7. Sampling

The study involved 15 participants across three different brands. Although there are no definitive guidelines regarding the number of individuals to include in research, some researchers suggest that a range of 10 to 50 participants is adequate for perception-based consumer behavior studies (Creswell and Creswell, 2018). Therefore, the study will select 15 participants to be interviewed in-depth.

In the procedure 5 Brand managers of Le Reve, Infinity and Sailor's interview was conducted. And 5 loyal and 5 seasonal consumer's interviews of those brands were taken. To keep the data unbiased, a physical interview was taken and the questions were deliberately explained to the respondents. It was a semi structured interview of 7 questions where there was room for respondents to add their view and comments.

3.8. Data analysis

In the data analysis part of the research, we explored 7 key questions revealing diverse loyalty definitions. Identified factors driving consumer choices. How brands can enhance loyalty by addressing identified factors. Here the study focuses on customer loyalty towards the brands and brand perspectives on loyalty.

4. Interaction with the Managers

Customers in the Bangladeshi fashion and lifestyle sector demand nothing less than first-rate service and high-quality goods. The best brands consistently provide excellent service in order to preserve customer loyalty. Le Reve's Banasree and Wari branch managers voiced their opinions. *"Customer is our Master".* Sailor manager from the Wari branch mentioned. "*The customer is king*". Goodness, diversity, and value for money are the most important factors in establishing a brand's loyalty, nevertheless. So that their clients never get tired shopping at Le Reve, the managers claim that new outfits are released seasonally and for special occasions throughout the year. Sailor Manager said that the company wants its customers to be on trend all the time, thus it releases items that are in line with current trends. Alternatively, Infinity's management put a premium on children's wear; the company caters to every market segment for both sexes, but they have 200 distinct lines of clothes for children alone. For today's shoppers, buying clothes online has become the norm. You can see all of Le Reve, Sailor Moon, and Infinity's wares on their own websites. Online shopping isn't really their thing, however, according to Manager of Infinity. This is what the Manager of Infinity at Wari had to say: "We believe in physical shopping where consumer can See, Touch and Trial their product and buy it with 0% confusion in mind." Additionally, "*Consumers are getting into online shopping more and more,"* said Le Reve of Banasree's manager. Both our online and offline sales are equally balanced. Le Reve continues to lead the online retail industry with the development of their own app. People who pay a premium for things also want assurance that they will be safe. According to Le Reve's management, Infinity offers a similar 21-day return policy. Any day, anyplace product changes are available with Sailor. In order to maintain and develop brand loyalty, quantity and price discounts are also important. Two membership cards exist, according to Le Reve's management. Gold and silver. All purchases are discounted by 5% for Silver Members. Enjoy a 10% discount on all purchases with our Gold Membership. Savings for students are available, and Sailor accepts a variety of payment methods, including Bkash, Nagad, and a number of bank cards. After making 10,000 purchases, Infinity will send you a membership card good for a 5–10% discount on any future purchases. Managers at all levels of the company claim that they work tirelessly to meet the needs of its customers, which in turn maintains them loyal and the brands at the top of Bangladesh's apparel lifestyle category.

5. Loyal Customers' Expectation from the Brands

A brand's long-term viability depends on its ability to attract and retain customers. Customers' expectations tend to grow as they become more devoted consumers. Client loyalty is built on the brand's reputation and persistent devotion to quality, not on the newest fashionable outfits, according to one Le Reve client. Customers often worry about spending too much money, so they look for affordable options that don't skimp on quality. As a sign of how much they appreciate the perks of membership, long-time Le Reve supporters are looking forward to the launch of a membership card. Customers who have been dedicated to the Sailor brand for years see it as more than just apparel; it represents a way of life. "Wearing Sailor not only makes a fashion statement but also instills confidence and a sense of connection to a community that shares aesthetic values," says the third interviewer from Sailor in the interview. The need for fresh ideas in design and individuality in style highlights the commitment of Sailor fans to maintaining the charm of the brand with every captivating collection. Comparable emotions are shared by Infinity consumers, who likewise want certain perks comparable to those of the businesses named. Infinity, like Le Reve and Sailor, might increase consumer loyalty by resolving pricing issues and providing accessible quality. In order to strengthen customer loyalty, Le Reve could look into offering membership advantages, as its clients have shown an interest in. A brand's reputation, dedication to quality, and ability to meet changing consumer expectations are the three main determinants of brand loyalty. Three important techniques for these three companies to nurture and retain brand loyalty among consumers include resolving common concerns about pricing, creating inexpensive collections, and continuing to innovate in design. Finally, elements like distinctive style, personal choice, membership benefits, gift certificates, and efficient advertising have a significant impact on consumer loyalty to companies like Le Reve, Sailor, and Infinity. Also, knowing and catering to your clients' demands—particularly in regard to pricing, quality, and distinctive offerings—is key to satisfying their expectations and generating good consumer perceived value. Customers' attitude and expectation building are greatly impacted by perceived value. For these dedicated consumers, nothing beats shopping for their preferred brand of clothing, which brings them immense joy.

6. Seasonal Customers Complaints

As a result of our investigation, we now know how Infinity, Le Reve, and Sailor respond to seasonal consumer concerns. Every company said that hearing their customers' grievances is their top priority. After that, they tried to figure out what type of consumers they were dealing with, according to Le Reve. While Infinity said they demonstrate empathy, Sailor claimed they really apologize when they make a mistake. After hearing it three times, they attempt to clarify to the consumers what went wrong. Le Reve maintains her optimism, Sailor takes the initiative, and Infinity acts swiftly in situations like this. When faced with such a scenario, all three businesses opt for an optimistic tone. Their demeanor is impeccable. When faced with such a challenge, all three companies demonstrate remarkable adaptability. When customers have questions, all three brands have the answers. Customers are then presented with solutions. In such a scenario, Sailor offers awards to their clients; Le Reve gives out free services, and infinity does the same. In the end, it's the consumers' input that every brand records.

7. Findings

Customers' devotion to a brand is proportional to the companies or product's reputation and quality. On occasion, businesses fail to identify their target market, leading to underexposure of otherwise excellent items. Even when the target market is defined precisely, products don't always provide the promised value. Achieving harmony between these two factors is what really makes customers loyal to a brand. From what we can tell from our analysis of the Bangladeshi retail clothes and lifestyle shop scene, the leading brands in the country place a premium on catering to a certain demographic within the country's tightly packed market. One of the main reasons people shop at that business often is because of the variety of things they provide. Shoppers save time and effort when they can locate all the things they need in one place. We have also researched the fan bases of Le Reve, Infinity, and Sailor. One thing these firms have in common is the wide range of products they provide, catering to people of all ages and both sexes. They sell more than just clothing; they also have accessories, jewelry, and home décor for both men and women. When customers see all of these items in one place, they often attempt to do all of their shopping there. And those companies' discount policies entice consumers to purchase more from that shop, which in turn attracts those customers for a very long time. However, this only occurs when the product is of high quality and offers excellent value for the money. Also, customers care about product safety, and rules might change at any moment; color guarantees are an important element of that. Brands provide appealing outlet ambiance and excellent service to ensure customers have a pleasant shopping experience. These shops have also recently increased their online presence in response to customers' growing preference for online purchasing. As a result, businesses like Le Reve, Infinity, and Sailor Moon are able to establish strong brand loyalty among Bangladeshi customers.

In our study report, we found that brand practitioners from Sailor Moon, Le Reve, and Infinity all emphasized the importance of brand loyalty. Establishing a loyal customer base gives you a leg up in the cutthroat fashion and lifestyle industry. When consumers have faith in a brand, they tend to be less likely to be persuaded by rival offers. Loyal consumers become enthusiastic promoters of the brand when they have a good experience with it. Such advertising holds a lot of sway in Bangladesh because of the importance of personal relationships and word of mouth when it comes to making purchases. Building loyalty requires providing a pleasant and unforgettable experience for customers. Furthermore, in the fashion industry, where in-store experiences and customer service are crucial, putting an emphasis on customer happiness may tremendously boost brand loyalty.

To keep clients interested for the eternal duration, several strategic initiatives have been integrated. Shoppers' tastes, habits, and preferences may be better understood with the use of data and insights provided by loyal consumers. Strategic decision-making and targeted advertising may both benefit from this data. Companies with a stellar reputation, like Sailor, take the time to learn everything they can about their ideal customers. Make sure their marketing, goods, and services are all tailored to what their devoted consumers want. Thus, establishing a loyal customer base is a continuing process that calls for consistent work and the ability to respond to changing market conditions by chosen brands.

The findings of the study showed the steps to take and the elements that influence customer loyalty in the retail and leisure industry of Bangladesh. You can see where the brands are focusing their efforts and what problems they're facing from the data. The viewpoint of a Bangladeshi customer while making a purchase is also shown by research. Additionally, it is shown that despite the fact that the three businesses are using diverse approaches to attract customers, they are all successful in building brand loyalty. It could also reveal where the companies can improve.

8. Discussion and Practical Implication

Building brand loyalty is an essential component of every company's strategy for long-term success and maintaining consumer connections, according to our study. Le Reve's brand messaging remains same regardless of the platform. Maintaining cohesion in the brand's messaging across all touchpoints with customers, from advertising to product development, is essential for building trust and loyalty. In order to build loyalty, you must dedicate yourself to providing top-notch items. Every purchase from Le Reve is guaranteed to meet or beyond client expectations since the company is dedicated to preserving the quality that consumers demand. To maintain its lead in the market, Infinity has prioritized constant innovation. Forming online communities where consumers can talk about the brand and exchange ideas and feedback via events, forums, and social media groups. Contrarily, Sailor has made providing outstanding customer service a top priority. Customer service that is easy to use, provides fast issue solutions, and is tailored to each individual may do wonders for retention. Created an engaging brand narrative that strikes a chord with target audiences. Tell the story of Sailor, the people who created the company, and their commitment to making high-quality sailing gear. A dedication to satisfying customer demands, consistent messaging, high-quality goods, consumer involvement, and innovation are all necessary ingredients in the recipe for brand loyalty. In order to engage with their devoted clients, Le Reve, Infinity, and Sailor have all customized these techniques to match their individual identities and target audiences.

The study gives us a general notion of the Bangladeshi clothing and lifestyle industry as well as some insights into it. We get a general understanding of how a brand may be established from the ground up and yet succeed in the highly competitive clustered market of Bangladesh, home to many established brands.

9. Conclusion

There is no denying that brands have always cared about the connection between their consumers and the results they want to achieve. Brand loyalty development is more than a strategic decision in the fast-paced and cutthroat fashion and retail sector; it's an absolute must for sustained success. Brands in the fashion industry must constantly innovate to keep up with customer tastes that are both varied and unpredictable, as well as the impact of social media and fads. In the fashion sector, a customer-centric and comprehensive strategy is the key to establishing brand loyalty. Essential components include constant brand messaging, a steadfast dedication to quality, customer interaction, and the adoption of new methods. Recognizing the power of network building, whether online or offline, is crucial for fashion firms. It helps customers feel like they belong. Le Reve lays the groundwork for customer loyalty with its dedication to consistent brand message and high-quality product delivery. To make a splash in the competitive fashion industry, Infinity prioritizes new ideas, unique styles, and community development. Sailor is a niche player in the sailing industry that has found success by focusing on its customers, providing an engaging narrative about the brand, and forming strategic alliances.

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