

Czech University of Life Sciences Prague
Faculty of Economics and Management
Department of Economics



Master's Thesis

**The Role of Economic Growth and Human Capital in Economic
Development – The Case of Bangladesh**

Sakhawat Hossain

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Thesis title

The role of Economic growth and Human capital in economic development – the case of Bangladesh

Objectives of thesis

This thesis will focus on economic growth and how human capital impacts GDP, foreign currency reserve, income per capita, and infrastructure development in Bangladesh.

Methodology

The thesis will be divided into three parts.

The first part is a theoretical one and is based on a literature search. It defines the current state of knowledge in the field of poverty alleviation. In this part, articles, books, research, and different electronic resources will provide information. Methodologically, this part of the thesis will be the analysis of documents.

The second part will rely on the theoretical part, which is the thesis's crucial component. Methods of quantitative research such as statistical and mathematical methods will be used in this part. The analysis will be done for Bangladesh.

The final part concludes the results of the previous parts and discusses them with another author.

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Recommended information sources

- Azizul Islam, M. and Deegan, C. (2008), "Motivations for an organisation within a developing country to report social responsibility information: Evidence from Bangladesh", *Accounting, Auditing & Accountability Journal*, Vol. 21 No. 6, pp. 850-874. <https://doi.org/10.1108/09513570810893272>
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The Diploma Thesis Supervisor

doc. Ing. Irena Benešová, Ph.D.

Supervising department

Department of Economics

Electronic approval: 15. 2. 2022

prof. Ing. Miroslav Svatoš, CSc.

Head of department

Electronic approval: 21. 2. 2022

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

Prague on 27. 03. 2022

Declaration

I declare that I have worked on my master's thesis titled "The role of economic growth and human capital in economic development-the case of Bangladesh" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on date of submission

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ABSTRACT

Human capital is a critical component of economic development and prosperity in every country. A causal link between human capital development and economic growth is established in this work through empirical evaluation. OLS, Johansson co-integration, and unit root tests are used in this research. This study considered growth in the GDP per capita, public expenditure on education and health and life expectancy, secondary school enrollment, primary school enrollment, and tertiary school enrollment were proxies for economic growth. The study found a substantial link between the increase of human capital and the expansion of economic activity. In this model, life expectancy is shown to be the most significant variable since it significantly impacts Bangladesh's economic growth. In recent years, tertiary education has had a more significant impact on the economy than secondary education. Efforts should be made to implement policies that will lead to overall economic growth. The country's health care and education budgets must be well-managed to benefit from high-quality services and a high-quality educational system.

Keywords:

Human Capital, Economic Growth, GDP, Primary School Enrolment, Ordinary Least Squares, Johansson Co-Integration, Public Expenditure on Education and Health, Secondary School Enrolment, Life Expectancy, Tertiary School Enrolment,

Abstrakt

Lidský kapitál je kritickou složkou ekonomického rozvoje a prosperity v každé zemi. V této práci je empirickým hodnocením stanovena příčinná souvislost mezi rozvojem lidského kapitálu a ekonomickým růstem. V tomto výzkumu jsou použity OLS, Johansson co-integration a unit root testy. Tato studie považovala růst HDP na obyvatele, veřejné výdaje na vzdělání a zdraví a střední délku života, zápis na střední školy, zápis do základních škol a zápis do terciárních škol za zástupce ekonomického růstu. Studie zjistila podstatnou souvislost mezi nárůstem lidského kapitálu a expanzí ekonomické aktivity. V tomto modelu se ukazuje, že střední délka života je nejvýznamnější proměnnou, protože významně ovlivňuje ekonomický růst Bangladéše. V posledních letech má terciární vzdělávání významnější dopad na ekonomiku než střední. Mělo by být vynaloženo úsilí na provádění politik, které povedou k celkovému hospodářskému růstu. Rozpočty na zdravotní péči a vzdělávání v zemi musí být dobře řízeny, aby těžily z vysoce kvalitních služeb a vysoce kvalitního vzdělávacího systému.

Klíčová slova:

Lidský kapitál, ekonomický růst, HDP, zápis do základních škol, obyčejné nejmenší čtverce, Johanssonova kointegrace, veřejné výdaje na vzdělávání a zdraví, zápis na střední školy, střední délka života, zápis na terciární školu.

List Of Abbreviation

ADB	Asian Development Bank
ADF	Automatic Document Feeder
ADP	Annual Development Programme
BFTI	Bangladesh Foreign Trade Institute
BPDB	Bangladesh Power Development Board
BPC	Business Process Council
BSTI	Bangladesh Standards and Testing Institution
CEIC	Census and Economic Information Center
CPI	Consumer Price Index
DAE	Data Of Autorised Economy
DMB	Deposit Money Banks
ECM	Error Correction Model
ECM	Electronic Control Module
EPB	Export Promotion Bureau
FDI	Foreign Direct Investment
FYP	Five-Year Plan
GDP	Gross Domestic Product
GER	General Education Requirement
GNI	Gross National Income
HD	Human Development
HDR	High Dynamic Range
HIES	Household Income and Expenditure Survey
IDCOL	Infrastructure Development Company Limited
IFC	International Financial Council
ISCED	International Standard Classification Of Education Development
LDC	Least Developed Countries
LE	Limited Edition
MDG	Millennium Development Goal
MIGA	Multilateral Investment Guarantee Agency
MPS	Monetary Policy Statement
MV	Modern Varieties

OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square Model
PPP	Purchasing Power Parity
RM	Reserve Money
R&D	Research and Development
SBIIPCL	Summit Bibiyana II Power Company Limited
SNA	System of National Accounts
TEVT	Technical Education And Vocational Training
TEVTA	Technical Education and Vocational Training Authority
USD	United States Dollar
VIPB	Viable Infrastructure Projects Bibiyana II

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INTRODUCTION

Since the two world wars, the globe has changed dramatically. This century has seen substantial advances in science and technology, and broad-based governments and the development of institutions, which have improved many people's lives around the world. The actual reality in the Asian region is that there are considerable variations in economic progress between countries. Employee productivity and a firm's ability to maintain a competitive edge can both be improved by strengthening human capital, according to (Schultz, 1993).

Since the training process, knowledge acquisition (education), activities, are all directed towards skill acquisition, and human capital becomes a competitive advantage instrument, human capital development has been focused on human empowerment and engagement. According to the OECD (Organisation for Economic Co-operation and Development), knowledge, competitiveness, and other characteristics a person possesses that contribute to his or her social, economic, and personal well-being are all examples of what the OECD calls "human capital,". Human capital development is a critical component of Bangladesh's economic success, and it must be prioritised as such. An important issue for the global world and Bangladesh, in general, is how to attain long-term development. Achieving the three pillars of sustainable development will be impossible if human capital development is not included. The development agenda cannot be complete without addressing human resource development. Education and technology are two areas in which Bangladesh's government has been working to improve the lives of its citizens.

Bangladesh's Economic Growth Health and Family Well-Being, Human Capital Development and Women and Children, Social Well-Being, Sports and Youth Development, Culture, Work and Employment, various projects have been implemented to improve the quality of education and increase the number of students enrolled in higher secondary, technical, and entire higher education. (Md Chowdhury, Murshed Chowdhury, 2018).

A comprehensive “National Education Policy, 2010” has also been issued by the government to meet the educational demands of the country. By 2014, the goal of eradicating illiteracy was achieved through increased school enrolment, pre-school education, stipends, and classroom contact hours for instructors and students. Bangladesh is the second country in the LDCs (Least Developed Countries), after Sri-Lanka, to achieve gender parity in secondary and primary education. The government has prioritised the health, nutritional, and

demographic sector, which aligns with the Millennium Development Goals, resulting in significant development in the country's health sector. Birth and death rates have fallen and there has been considerable progress in reducing newborn fatalities, likewise the life expectancy was 64.2 years in 2001 which has now risen to 68.2 years by 2021 and malnutrition rates have also decreased. Health, Population and Nutrition Sector Development Program (HPNSDP), have been implemented to ensure the long-term viability of these accomplishments. The Government has issued the “National Women Development Strategy, 2011” to educate and empower women in the country and assure their active engagement in the mainstream of national development activities and it has also made a positive impact on the performance of the education system which has increased from 22% to 62% after the course of action of appointing 61% women in government primary schools. Additional measures have been taken to protect the welfare of children, such as the adoption of the “National Children Policy in 2011”.

OBJECTIVES AND METHODOLOGY

2.1 Objectives

The primary goal of this study is to analyse the relationship between Bangladesh's human capital development and the country's economic growth to demonstrate the vital significance given to human capital development in Bangladesh.

The study's first specific objective is to look at how Bangladesh's human capital grows and changes.

The second is to evaluate the relationship between Bangladesh's economic growth and human capital development.

This study further clarifies the proposed policy implications and recommendations for future studies.

This dissertation will research the connection between economic growth and how human capital impacts Bangladesh's foreign currency reserve, income per capita, and infrastructure development.

In order to achieve the objectives, the following research questions are formulated:

1. What is the relationship between human capital and economic growth?
2. What roles does foreign currency reserve play in the development of an economy?
3. What is the significance of primary, secondary and tertiary education in the GDP?
4. What impact does income per capita have on the infrastructure of Bangladesh?
5. How does economic growth affect economic development?

2.2 Methodology

The thesis will be divided into three parts. The first part is a theoretical one, based on a literature search. It defines the current state of knowledge in human capital development and its economic factors. The secondary data will be used in review part, including articles, books, research, and different electronic resources.

The second part will rely on the theoretical part, the thesis's crucial component. Methods of quantitative research such as statistical and mathematical methods will be used in this part. The third part is a practical part which describes the method of data collection and what type of data is used for this study. The study analysis will be based on the region of Bangladesh.

2.1.1 Data and study

This research relies on secondary data sources. Annual time series data for the period of 2001-2021 are used in this study. Bangladesh Economic Review, Bangladesh Bank, World Development Indicators and Bangladesh Statistical Review are used to gather data for this study. A total of seven variables are used in this study to examine the relationship of economic growth and human capital in economic development. The used variables are:

- The income per capita (constant 2020 US dollar),
- Gross capital formation (percent of),
- School enrollment,
- Foreign currency reserve,
- Infrastructure development in Bangladesh,
- Life expectancy at birth, total (years),
- Health expenditure, total (percent of)

The variables mentioned above will examine the relationship between human capital development and economic growth. Remittance and the foreign exchange rate will be calculated using annual time series data from 2001 to 2021. Foreign aid and GDP per capita in PPP (Purchasing Power Parity) dollars are included in the inflation rate difference and unit price index of imports. It can be concluded that this study relied heavily on secondary sources.

Per capita income: The per capita will be calculated by taking the midyear population and dividing it by the gross domestic output of Bangladesh. Any product taxes and subsidies that are not included in a product's price do not count and hence are not measured in the total value of that product. Depreciation of manufactured assets and natural resource depletion and degradation are not considered in the calculation. The data are presented in constant 2020 U.S. dollar terms.

Primary school enrolment (percentage of gross enrolment); regardless of age, total primary school enrolment, represents a proportion of the population officially designated as being of primary school age.

The data sources include: Bangladesh's Economic Survey, which is published by Bangladesh's Ministry of Finance and includes sources from Bangladesh Central Bank and Export Promotion Bureau. Bangladesh Bureau of Statistics publishes the yearly report of the Bangladesh Bank, income per capita and the Statistical Year Book. The International Monetary Fund, World Bank's databank, the official website of the World Bank,

Bangladesh Bank Bulletin, Asian Development Bank (ADB) database published the world economic outlook. This research studied a variety of previously published materials, such as academic journal articles, technical reports, and studies.

2.2.3 Statistical Analysis

The data for 2001-2020 will be used to calculate the Secondary school enrolment. This data will be based on secondary sources. This study calculate the total percentage of students who are officially of secondary school age enrolled in secondary school; regardless of age, the General Education Requirement (GER) can rise to more than 100%. Enrolment at the tertiary level (percentage gross): ISCED 5 and 6 tertiary enrolment (ISCED 5 and 6) for all males, regardless of age, expressed as a percentage of the five-year-old male population following secondary school graduation.

Moreover, total life expectancy (years) at birth: The number of years that a newborn baby can be expected to live based on current mortality rates at the time of birth will be calculated, a measure of how much money is being made. Gross capital formation is the sum of expenditures on new economic assets and net changes in inventory levels. Plant, machinery, and equipment purchases; the purchase of roads, railway lines; and the construction of private residences, public institutions (such as schools, hospitals, private homes), and commercial or industrial buildings are all examples of fixed assets will be included in this study. The government's percentage on education: Gross domestic product is used to calculate the general government's expenditure on education (current, capital, and transfer payments). Transfers to the federal government from other countries are included in this spending category.

2.3 Variable Used In This Study

In this study, the time-series data from 2001 to 2021 will be used with the seven variables GDP per capita (constant 2005 US\$), School enrollment, Gross capital formation (percent of GDP), secondary, primary, tertiary, total, Health expenditure, Life expectancy at birth, and total (percent of GDP). This study will investigate the relationship between independent variables and dependent variables (human capital development and economic growth) respectively (Corbo, V., 2019)

GDP divided by the midyear population yields GDP per person. The figures will be expressed in 2020 U.S. dollars, the most recent available. As a dependent variable, will look at the gross domestic product in this study.

School enrollment will be used to test the significance of the positive sign of the coefficients in the Bangladesh economy.

Variable	Units of measurement	Source
GDP per capita	Constant 2020 US dollars	tradingeconomics.com
GCF = Gross capital formation	USD Million	Statista.com, 2021
SET= School enrollment, tertiary	%	tradingeconomics.com
SES= School enrollment, secondary	%	tradingeconomics.com
LE= Life expectancy at birth, total (years),	Years	macrootrends.network
HE= Health expenditure,	USD Million	World.Bank
EE= Expenditure for education	USD Millions	World. Bank

Table 1: Description of Variables

Source: Own Processing

2.4 Model Specification

Research on Bangladesh's long-term economic growth will be the key goal of this thesis. Multiple regression of Ordinary Least Square (OLS) approximates the model to attain this goal. The model's functional form will be defined as follows:

$$Y_i = B_1 + B_2X_{2i} + B_3X_{3i} + u_i \quad \dots(I)$$

B coefficient

Y_i is the response of the dependent variable. There are explanatory variables (or covariates, predictors, independent variables),

X_2 and X_3 is the value of the explanatory.

U constant

i the data time serial

2.5 Regression Test

This study will apply regression analysis to verify the stationarity of OLS regression. Using the Johansson co-integration approach, it has been possible to determine whether or not variables are related.

2.6 A Co-integration Analysis

This approach is insufficient because the results will be skewed if non-stationary time series is used. In the case of co-integration, on the other hand, there is no issue with fictitious regression. It is essential to know that the time series used to estimate the co-integration are integrated of the same order before conducting the co-integration test. Aside from Engle-Granger, the most often utilised co-integration methods are Co-integration by Johansen. Johansen's co-integration will be employed in conjunction with the other two methods. Rather than Engle-Granger, since there are more than two variables, using Engle-Granger would be too cumbersome.

With Granger, only a single relationship can be found, even though there could be a slew of others.

LITERATURE REVIEW

This chapter provides an in-depth analysis of the literature review, which includes a discussion of the research questions and quality issues in the research design and explains Bangladesh's human capital development and economic growth. Each of these previously done studies was undertaken and explained their point of view. Bangladesh has sustained its high growth rate despite the weak global development rate for decades. Bangladesh's economy has grown at an annual rate of more than 6% during the past decade. Total domestic product growth has now exceeded 7.5%. Growing up-ward and expecting to reach a landmark double-digit increase in the following few years has been forecasted.

3.1 Economic Examination

Human Development Index (HDI) was designed to focus on the well-being of individual and in addition to traditional economic growth, it is feasible to gauge a country's level of human development by looking at its potential for individual human growth which includes its components, and other metrics of per capita income and that have such high correlations, several economists have argued that it is effectively redundant. The overall HDI and the other two components have a strong correlation with Gross National Income (GNI) per capita in terms of both values and rankings. Just comparing GNI per capita between nations, rather than gathering data for the extra components that contribute little or no new information, would be the most efficient use of time and resources which indicates strong and persistent relationships. A greater degree of sustainable economic growth requires nations worldwide to integrate human capital and physical capital like independent sources. By making public investment on the impact on income per capita, and other social services, rising nations have sought to stimulate human capital accumulation (Saad and Kalakech, 2009).

For the second time in the previous three decades, Bangladesh has shown significant economic development, with growing at a rate projected to have topped 7% in FY2016, driven by services on the supply side and increases in public consumption and investment expenditures on the required side. During the Five-Year Plan (FYP), FY2015– FY2021, Bangladesh must achieve average growth of 6.4% to reach its 2021 goal of being a “middle-income” economy. This year's 7th FYP is the culmination of the ongoing plans to carry out

Vision 2021 and the related Perspective Plan 2021, which were adopted in July 2015. (PP2021).

To finish what the 6th FYP started, the 7th FYP worked to implement the PP2021. The 6th FYP saw significant progress, but the government was conscious that the PP2021's development goals remained unfulfilled and needed to be addressed. After taking stock of where we've come and where we want to go, the 7th FYP outlined a plan for moving forward with the PP2021 development agenda and UN Sustainable Development Goals (SDGs) 2030 implementation in order to close any remaining gaps.

A jump in investment rates from 28% to 34% is required by FY2020. Much of the money will improve infrastructure, train workers, and boost output in the industrial sector (Kalakech, M., 2016).

3.2 Economic Success Elements

Several essential ideas stresses and explains the importance of human capital as a requirement for economic success. The human capital theory promotes investing in human capital to enhance the foreign currency reserve, which is required for economic success. This idea holds that their income per capita determines the labor force's output potential. Furthermore, numerous additional growth theories emphasize the relative endogenous and external variables that might underwrite economic development. Endogenous growth theory, as evident, proposes investing in health and education to enhance human capital (Benhabib and Spiegel, 1992). According to this idea, a capable and educated labor force will result in endogenous technological progress, eventually contributing to economic growth (Mukhopadhyay et al., 2012). The importance of foreign currency spending results in competent and healthy human capital, which is critical for emerging economies.

3.2.1 Monetary Policy

Monetary targeting as a financial instrument is becoming more popular in both developing and developed countries. The collapse of the Bretton Woods system in the early 1970s paved the way for emerging-market central banks to implement explicit inflation targeting policies. In 1990, the Bank of Canada, the Bank of Israel, and the Bank of England also adopted this new policy to follow New Zealand's lead. The Czech Republic, Brazil, Poland, Argentina, Korea, South Africa, and Thailand have numerical inflation objectives. More than a dozen countries have accepted the inflation targeting

strategy, which has been around for two decades. Another country has accepted elements of this new approach, while others are considering adopting full-fledged inflation targeting in the future years. As Petursson (2004) points out, inflation is becoming increasingly popular because it is seen as integrating two important components of successful money management: setting a credible moderate anchor for inflation expectations and providing enough policy flexibility.

3.2.2 Central Bank Of Bangladesh Monetary Policy

In the monetary policy framework, the central bank of Bangladesh executes monetary policy by designating Reserve Money (RM) as the operational objective and wide money (M2) as the midway target. The currency outside the bank (DMBs) and the other financial institutions with Bangladesh Bank and money at DMB tills is referred to as reserve money. Wide money (M2) is described as a total of cash held outside of banks, time deposits and demand deposits. Bangladesh Bank affects the RM utilizing a variety of strategy measures. The controllability of reserve money is critical to the success of the monetary policy. In the context of the Bangladesh economy, four actors affect the monetary base system, namely the Bangladesh Bank, the government, DMBs, and public deposits and lenders of DMBs. The Bangladesh Bank forecasts inflation expectations rates, and it establishes a safe ceiling for M2 expansion in line with those projections. Reserve money expansion is planned in such a way that it corresponds to M2 projections. Nonetheless, notwithstanding these efforts, the Bangladesh Bank maintains a fairly control over the money supply, as seen by the current disparity between intended and actual changes in the money supply (Islam, 2008).

Key Monetary Program (y-o-y growth in %)

Items	Actual			Program	
	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22
Net Foreign Assets*	10.2	30.4	27.1	13.0	10.4
Net Domestic Assets	13.4	9.9	9.8	14.1	16.5
Domestic Credit	13.7	9.7	10.3	14.1	17.8
Credit to the public sector@	53.4	17.2	21.2	30.6	32.6
Credit to private sector	8.6	8.4	8.4	11.0	14.8
Broad Money	12.7	14.3	13.6	13.8	15.0
Reserve money	15.7	21.3	22.4	14.0	10.0
Money multiplier	4.84	4.87	4.49	4.86	4.69

*Calculated using the constant exchange rate of June 2021. @The amount of net credit to the government in FY21 was BDT 627 billion and BDT 412 billion respectively, and for FY222 it is assumed to be BDT 765 billion as per the national budget. (1 USD=84.84 BDT, 2020)

Figure 1: Exchange Rate and Official Reserve Developments

Source: Bangladesh Bank

Economic recovery in the pandemic-stricken country is expected to benefit from the central bank's announcement that it will continue its expansionary policy for this fiscal year (FY).

As the Bangladesh Bank (BB) published its Monetary Policy Statement (MPS) for the fiscal year of FY 2021-22. By supporting investment and employment-creating activities, the MPS intends to assist firms to repair GDP and maintain human capital development. The latest National, urban and rural Consumer Price Index (CPI) are all included in the release. The 2015-16 base year was used to calculate the national, urban, and rural CPIs. The 2015-16 Household Income and Expenditure Survey (HIES) was used as the baseline for the weights. The indices can be seen in two ways: as a total and broken down into food and non-food categories. CPIs for apparel and shoes, rent, energy, and illumination, furniture, furnishings, household items, and implementation, medical care and health expenditures, transportation, recreation, enjoyment, and supporting attractions, and odds and ends goods and services are further subdivided into national, urban, and rural groups.

3.2.3 Index Baskets and Weights

Two consumer baskets are utilised to calculate CPIs: one for urban areas and one for rural areas. HIES, 2015-16 was used to calculate the consumer spending of the population's services and goods, which were then compiled into these baskets. Rural consumers had 318 food and non-food products to choose from, compared to 422 commodities in the urban consumer basket. The item weights in the base year were computed using the average household expenditure on the item defined in terms of its percentage share of the total housing costs on all items. There are eight major categories of products in the index basket (Islam, M. T., 2020).

On January 1, 1992, the dual currency markets were merged.(World Bank, 2021).

3.3 A recent survey of the Economy in Bangladesh

In economics, human capital is described as a person's collection of abilities and traits that enable them to do work and generate personal, economic, and societal value (OECD, 2001). The conflict is referred to as the workforce even though it is a production element. One of the most important investments we can make in our future is our children's education. In the early 1960s, economists (Carillo et al., 2013) found that investing in education is one of the most important factors behind the rapid growth of the economy. Carillo et al., point of view

attempts to point out that a dollar spent on education increases additional dollars on capacity like foreign exchange, and the possibilities for foreign direct investment, moreover, it highlights the significance of human capital as an asset. According to Niaz Murshed Chowdhury et al., focus on Human capital, Economic Growth and Human Capital Development in Bangladesh recommend the more capital investment. They suggest investing in intellectual resources through the World Bank, foreign investment, and various other initiatives to grow. They assert that the rate of return on human capital influences one's ability to produce.

If possible, Bangladesh should erase its debts and focus on human and infrastructure advancement instead. Exports, foreign direct investment, and remittances are all advantageous to Bangladesh's economy; therefore, sound debt management is also recommended (Yeasmin & Chowdhury, 2014). Economic growth and human capital development are closely linked, as demonstrated by the research findings conducted by (Ifeoma C 2013). According to their results, economic growth is closely related to human capital development. Sajid Ali (2012) uses time-series data to examine the role of human capital formation in Pakistan's economic growth. All three were shown to significantly impact in a good way: gross fixed capital production, enrolment index, and the Gini coefficient. Greenspan, A., (2004) looked at the link between economic growth and came up with a framework and policy tools to help boost overall economic growth. International investment has a high correlation with both economic growth (EG) and human development (HD), as shown by cross-country regressions (Ranis, 2000).

3.4 Infrastructure Financing in Bangladesh

A small percentage of public infrastructure has been allocated to development in Bangladesh, which has left a large section of the population without access to basic services as well as technologies. Bangladesh was placed 127th in terms of facilities in the 2013–2014 Worldwide Competitiveness Report by the World Economic Forum (Asghar, N. 2012). In the Five-Year Plan, FY2016–FY2020 it is estimated that 31.9 million USD would be needed to address infrastructure issues. It is critical to raise money from the private and public sectors to move infrastructure upgrades forward. Analysis of Bangladesh's economy from 1981 to 2014 was carried out by Ali et al. (2016). According to researchers who used Johansen Co-integration, human capital accumulation has a big and favourable impact on

Bangladesh's economy. Analysis of Sri Lanka, Pakistan, Bangladesh, and India by Khan et al., (2016) from 1971 to 2013, they discovered that human capital helped these countries expand faster than they otherwise would have done. A similar idea was examined by Gupta et al., (2017) for the country's economic growth, using the years 1991 to 2020 as a sampling period. Human capital and innovation have a favourable and considerable impact on Bangladesh's economic growth; according to the findings of the study Hassan (2017) looked at the effects of health capital on economic growth in men and women Commercial Bank (CB).

Commercial banks are a development engine in every economy, but they have little exposure to the infrastructure sector in Bangladesh. As of the end of FY2012, just slightly more than 3% of scheduled banks' loans and advances were in, what might be termed infrastructure industries. Banks are typically prohibited from participating in infrastructure due to exposure restrictions and asset-liability structures in the banking sector. Given that banks in Bangladesh are subject to a single borrower exposure restriction of 25% of total capital, projects over \$60–\$90 million have proven challenging to fund in the local loan market. A single bank's typical investment capacity is approximately \$20 million, insufficient to support any significant infrastructure or energy sector project. Furthermore, CB's are usually restricted to inventing loans with a thoroughgoing duration of 6-8 years and demand equity levels ranging from 15% to 25%. IDCOL Role (World Bank. 2016).

Prosperity is dependent on the more efficient production of more and better products and services made possible by technological progress. Human capital can contribute to agricultural or general economic growth by adopting contemporary technology, increased efficiency and input utilisation, and/or the empowerment of individuals to migrate from low-paid agriculture to the relatively high-paying non-farm sector." Consequently, estimates of how human capital affects technology adoption, agricultural output, and production and non-farm income efficiency. Because of this, it is critical to examine the challenges from both a farm and regional level perspective. Regional Technology Adoption, Human Capital Descriptive and econometric analysis are used to determine the impact of human capital on technology adoption. The descriptive statistical analysis is supported by econometric analysis. The farmer's level of education serves as a proxy for other characteristics that affect adoption decisions.

The human capital contribution was calculated for irrigation, Modern Varieties (MV), and chemical fertiliser technology. Use an ordinary least squares and bits equation to see what

factors influence the fraction of irrigated area (Chowdhury, M. N., 2014). The concept of human capital is a nebulous one. It considers a person's level of education, health, and diet. Human capital was measured using education as a proxy (Gazi, M. T., 2009). The research investigates whether or not farmers' education and the adoption of new technology are linked.

What is the role of economic growth and human capital in economic development? Among economists, are there any that differ in technical efficacy in production? What role does farmer education play in enhancing the technical efficiency of various farms' output? Attempts are made to use both micro and macro-level analysis to answer these questions. Agricultural growth and farmer education are examined from a macroeconomic perspective with technology adoption (Taimur, J. A. 2013). MV rice technology adoption, technical efficiency in rice production, and non-farm revenue are all examined using longitudinal farm-level data. It's an era of tremendous agricultural expansion.

3.5 Financing of Medium and Large-Scale Infrastructure Projects

According to a list of potential medium - and large-scale infrastructure subprojects submitted by IDCOL to the Asian Development Bank (ADB) for financial support under the third-party, most of them are in the energy, transportation, and ports industries Public-Private Infrastructure Development Facility of the ADB. The government uses the public-private partnership model to fund these initiatives. It is part of the government's Vision 2021 effort to achieve faster and more leadership that creates positive change while still delivering the super quality public amenities in a financially sustainable method. The projected ADB capability aims to promote investment, economic growth, the creation of new jobs, and the development of the financial sector (ADB, 2014).

- (i) Private investors would acquire an ADB credit line for infrastructure projects through IDCOL.
- (ii) It is designed to help improve the investment climate and to encourage additional investment and regional integration in South Asia, among other purposes
- (iii) Improvements in power supply and market access will help raise industrial output.
- (iv) Boost economic activity, and as a result, create jobs; and

Bangladesh's project finance industry is growing by stimulating greater capital investment and improving the country's financial infrastructure

3.6 Renewable Energy Facility Financing

It intends to enhance funding for renewable energy projects to offer power to rural and off-grid communities while also mitigating the effects of climate change. This will also boost the economic output of rural residents who benefit from it.

Agriculture has a significant role in the economy of Bangladesh. Bangladesh's gross domestic product has traditionally been dominated by agriculture, which employs 60% of the workforce and accounts for 60% of the country's overall export profits. Over the next two decades, Bangladesh is anticipated to face a significant challenge in sustaining food self-sufficiency and ensuring food for everyone in the country. Around 128 million people will be added to this country between 1995 and 2015 (UN, 1993). The average farm size was decreased from 2.2 acres to approximately 1.4 acres during this period (Niaz, M., 2018). The old methods of increasing yields and productivity, such as increasing cultivated land, increasing crop intensity, and expanding irrigation infrastructure, have either run their course or have been severely curtailed. Is Bangladesh's agricultural boom sustainable in the absence of more public investments in irrigation and flood control and a lack of untapped capacity in the adoption of enhanced varieties in the irrigated ecosystem? It is necessary to study the growth components of agriculture to establish appropriate policies based on a thorough grasp of economic dynamics to address this issue. Human capital refers to a person's ability to generate income for the economy. People's collective knowledge and skillset are referred to as the "human capital."

Human capital yields or returns in strengthening a person's competence and earning potential, as well as raising the efficiency of economic decision-making both in and outside of the market economy (Osama, M., 2008). Farmers, farmworkers, researchers, and extension workers all have valuable human capital that may be used to create, adapt, and disseminate new technologies that boost productivity and, consequently, farm income.

A company's fixed assets include things like improvements to the land (like ditches, fences, and drains), investments in machinery and equipment (like equipment and plants), and the building of infrastructure (like roads and railroads) and other types of structures (like offices, schools, and hospitals). Company inventories are retained to satisfy short-term or unanticipated changes in production or sales and "work in progress". According to the 1993 System of National Accounts (SNA), capital formation includes net acquisitions of valuables. Amount spent on health care as a percentage of gross domestic product. Calculated the total amount spent on health care the percentage of that is spent on education

by the general government (current, capital, and transfer) is calculated by multiple economists of Bangladesh. Expenditures financed through transfers to the government from international sources are also included. Local, regional, and national governments are commonly referred to as general governments (Hanushek, E. A., 2013).

According to Sharif et al. (2013), in the short- and long-run causation between human capital, trade, and economic growth. This section summarises previous studies related to the current research. Investigated the role of Human Resource Development (HRD) in Bangladesh's growing process. To perform the empirical analysis, they built a hypothetical growth model based on two influential microeconomics and used a couple of econometric tests, namely, the Augmented Dickey-Fuller (ADF) unit root test and the Engle-Granger co-integration test. They discovered a good relationship between Strategy implementation and Bangladesh's economic growth process.' They also found that among HRD activities, investment in education has a stimulating effect, while Research and Development (R&D) expenditures have a small but favourable impact on growth. After exploring the long-term relationship between government spending on education and economic growth in Bangladesh, it is found that public expenditure on education has a considerable long-run and positive impact on economic growth (Mukii, 2012). According to the co-integration statistics, a 1% increase in public education spending subsidises a 0.35 % increase in per capita in the long run. Ahmed and Uddin (2017) used annual data from 1976 to 2005 to analyse the causal relationship between export, import, remittance, and growth in Bangladesh. Using data series from the period mentioned, the study discovered that exports, imports, and remittances impact growth rate only in the short run, and the causal linkage is unidirectional. In Bangladesh, Mamun and Nath (2015) explored the relationship between economic growth and matters of exports. The study discovered that exports and industrial production are cointegrated using quarterly data from 1976 to 2013. According to Error Correction Model (ECM) findings, there is a long-run unidirectional causality from exports to growth in Bangladesh.

According to Hossain et al. (2009), the link between exports, imports, in Bangladesh is by utilising co-integration and error correction models using annual time series data from 1973 to 2008. The research looked at the short-run dynamics of export-import earnings within a long-run framework. The study discovered unidirectional causality from exports to income, implying that an export marketing strategy could help Bangladesh's economic growth. To the best of our knowledge, most research has used public expenditure on education as a

proxy for human capital to determine the relationship between human capital and economic growth. However, due to the various difficulties in the education sector in developing and least-developed nations such as Bangladesh, public expenditure on education may not be a useful proxy variable for human capital. Human capital affects economic growth and a country's exports, which promotes economic growth in the long run. However, most researchers have focused on the direct effects of human capital on economic growth while ignoring the indirect effects of financial development on economic growth in Bangladesh. As a result, the current study attempts to investigate the direct and indirect effects of human capital on economic growth in Bangladesh using higher education attainment (which may be a stronger proxy variable for human capital) and exporting, which mirror the true condition.

3.7 World Bank in Bangladesh

Together with International Financial Council (IFC) and Multilateral Investment Guarantee Agency (MIGA), the World Bank assesses how financial and other assistance may be customised to maximize impact on the government of a borrowing nation and other stakeholders. The borrower and the Bank Group construct a Country Partnership Framework after completing the analytical work to determine the country's top priorities for reducing poverty and improving living circumstances.

Initiatives can range from industrialization to training, care services, and government financial management, to name a few. An agreement is reached on an initial project concept and beneficiaries between World Bank personnel working on that project, and a Project Concept Note is created outlining the major elements. This document outlines the project's goals, potential pitfalls, alternate scenarios, and expected approval schedule. The creation of two additional Bank documents occurs during this period. While the Project Information Document outlines the project's scope and provides useful government data for tailoring bid documents to the project's specifics, the Integrated Safeguards Spec Sheets point out essential ecological concerns related to the bank's ecologic safeguard policies (Gerlach, S. 1999).

There are four stages in the project cycle: The project's life cycle (figure 2) is extensive by today's commercial standards. Over four years from the time the need is identified, it's unusual for a project to be completed (World Bank project cycle. 2021).

A World Bank project is divided into six stages as shown in the figure:

- ✓ Identification
- ✓ Planning
- ✓ Evaluation
- ✓ Negotiation/Approval/Implementation/Support
- ✓ Completion/Evaluation
- ✓ Identification



Figure 2: World Bank Project

Source: World Bank project cycle. (2021)

The notion of human capital advances that education raises workers' cognitive abilities, which in turn increases productivity and efficiency. The idea that people invest in education or to grow their stock of human capabilities that can be developed by combining essential qualities with investment in human beings was suggested by Schultz, Theodore, Jacob Mincer, and Gary Bucker (Abbas, Q.,2017). Investments in education, on-the-job training, nutrition, and health, are only some examples of these expenditures. Only when gross investment exceeds depreciation over time, with vigorous use or lack thereof, does the stock of human capital increase. Proponents of human capital theory believe that education is a

productive investment in human capital and that this investment is just as valuable as an investment in physical capital. Human capital researchers have found that workers in low-skilled jobs are more productive if they are literate. According to this study, workers in high-skill or high-position roles have higher marginal productivity when they are given teaching that necessitates logical and analytical reasoning and technical and specialised knowledge. A better-educated populace contributes to higher national production and economic growth (Bassanini, 2012).

The theory of modernization to understand how education influences an individual's value, belief, and behavior in modernising institutions such as factories, schools, and mass media. These characteristics include an openness to new ideas, a lack of allegiance to established hierarchies, a readiness to foresee and prepare for future challenges, and an increasing belief in oneself and others. It is said that these behavioural and psychological changes persist throughout a person's life, forever affecting the individual's interaction with the social system. As the number of people exposed to modernization facilities rises, society as a whole becomes more modern. Modernization and economic progress accelerate when a significant portion of a population undergoes such a shift. As a result, the foundations for a more productive workforce and longer-term economic growth are set in motion when educational opportunities are made more widely available. The theory of dependency was originally developed by Marxist thinkers; this idea is based on the dynamic global system that creates the conditions for economic change in both the global economy's core and its periphery. State fiscal stability, regime consolidation, and international political integration are all aspects of global politics that may impact the growth of the economy.

3.8 Bangladesh Foreign Exchange Reserves

According to Islam and Muneer (2018)'s comparative study on the economic growth and human development nexus between Bangladesh and Pakistan, spending on foreign exchange reserves has a statistically meaningful influence on as per capita in Bangladesh followed Pakistan, but with prominent differences in terms of consequence in both countries. In contrast, other research indicates that foreign reserves spending has a detrimental influence on economic growth (Calvo, G., 1978).

In February 2021, Bangladesh's foreign exchange reserves rose from 44951.20 USD million to 45947.80 USD million (Bangladesh Bank, 2021). This remained unchanged from the prior

figure of 4% for March 2021. Bangladesh Foreign Exchange Reserves: percent of data is updated monthly, with a monthly average of 5.000% from October 1999 to April 2021, totaling 259 observations. The statistics set a new high of 6.5% in March 2018 and a new low of 4% in April 2021. Bangladesh Foreign Exchange Reserves: Percentage of data is still live in Census and Economic Information Center (CEIC) and is published by CEIC Data. World Trend Plus's Global Economic Monitor - Monthly: Asia categorizes the information: Table: Reserve Requirement Ratio: Bangladesh Bank regularly publishes the Reserve Requirement Ratio (CEIC, 2021).

3.9 Economist GDP Forecast

As most empirical work has shown, the direct rewards will be a rise in productivity and overall economic production. Furthermore, economists forecast the indirect returns of human capital, known as the trickle-down or spillover effect, which cannot be quantified. When investigating the economy and human development dynamics, Ranis and Stewart (2005) discovered a favorable and substantial influence of economic expansion on human development. In summary, both economic growth and human capital are required for long-term economic growth.

3.9.1 Impact of Education And Health On GDP

Human capital is connected to the growth and productivity advancements that we see today. A large amount of empirical research has been written to investigate the link between human capital creation and economic growth (Omojimiti, B., 2020). Several studies of Bangladesh utilized per capita or growth to assess economic growth, in contrast, literacy rate, life expectancy, and government spending on health and education were employed as proxies for human capital production. However, the research yields ambiguous conclusions based on statistical relationships between factors. Regardless, the majority of Human capital has evolved to the point where it may be an essential key to solving the puzzle of economic growth (Schultz, 1961). According to Belassi's, (2004) research in Uganda, education or education expenditures have a direct or indirect beneficial impact on economic growth. Table 1 looked at the influence of health spending on economic growth from 2001 to 2021 and discovered a positive relationship between average education spending per worker and economic growth.

Year	GDP Growth	GDP per capita USD	Poverty Rate (%)	Life Expectancy (Year)	Per capita income USD (Atlas Method)	Literacy rate (%)
2001	5.9	405	48.9	65.3	420	45
2002	5.08	400	47.6	65.9	440	47.5
2003	3.83	402	45.5	66.4	440	48.3
2004	4.74	432	43.8	66.9	460	49.5
2005	5.24	460	41.4	67.4	510	50.2
2006	6.54	484	40.2	67.9	550	51.6
2007	6.67	494	38.4	68.4	570	52.3
2008	7.06	541	36.8	68.8	610	53.3
2009	6.01	637	35.1	69.3	660	54.4
2010	5.05	703	33.4	69.7	730	55.5
2011	5.57	780	31.5	70.1	800	56.8
2012	6.46	860	29.9	70.6	890	55.8
2013	6.52	880	28.5	71	970	56.3
2014	6.01	976	27.2	71.4	1040	57.2
2015	6.06	1110	26.0	71.8	1110	58.6
2016	6.55	1236	24.8	72.1	1220	63.6
2017	7.11	1385	24.3	72.4	1370	71.0
2018	7.28	1544	23.1	72.8	1520	72.8
2019	7.17	1675	21.8	73	1750	73
2020	7.77	1554	20.9	71	1732	71
2021	8.00	1756	22.1	73.9	18.11	73.9

Table 2: Different Economic Indicators (2001-2021)

Source: World Bank, UNESCO Institute for Statistics. Ministry of Finance. Bangladesh.

3.9.2 International Studies Impact On GDP

Several additional research on emerging countries looks at the conflicting conclusions about the link between government spending on education and health. A study conducted

by Saad and Kalakech (2016) on Lebanon using data from 1962 to 2007 found that education spending had a favourable influence on economic growth in the long run but had a negative impact in the short run. Omojimiti (2010) discovered unidirectional causation between education spending and economic development in research on Asia using data from 1980 to 2005. Furthermore, there is little evidence of a link between primary school enrolment and economic growth. Ho (2018) discovered that human capital has a favourable and substantial influence on economic growth, both in the short and long run, utilising data from Thailand from 1975 to 2014. They also suggested that policymakers focus on measures that improve human capital to achieve long-term economic growth. Similarly, Roopchand (2017) discovered a direct relationship and correlation between human capital and economic growth in Mauritius and advised that investment in human capital development be necessary for economic growth enhancement.

Many additional scholars argued that investments in human development and social services, such as health, training, and education, improve workers' abilities and abilities and this transformation boosts economic growth. Several researchers created models that demonstrated the beneficial impact of human capital creation on economic development through government investment (Beauchemin, 2001; Yesufu, 2000).

This might be attributed to significant public health care spending on hospitals and expensive medical care aimed at a small fraction of metropolitan regions. This is a long way from most of the population living in rural regions. As a result, the total impact of public spending on health care falls short of the anticipated result (McKinley, 1992). (Lleras-Muney., et al., 2010) conducted research on the impact of education on health. They contended that education improves health by giving greater career prospects, healthier conduct, and a direct influence on health. Thus, despite several studies, there is inconclusive empirical data in the literature. The availability of research on human capital development in Bangladesh is restricted, which is a few factors that have prompted the necessity for this study.

3.10 New Policies To Increase Goods Export, IT Industries

3.10.1 Implementation Strategy

To improve the efficiency of the (EPB) Export Promotion Bureau, Bangladesh Tariff Commission, and (BFTI), as well as taking collective initiatives to assist in capacity building of Sea and Land Port Operators, Customs Department (BPC), Department of Fish stocks, Division of Agriculture Extension (DAE), BSTI, Tea Committee, and various export bodies.

- Strengthen economic diplomacy to modernize and upgrade Bangladesh's Foreign Missions overseas.
- Make Bangladesh's export commodities more competitive by lowering costs, improving manufacturing quality, and extending the market. Furthermore, assisting in modernizing and updating the trade regime via the implementation of automation, e-commerce, and e-governance in order to reduce lead time. Providing exporters with up-to-date knowledge on the export market and technologies for diversifying exports;
- Organizing numerous training programs for workers, employees, and managers, as well as developing new training institutes sector by sector;
- Initiating joint government-private sector efforts to promote the export of new offerings and revving up the 7(seven) existing product-based business promotion councils to improve the flow of goods and commerce and forming new marketing and advertising councils as required.
- Extending assistance to establish an internationally recognized certification system to assure product quality; emphasizing the importance of worker rights and workplace safety.
- Strengthening the establishment of product-based design and fashion centers for the development of fashion and design for export products.
- Promoting exporters to adopt globally acknowledged good practices and business ethics in trade; establishing a National Single Window to facilitate international trade; Providing general assistance to exporters in producing organic goods. Providing specific help to small and medium-sized businesses. Offering different monetary incentives to exports, such as export financing at low-interest rates;
- The upgrade port management, improve infrastructure, simplify product release procedures, and create five communication systems to reduce export lead times.

Moreover, measures are being taken to boost exporters' competitiveness by lowering the cost of doing business by implementing a one-stop shop (Export police, 2021).

3.10.2 Multiple Contribution To Enhance Trading

Organizing single country trade fairs for Bangladeshi products in various countries, sending trade missions abroad, assisting exporters in participating in international fairs, sending and receiving trade delegations, and conducting market research under the initiatives of exploring new markets, products branding, and diversification. Taking all necessary steps to gain duty-free market access in developed and developing nations, including the United States, to increase markets for Bangladeshi goods and services overseas; taking specific steps to increase product and service exports to South East Asia, the Middle East, and other regions of Asia nations such as Brazil, Mexico, Chile, Russia, and other Commonwealth of Independent States (CIS) and South Asian Association for Regional Cooperation (SAARC) countries (Bernanke, et al., 1997), annually awarding CIP status and the National Export Trophy to the best exporters in various industries in appreciation of innovative product development, product diversification, faster export growth, and so on. (Export police, 2021).

3.10.3 National Committee on Export (NCE) Report

The "National Committee on Export" reviews the country's export status regularly and provides required guidance on a variety of topics. Monitoring and assessing the work of the "Task Force" formed for this purpose in implementing the decisions of the "National Committee on Export"; Establishing an "Export Policy Review Panel" comprised of members from relevant ministries and leading business groups to assess implementation status and make appropriate suggestions. Taking steps to strengthen negotiating skills and thought to be better to achieve bilateral, multilateral, and free trade agreements for the growth of export trade; Improving Bangladeshi product branding and upstream value addition (Export police, 2021).

3.10.4 Bangladesh Bank Contribution

Supporting Bangladesh Bank's efforts to create a more trade-friendly banking environment and factoring services to finance export commerce; Establishing import substitution businesses to offer raw materials to export-oriented sectors to increase export trade; Increasing export trade through encouraging foreign investment in export-oriented manufacturing areas; Adopting innovative methods and gathering and evaluating

international market-related information to explore new markets for export market expansion; Assisting in the development of foreign affiliates to build trade-related technology to encourage the production and sale of exportable commodities; Conducting appropriate training to produce competent labour to aid in the organisation of international commerce; Providing a thorough understanding of evolving international trade rules and regulations to trade associations, trade organisations, businesspeople, and concerned individuals (Export police, 2021).

3.11 Role of Infrastructure Development Company Limited (IDCOL)

The IDCOL, a non-bank institution founded in 1997, plays a premeditated position in infrastructure financing and mitigates risk by bridging the financing needs for large and medium building renewable and infrastructure technologies. IDCOL has access to long-term financial resources from international financial institutions (like the Asian Development Bank and the World Bank) and offers long-lasting debt financing to sustainable privately operated infrastructural development across a wide range of sectors. It also funnels subsidies and concessional loans to lower the costs of renewable building projects in rural regions to develop off-grid electricity IDCOL Strategies

IDCOL primarily finances greenfield projects carried out by the private sector or PPPs. The projects must fulfil qualifying criteria such as aligning with government goals, being commercially and financially feasible, and undergoing environmental and social evaluations. IDCOL has its credit policy and specific strategic rules for loan evaluations and approvals. Under the company's investment rules, IDCOL can only offer credit facilities to a local business entity. When overseas funders demand financing from IDCOL, they must create a local project firm. IDCOL's loan application and evaluation procedure are comprehensive. It includes producing a financial study for each assist in establishing to access resources under the ADB facility. ADB deems only those with a domestic financial rate of return (EIRR) of at least 12% to be qualified for finance (Sultana. N et al., 2013). With the recent removal of Bangladesh from the list of least developed countries, the country is now considered a developing country. Bangladesh's GDP is presently worth \$302 billion. As of 2014, per-capita earnings had exceeded \$1,000. Since then, the average salary has risen, and it is expected to surpass USD 2,000 by the end of this decade.

4. PRACTICAL PART

The practical part is divided into two separate chapters. The first subchapter is based on empirical results of different authors aiming to summarize the empirical connection between foreign direct investment and economic development. The second subchapter is based on the econometric model. This part monitors the influence of chosen economic variables on economic development in Bangladesh.

4.1 Connection between Foreign Direct Investment (FDI) and economics

This thesis used data from the World Bank's World Development Indicators database to investigate the relationship between human capital and economic growth. From 2001 to 2021, annual Foreign Direct Investment (FDI) and GDP data (in millions of dollars) were included in the data set. Accordingly, the GDP variable was measured in constant 2020 dollars as a real-time data series. The net FDI inflows were taken and converted to real dollars by using a GDP deflator. The natural logarithm was used to express both series.

The initial step in the econometric analysis was to conduct unit root tests to determine the order of integration of the data series. For the second part of the analysis, an enhanced ARDL modelling strategy is used to look for long-term correlations between the different variables in the dataset. In the third step, a Granger causality test was conducted to establish whether FDI was responsible for driving GDP or GDP was to blame.

4.2 Data Collection

The data was dependent on secondary sources. The data of research of article were studied which was based on the human development and economic growth of Bangladesh. Moreover, the collection of data of this paper is based on Coorey (2009) and Khan (2012) models.

The model begins with the given equation.

$$y = A(k) \alpha (\theta h) \beta \dots\dots\dots(\text{II})$$

1. $\ln y = \ln A + \ln(k) \alpha + \ln(\theta h) \beta$

2. $\ln y = \ln [A(k) \alpha (\theta h) \beta]$

3. By simplification and solving the following model for estimation are received.

4. $\ln y = \beta_0 + \beta_1 \ln k + \beta_1 \ln \theta + \beta_1 \ln h + \epsilon_i$

In equation (1), h = Human Capital y = Economic Growth θ = Labour k = Physical Capital

The final equation for estimation can be written as

$$\ln y = \beta_0 + \beta_1 \ln k + \beta_1 \ln \theta + \beta_1 \ln he + \varepsilon_i$$

$$\ln y = \beta_0 + \beta_1 \ln k + \beta_1 \ln \theta + \beta_1 \ln hh + \varepsilon_i$$

Where, *hh* stands for human capital as health

Gross Fixed Capital (GFC) and real GDP per capita have been used to calculate economic growth in this study. According to the literature, human capital can be measured in a variety of various ways. Many people use education as a substitute. According to (Barro, 2004), School enrolment, average years of schooling, literacy rate, and education spending on education were all employed as proxies for human capital by Krueger and Khan and Khattak (2015). In this thesis, school enrolment is used as a proxy for human capital. In addition, the symbol depicts the total number of workers. Human capital's function in economic growth is reinforced by replacing education with health as a proxy for human capital.

Year	2021-20	2019-18	2017-16	2015-14	2013-11	2010-9	2008-7	2006-5	2005-4
ADP	2,027.21	1,670	1,195.38	903.09	816.12	6,49.19	648.70	523.66	410.80
Human Development	556.15	421.73	234.46	221.87	170	162.20	151.40	123	93.65
HD as a % of ADP	27.4	25.3	19.6	24.6	20.8	25	23.3	23.5	22.8
HD as a % of total Budget	10.63	9.53	7.29	8	7.06	7.77	7.63	7.06	6.14

Table 3: Budgetary allocation of ADP on the Human Development (in Billion USD)

Source: World Bank

4.3 Estimated Techniques

In order to meet the aims of the study, numerous econometric methodologies have been applied in this study. The results were obtained by employing Ordinary Least Squares (OLS), regression analysis and the Johanson Co-integration test. As measured by GDP growth, we define the growth model as a nexus between economic expansion (measured by GDP growth) and human capital formation (health and education expenditure). Gross Domestic Product Growth Rate (GDPR) is equal to the natural logarithm of yearly health expenditures (LCEX) and annual public education expenditures (LEXE), respectively. Data from the

World Bank's annual Bangladesh time series from 1998 to 2017 are used in this study. Johansen Co-integration and the unit root test were employed to determine the long-term relationship between the variables. As the last step, the Granger causality test is performed to determine the direction of causality.

ADF, DF-GLS, and KPSS test								
Variables	ADF		DF-GLS				KPSS	
	Level	First Dif.	P _T		GLS		Level	First Diff.
			Level	First Dif.	Level	First Dif.		
GDP	2.264	-11.109***	74.853	5.529**	0.164	-7.772***	0.1577**	0.1435*
FDI	-1.711	-7.434***	7.828	4.385**	-2.764	-4.598***	0.1179	0.1005

LS (one break model)					
	Model	Level		First Dif.	
		T-Stat	Break	T-Stat	Break
GDP	Crash	-0.376	D: 1980	-3.651**	D: 1987
	Break	-2.648	D: 1997 DT: 1997	-7.150***	D: 1985 DT: 1985***
FDI	Crash	-3.921**	D: 1982**	-2.415	D: 1982*
	Break	-3.437	D: 1995 DT: 1995	-6.784***	D: 1981 DT: 1981

Table 4: Foreign Investment And Bangladesh's Economic Expansion Are Linked By An Augmented Autoregressive Distributed Lag Boundary Testing Approach.

Source: Bangladesh Bank, 1999

4.4 Survey

Table 5 displays the Bangladesh government's financial allocations for healthcare, educational, and human resources from the fiscal year 2010-11 to the fiscal year 2015. The data for 2019-20 indicates the planned allocation, whereas the data for 2019-21 reflects the amended budget. The following values are the actual figures that were suggested and later altered. The budget's growth rate has been substantially more significant in recent fiscal years. Budget statistics have not been excessively high since the country's independence in 1971. For the first time, the budget amount exceeded one hundred billion, or one trillion USD, in the final year of the previous decade. The quantity climbed swiftly, and over the following four years, it surpassed the two thousand billion or two trillion USD mark.

Furthermore, the fact that it only took additional five years to hit five trillion indicates the extraordinary expansion of the country's national budget to various industries.

FY	National Budget (Billion)	Education Budget as a % of total Budget	National Health Budget (Billion)	Allocation on Human Resources (Billion)	National Education Budget (Billion)	Health Budget as a % total Budget	Allocation on HR as a % of total Budget
2009-00	893.16	13.29	51.1	211.06	118.69	5.71	23.63
2010-11	1016.08	15.32	62.71	267.58	155.50	6.18	26.36
2011-12	1,282.68	14.33	72.87	317.38	183.83	5.68	24.74
2012-13	1,526.64	12.27	76.67	332.81	187.44	5.02	21.80
2013-14	1,744.48	13.82	91.30	382.81	264.98	4.82	20.22
2014-15	1,986.21	13.22	97.54	456.56	262.36	4.91	22.99
2015-16	2,088.74	12.05	83.92	503.65	251.70	4.02	24.11
2016-17	2,408.07	13.98	102.51	648.24	336.69	4.26	26.92
2017-18	2,772.36	13.85	103.41	759.99	383.97	3.73	27.41
2018-19	3,218.62	11.96	130.36	808.15	384.95	4.05	24.98
2019-20	4,425.41	10.49	172.69	1097.76	464.22	3.90	24.81
2020-21	5,231.90	10.26	199.44	1290.56	536.80	3.81	24.67

Table 5: Budgetary Allocation on Health, Education, and Human Capital (USD Billion)

Source: Ministry of Finance. Speech of Bangladesh National Budget 2020-21.

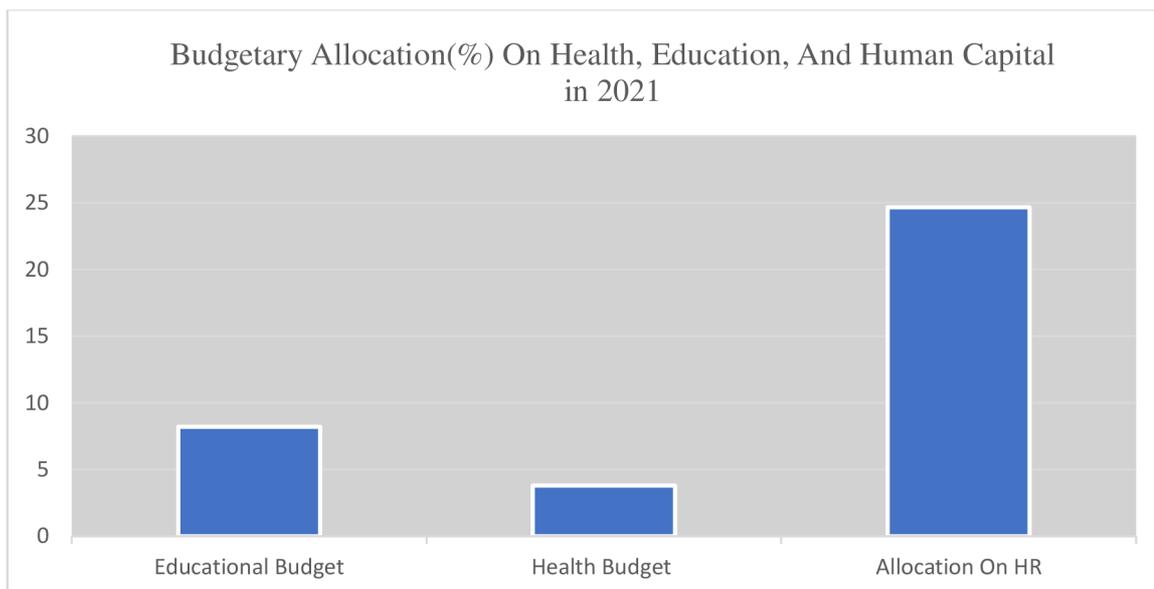


Figure 3: Budgetary Allocation On Health, Education, And Human Capital in 2021

Source: Bangladesh Bank

Figure 3 shows that allocation on HR in 2021 was the highest in Bangladesh throughout 2021. HR allocation was the priority when budgeting the HR budget. This includes the employee salaries; moreover, HR defines the business goal, which was very high in 2021, as seen in the chart.

The allocation of the Ministry of Primary and Secondary Education and Ministry of Education is reflected in the National Education Budget. In the current fiscal year, the government has requested 526 billion USD. The allocation was slow in 2019-20, totalling 384 billion USD. In terms of proportion of the overall budget, the share of the education budget has decreased throughout time. In 2010-11, the rate was more than 16%. The percentage allocation has fallen with time, and it is now at 11.26%, the lowest among all prior fiscal years. However, UNESCO recommends that the allotment be at least 25% of the entire distribution. Bangladesh falls far short of the standard allotment. Even among South Asian countries, the rate is lower. Suppose the government truly wants to strengthen its human capital, in that case, there is no other option except to invest more in this area. Education is associated with a higher GDP and higher standard of life. Although the country's economic growth is exceedingly good at the moment. There are several additional variables contributing to the rapid rise. Bangladesh must invest more in education to continue economic progress.

The allocation to the Family Welfare and Ministry of Health and the health service division is reflected in the National Health Budget. The projected budget for the health sector in the current fiscal year is 200 billion USD, barely 4% of the entire budget. In terms of population, the allocation to the health sector is substantially smaller. Although Bangladesh has already met the Millennium Development Goal (MDG) health-related benchmarks (Bangladesh economic review, 2018), ten years ago, the allocation was greater than 5%. It is terrible that the proportion has been reduced in the several previous budgets in a row. According to the Bangladesh National Health Account, health expenditure as a source of government finance was 25% in 2007, while out-of-pocket spending by households was 65%. The remaining 10% came from international donations made by private volunteer organisations and NGOs (Rannan-Eliya, & Ravi, 2007). Bangladesh's government has implemented several health-related projects to meet the millennium development target as it has already lowered maternal death rates and fertility. With a sanitation system and safe drinking water, people's average life expectancy has also grown.

The final two columns of table 5 show the percentages of Human Resources in the budgets. The total non-development and development budgets for human resources are displayed here. Human resource development (HRD)-related sectors include the ministries of secondary and primary education, technical and madrasah education, health service division, secondary and higher education, science and technology, ministry of health and family welfare, ministry of women and children affairs, ministry of social welfare, ministry of expatriates welfare, ministry of labour and employment.

Over the years, the average distribution has been close to 26% of the entire budget. In the fiscal years 2010-11 and 2012-13, the highest disbursement was 25.36% and the lowest was 21.22%.

Bangladesh has been given more importance in terms of the general quality of its population and improving its skill. In the fiscal year 2011-12, ADP allocated 94.65 billion USD to Human Development (HD). With the allocation of budget and ADP, the amount for Human HD has grown. In the fiscal year 2019-20, it amounted to 557.15 billion USD. The proportion of ADP on HD was 28.4%, while the percentage of the overall budget was 11.63%. Over the years, this has been the largest allocation of HD as a proportion of ADP and in the total budget. The average allocation of developmental share on ADP is 26%, and it has been nearly constant throughout the decades, with minor ups and downs. Whereas, the tendency

of HD as a percentage of the total budget has achieved double digits in the latest accounting year, up from 7 and 8% in the 2016-17 and 2012-13 fiscal years, respectively.

Year	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
ADP	2,027.22	1,671	1,185.37	902.08	817.11	6,59.18	648.71	523.65	410.81
Human Development	556.55	421.72	234.47	221.77	171	162.21	151.41	122	93.66
HD as a % of ADP	27.5	25.4	19.7	24.5	20.7	26	23.4	23.6	22.7
HD as a % of total Budget	10.62	9.52	7.30	9	7.07	7.78	7.65	7.07	6.13

Table 6: Budgetary allocation of ADP on the Human Development (2012-2021)

Source: Bangladesh. Ministry of Finance.

Table 6 shows government spending on health and education as a percentage of GDP. The average government education expenditure as a proportion of GDP is about 3%. In the case of medical bills, the figure is roughly 2%. Total health expenditures include both governmental and private spending. Even the private sector's contribution to health and education is in some ways inaccessible. If all of the information were available, it would be simple to disentangle the private sector's contribution. However, private and public health expenditures in terms of GDP are 2.47%, implying that private expenditure in 2021 was 1.66% of GDP.

Year	2021	2020	2019	2018	2017	2016	2015	2014
Public Education expenses as a % of GDP	1.97	2.19	2.14	1.95	2.06	2.21	2.14	1.95
Public Health expenses as a % of GDP	0.82	0.99	1.05	0.99	0.96	0.99	1.05	1.05
Total Health expenses as a % of GDP	2.47	2.50	2.51	2.58	2.50	2.41	2.35	2.33

Table 7: Government Expenditure On Health And Education As A Proportion Of GDP (2014-2021)

Source: World Bank.

Table 7 shows the expenditure on Primary, Secondary, and Tertiary education as a % of government expenditure on education. The highest priority has been given to primary education, followed by the secondary and tertiary levels. Almost half of the government allocation is distributed to primary education. Secondary education also gets similar kinds of concentration. It is worldwide recognized that the rate of return of primary education is much higher than the secondary and tertiary levels.

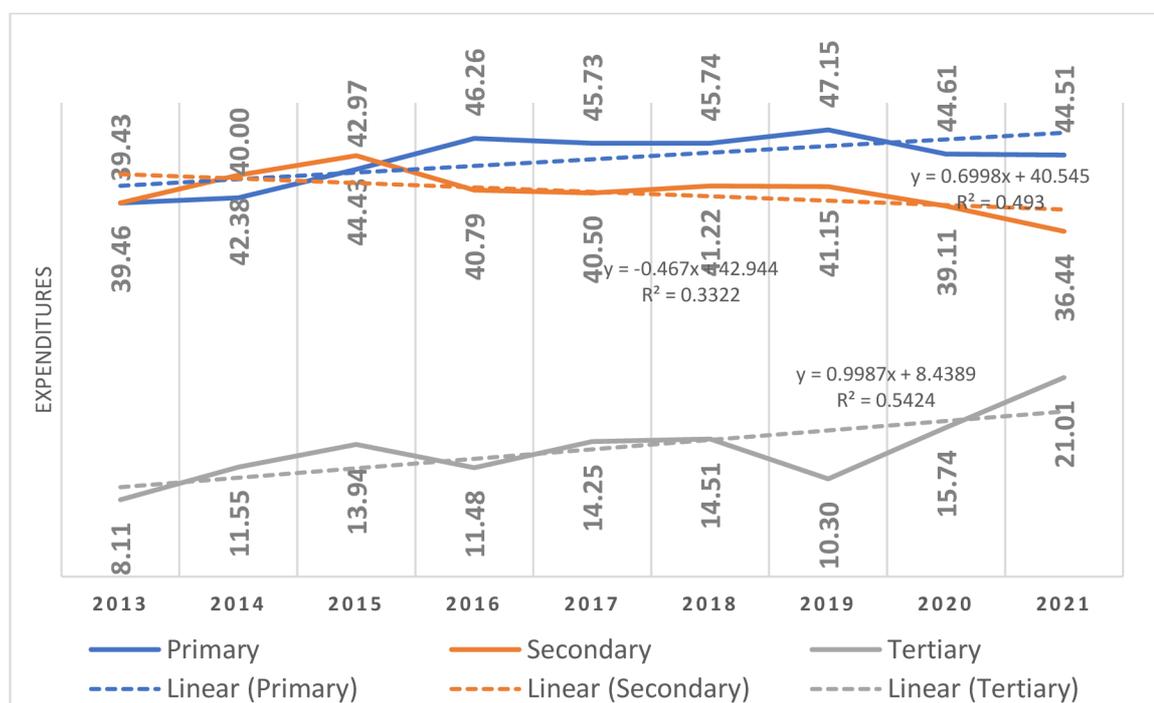


Table 8: Expenditure on Secondary Primary, and Tertiary as a % of government expenditure on education (2013-2021)

Source: Self processed based on UNESCO Institute for Statistics.

It is worthwhile to spend more money on the early stages of schooling. Bangladesh's elementary education is entirely free, with the government covering all costs, including school food and free textbooks. There are also non-government institutions like kindergartens, Arabic medium schools, English medium schools, and certain non-governmental organisations (NGOs) that provide basic education in the nation. During the fiscal year 2017, one-fifth of the budget was allocated to tertiary education. Tertiary education has grown in prominence since the beginning of this decade. In 2013, the percentage was 15%, and by 2017, it had risen to 20%. The government is attempting to increase the involvement of the private sector in tertiary education.

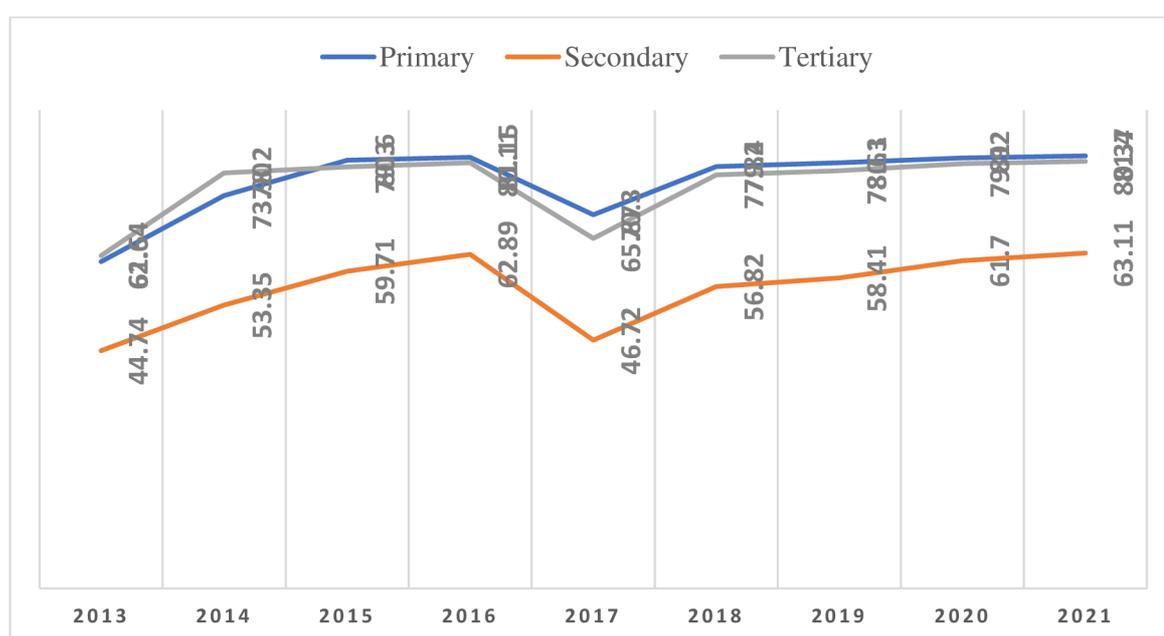


Table 9: Successful Completion Rate Of Secondary Primary, And Higher Secondary Education (2013-2021)

Source: World Bank, 2021

4.5 Private Expenditure on Education and Health

There is a scarcity of pertinent statistics on private individual expenditure on health and education. This is owing to the right survey and actions. The consumption also differs from person to person, based on their investment and expenditure habits. One of the reasons for expenditure disparities is the accessibility of the necessary service. Essentially, the average spending varies markedly between remote village dwellers and city dwellers. Other forms of statistics are offered here, focusing on self spending on health and education.

Survey Year	Residence	Average Monthly (lakh)		
		Income	Expenditure ¹	Consumption
2021	National	16,946	15,875	15,250
	Rural	14,354	14,186	13,768
	Urban	21,566	19,767	19,433
2020	National	10,480	11,200	11,113
	Rural	9,749	9,655	9,336
	Urban	17,476	15,351	15,2376
2019	National	7,204	6,144	5,9635
	Rural	6,097	5,269	5,170
	Urban	10,543	8,443	8,321
2018	National	5,834	4,996	4,551
	Rural	4,826	4,367	3,890
	Urban	9,888	7,560	7,109

Table 10: Expenditure, Average Monthly Income, And Consumption Of Household

Sources: Expenditure survey and Household income (2021-2018).

A household's average per capita income in 2016 was 15,945 USD. Almost the majority of the money was spent on various consumer goods. The rural spending was 13,877 USD, whereas the urban expenditure was 19,377 USD. Between 2001 and 2016, families' average monthly income and consumer expenditure climbed three times. During the same period, spending on education and health climbed proportionally.

Year of Survey and Residence	Avg. Cos. Exp.	Major Expenditure Groups (%)								
		Total	Food and Beverage	Housing	Cloth Foot wear	House-holds effects	Fuel & Lighting	Educ ation	Medi cal	Misc.
2021 National	15411	100	47.670	7.11	12.50	6.08	2.94	4.55	5.41	13.81
Rural	13877	100	50.50	7.51	9.90	6.66	2.89	4.64	4.94	13.13
Urban	19356	100	42.60	6.43	17.73	5.04	3.04	4.37	6.34	15.11
2010 National	11012	100	54.72	4.96	9.94	5.64	1.69	3.80	5.67	13.63
Rural	94334	100	58.65	5.13	7.30	6.07	1.85	4.16	4.19	12.72
Urban	15567	100	48.20	4.68	14.50	4.90	1.47	3.36	8.21	14.9

Table 11: Household Expenditure On Different Departments

Sources: Household income and expenditure survey, Bangladesh (2021).

The bulk of the household's income is spent on food and beverages. A whopping 48% of respondents in Table 11 say they're doing just that. Another 20% of the cost of living is spent on lodging and clothing. Only 5.42 and 4.52% of funding went to education and health, respectively. The amount spent on education in 2016 was somewhat lower than in 2010. The situation is the exact opposite between those two years regarding medical expenses. Individuals and families bear almost two-thirds of all health care costs in monetary and non-monetary contributions—other groups foot around a third of the bill. There are federal and state governments representatives, non-governmental organisations, and other countries. Government policies and laws are sufficient to offer a full range of health care services. Many non-governmental organisations (NGOs) provide essential health services to the underprivileged. They are a vital resource. The donor communities also play a crucial role in providing primary health care facilities and technical help (Hossain, 2015).

Residence	Per Household Devoting on education	Percent of Expenditure Suffered by Sex	
		Male	Female
National	926	53.88	46.33
Rural	605	57.97	42.13
Urban	1787	49.88	50.33

Table 12: Per Capita and Per Household Expenditure on Education (USD,2021)

Sources: Household income and expenditure survey, Bangladesh (2021).

Table 12 shows the amount of money spent on education per family and the proportion spent on education by men and women, respectively. The typical family spent 926 USD on schooling. The spending in urban regions was 1796, whereas in rural ones it was just 604. Males accounted for 53.88% of the nation's educational spending, while females accounted for 46.33%. Compared to the male education spending in rural areas, females in urban areas spent more on education. According to previous research, women's education yields a larger, more significant return than that of men worldwide. Women in rural areas are more likely to get married early, which reduces the amount of money spent on schooling.

This study end up with the following model.

$$Y = 14.041 - 52.03 \text{ EXC} - 0.038 \text{ EXO} + 0.026 - 0.0126 \text{ IMP} - 1.0718 \text{ HOI} - 0.369 \text{ M} + 0.6271 \text{ REM}$$

5. RESULTS AND DISCUSSION

The descriptive and statistical data analysis of the variable is presented in the Table 1 and the numerical values calculated from the surveys are presented in this part. Data are described in descriptive statistics in terms of their key quantitative characteristics. Data and measurements are summarised straightforwardly. Quantitative data can be analysed with ANOVA (Analysis of Variance) software we provide the descriptive statistics for the variables in our model. A thorough description of the data used in this study includes annual observations from 2001 to 2021.

Variables (log term)	ADF test at level			ADF test at first difference			Status
	t-statistic	Critical value at 5%	Decision	t-statistic	Critical value at 5%	Decision	
GDP Per Capita	8.257	-2.975	stationary				I (0)
SEP	-0.021	-2.874	Non-stationary	-0.178	-2.978	Non-stationary	NA
SET	-0.717	-2.974	Non-stationary	-0.314	-2.978	Non-stationary	NA
GCF	-1.468	-2.998	Non-stationary	-0.344	-2.978	Non-stationary	NA
Variables (log term)	ADF test at level			ADF test at first difference			Status
	t-statistic	Critical value at 5%	Decision	t-statistic	Critical value at 5%	Decision	
LE	-9.563	-2.975	stationary				I (0)
EE	-0.840	-2.975	Non-stationary	-2.009	-2.978	Non-stationary	NA
HE	-7.266	-2.975	stationary				I (0)

Table 13: For A Unit Root On The Original Series' First Difference, ADF Test Results

There is an average gross national product per capita of \$5.82, with a standard deviation of about 0.29 based on the descriptive statistics. Elementary school enrollment is typically 4.47 children with a standard variation of 0.17. The standard deviation for secondary school enrollment is 0.43. The standard deviation for tertiary school enrollment is 0.42. There is a standard deviation of 0.08 in life expectancy, making the average of 4.13 years. The standard deviation of health spending is 0.14, with an average of \$1.07 spent per person. The standard

deviation of educational spending is 32 basis points, or about a sixth of the national average. In terms of gross capital formation, the average is 3.00, with a standard deviation of -0.23%. As can be seen from the data, lnPC has a high positive association with the other variables. All other variables are similarly affected. There is a substantial link between all variables. The standard growth model will then be extended to include human capital, including variables such as school enrollment. A very strong long-term relationship was found between economic growth and human capital investment. Gross capital formation, school enrollment, primary, secondary and tertiary education, foreign currency reserve, Life expectancy at birth, total (years), and Health expenditure, total (percent of) are included that affect the economic growth of Bangladesh.

5.1 Stationary Issues

The variance will be stationary when they remain stable over time, and the amount of correlation among two time periods is only directly proportional to the distance between those two points in time and not on the immediate event at which the variance is calculated; (Gujarti, 1995). The widely used unit root test such as Augmented Dickey–Fuller (1981) has been employed to verify the stationary qualities of the variables.

5.2 Co-Integration

The results revealed for the co-integration test is shown Rank 1= one cointegration among the variables (Null below in table Hypothesis) Rank 0= no co-integration amongst some of the variables (Null There is Co-integration (Alternative Hypothesis)

Similarly, it is valid for the remainder of the rank in this model.

Co-integration of all series of variables via the Johansen co-integration test.

Model	Trace Statistic and Max Statistics	Critical value at 5% level	Results
	32.97 & 41.3258	33.46 & 47.21	Accept
Conclusion	The null hypothesis cannot be rejected. The variables have a long-term relationship. In the long run, it can be claimed that they're moving together. For Trace Statistic, there are four co-integrations, while for Max Piece of information, there are three.		

Table 14: Johansen Co-integration Test Results

Co-integration is evident from the results. The conclusion drawn from this study is that it is possible to estimate an initial model without resorting to an Error Correction Model.

5.3 Regression Result

This research employs two independent methods to predict the relationship between economic growth and human capital development. Table-13 displays the empirical results obtained from the estimation utilising time-series data for Bangladesh and the period 2011-2021, using OLS methods.

Variables (log term)	Regression result, 2011-2021,	
	Model (I)	Model (II)
GCF	0.0195375 0.1722107	
SES	-0.1733197* 0.0879193	-0.1821376* 0.0956251
SET	0.3274036*** 0.0546	0.3373904*** 0.0533854
SEP	0.593218** 0.2492247	0.5878148** 0.240228
EE	-0.2739534* 0.1524088	-0.2818665* 0.1339583
HE	-0.2539286* 0.1361588	-0.25942206** 0.1249267
LE	2.924741** 1.192528	3.016055*** 0.8600807
Constant	- 8.49812**	-8.787642*** 3.075657
	4.04824	
F	125.22	151.42
Nr of Observations	33	33
R2	97.01	97.01

***p<0.01, **p<0.05, *p<0.1

Table 15: Results Of Linear Regression Model Forecasting Economic Growth.

5.4 Data of Human Capital Development and Economic Growth

Human capital is a critical component of the equation in opportunities and financial progress. This study uses empirical evaluation to determine the relationship between human capital development and economic growth. OLS, Johansson co-integration, and unit root tests are used in this investigation. Per capita, Gross Domestic Product (PPP), primary school enrollment, secondary school enrollment, tertiary school enrollment, public education and health spending, life expectancy, gross capital formation were all utilised as proxies for economic growth. According to the study, human capital development and economic growth are strongly linked. Life expectancy is the most essential variable in this model because it impacts Bangladesh's economic growth. Instead of secondary education, postsecondary education has recently had a substantial impact on economic growth. Efforts should be made to implement policies that will lead to overall economic growth. To ensure that the country has access to high-quality health care and education, the government should spend wisely on health and public education.

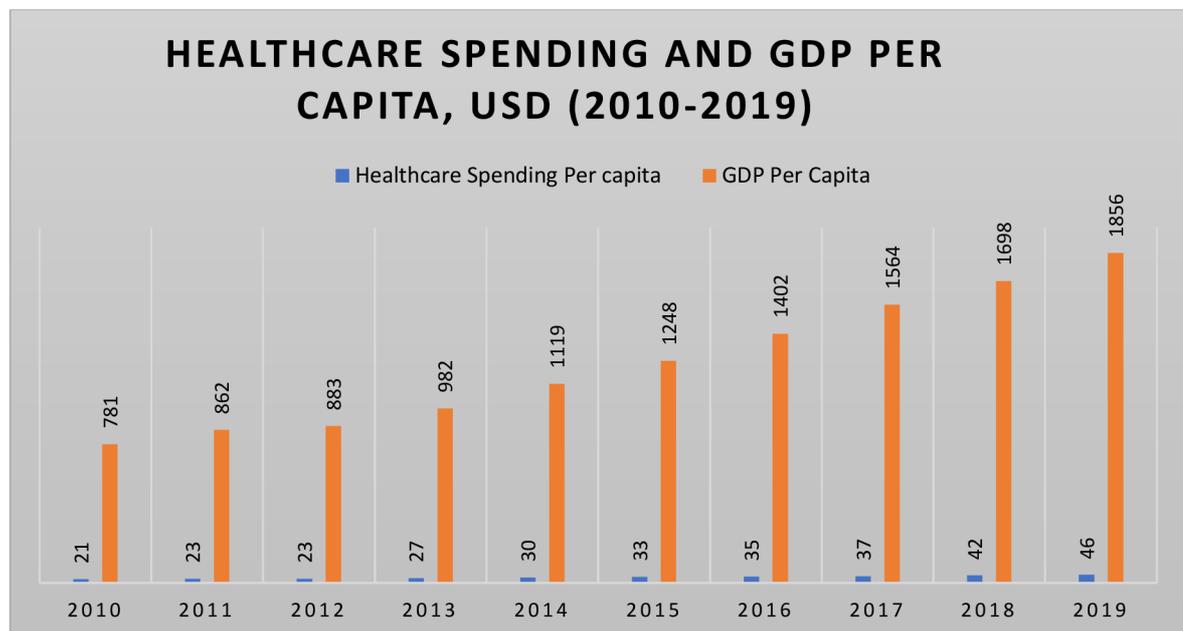


Figure 4: Health Expenditure and GDP Per capita in Bangladesh

Source : World Bank

The figure 4 shows that government spending on health and services increases with time. Setting budget targets, modifying taxation, boosting public expenditure, and implementing public works are powerful levers for economic growth.

5.5 GDP Per Capita

Per-capita Gross Domestic Product (GDP) adjusted for buying power parity is divided by the country's population in order to calculate PPP. In 2020, Bangladesh's GDP per capita was estimated to be 4 818.11 US dollars, based on purchasing power parity (PPP).

According to the Purchasing Power Parity (PPP) method, Bangladesh's GDP per capita is 27% of the world's average (Tradingeconomics, 2021)

Related	Last	Previous	Unit	Reference
GDP	324.25	302.57	USD Billion	Dec 2020
GDP per capita	1625.68	1603.96	USD	Dec 2020
GDP per capita PPP	4818.11	4753.74	USD	Dec 2020

Table 16: Bangladesh GDP Per Capita PPP

Source : (Tradingeconomics, 2021)

There was a progressive acceleration in economic growth rates in Bangladesh throughout time, as seen by their economic growth (figure 5) . This figure shows that GDP per capita in Bangladesh rose at a rapid pace in early 2001.

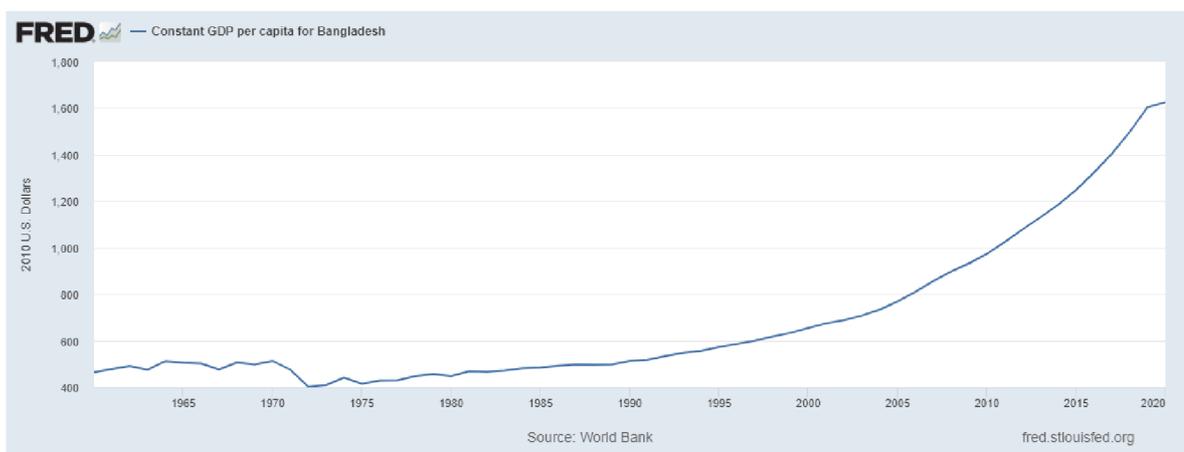


Figure 5: Constant GDP Per Capital for Bangladesh

Source : World Bank

5.6 Discussion

This study's findings suggest that human capital is a critical determinant of economic growth in Bangladesh. There are several ways in which human capital contributes to performance, not except through the incorporation of information or abilities into persons, but also through encouraging physical investment and the acceptance of technological advancement. At a 1%, 5%, and 10% significance level, most of the variables in model 1 are statistically significant, except for Gross Capital Formation. Because this variable is statistically meaningless, this research omitted it from the second model. In this model, variables are presumed to be statistically significant even after gross capital formation is excluded. The final model used in this study is model II, which has a high R² of 97.01%. As can be seen from the above results, the coefficient shown by the constant is negative, implying there are significant elements outside this model that negatively impact economic growth. In other words, if the interception varies by one unit, the Bangladesh economy will alter by 8.78 units in the long run. Although primary and secondary school attendance are both positively correlated, the coefficient for secondary school enrolment is negatively correlated with the other two. Secondary education in Bangladesh no longer has a good impact on education, as seen from the statistics.

There is a positive correlation between tertiary education and job success, and this correlation is statistically significant (strong) at the 1% level. According to this study, the growth of Bangladesh's economy was influenced by the variation in tertiary school enrollment and primary school enrollment. As expected, the coefficient for secondary education is negative and the coefficients for public expenditure on education and health expenditure. A significant rise in public education investment is found to influence economic growth. To put it another way, public education spending has only made a slight impact on the economic growth. This is because this variable, despite its low coefficient, is statistically significant because its t-value in absolute value is greater than 2. The negative coefficient of public health spending also had a negative impact, but it is statistically significant nonetheless. There is a strong positive correlation between the variance in the coefficient of Life Expectancy (LE). People's lifespans vary significantly, and this has a significant impact on per capita growth. A unit increase in life expectancy will have a beneficial impact of 2.92 units, according to this study. According to its t-value, which is larger than 2 at the 1% threshold of significance, this variable is statistically meaningful. Because the model's R²

value is 0.9701 and its F value is 151.42, it's clear that the model's explanatory variables account for the vast majority of the variation observed in the dependent variable (Capita). Export have a considerable impact on foreign exchange reserves, as shown in table 4, but the sign of the coefficients for imports and home interest rates is the reverse of what we expected based on our hypothesis. According to linear model B, about 85.76% of the changes in foreign exchange reserves can be explained by these eight factors alone. The linear model C can explain about 85.58% of the changes in foreign exchange reserves. However, the influence of remittance is large, and six of the seven variables are also significant.

If $F=F(r)$ and $F(r) > 0$, then we know that the net outflow and interest rate are equal. Net outflow will decrease as domestic r rises, and the FCR will rise as a result. The link between r and FCR was supposed to be positive, but instead, it turned out to be negative. To reduce net outflow $F(r)$, rate of interest(r) has to increase, but 'other things stay constant' (Investment surroundings; political turmoil; and lack of technological opportunities, etc.) if other things are not favouring $F(r)$ may increase as r increases and then foreign exchange reserves may decrease. A higher interest rate in Bangladeshi does not increase the desire for the local currency because of the negative founder of the home rate of interest. Furthermore, investors may see the outflow of funds as a sign of looming economic trouble, raising foreign currency price. In times of economic distress, central banks are known to implement a more cautious monetary policy, which increases the interest rate. Investors may therefore prefer to relocate their funds to a more stable country.

The USD is only freely convertible in transactions involving the current account; it cannot be used in capital account transactions. The central bank must officially approve any transfers of funds from capital investment accounts. A higher interest rate in a reasonable economic time may not be enough to attract foreign capital because investment capitals cannot easily flow in and out. According to this research, Bangladesh does not have the factors necessary to operate according to IFE and Career average theories, although exchange rate with USD is supposed to be determined by market forces, i.e., unrestricted macroeconomic conditions of both local and foreign currency.

It demonstrates that the free flow of cash in both locally and internationally currencies has the potential to harm emerging countries like Bangladesh, where demand for foreign currencies is usually strong due to high import volumes relative to exports. So even though the local currency, USD, has been declared fully transferable and its swiss franc is allowed to float on the market, the regression signs of cost of borrowing and importation are likely

to be preserved in their inconsistent nature. Imports are expected to fall as the import price index rises, and as a result, the country's foreign exchange reserve should rise. But in Bangladesh, imports are necessary for the country's economic growth. Because of this, it is impossible for the country to reduce its imports despite an increase in the cost of imports. Instead, Bangladesh is forced to use up a large portion of its foreign exchange reserves to continue importing the same items as previously. As a result, the import price index and currency reserves have a negative correlation. A beneficial impact on forex reserves was seen as expected, according to the study's findings. Although this variable shows a positive correlation, will not be using this variable in any future analysis (Model II). Foreign aid is now contributing in a small way as a basis for this to occur. Total foreign aid in the fiscal year 2009-2010 was \$2228 million, whereas in the fiscal year 2010-11 the figure was \$1760 million. In the 1980s, foreign aid accounted for 13% of the total, a figure that dropped to 5.9% in 1990, 3.33% in 1999, and 1% in 2011. In fiscal 2012-13, there is a potential of reducing this sum by less than 1%. We derive a negative exchange rate co-efficient in our model, which means that as exports rise and imports fall, forex reserves will rise along with them. Because we know that the exchange rate has a direct correlation with imports whereas the exchange rate has an inverse correlation with exports.

5.6.1 Additional Research

According to the annual report of Bangladesh economy, economic indices such as GDP, per capita income, and poverty levels have improved significantly despite a decrease in the share of resources allocated to education and health. Prospective scholars can investigate the negative association that exists between various economic data and the percentages deployment of human capital investment in Bangladesh.

5.7 Bangladesh's Human Capital Investment Policy Issues

Bangladesh has been fortunate with a steady supply of working-age labour. Regrettably, the majority of the labour force is either illiterate or only has a high school diploma. In comparison to the primary educated and illiterate, the number of higher secondary and tertiary graduates is quite low. On a daily basis, two-thirds of the employed work in the informal sector. The socioeconomic indices are still favourable and expanding rapidly. The main reasons for this are an increase in expatriate remittances and the steady growth of the ready-made clothes industry. Bangladesh ranks far below average in the Human Development Index. Bangladesh is seeing strong economic growth while allocating less

money to the education and health sectors. Education and health spending as a percentage of overall spending and in terms of GDP are declining over time. Public education spending as a percentage of total GDP is very low, hovering about 2% on average and currently falling below that level. This is the lowest in the South Asian area, showing a lack of dedication to education and research and development. The year 2019 Human resource allocation has remained constant at a given percentage over the years. For the first time, ADP's budgeted allocation for human development has reached double digits. The implementation of the ADP on human resource development is inadequate. However, there is a significant disparity between the proposed and actual budgets every year. This is primarily due to a lack of implementation capabilities. Initially, Bangladesh prioritised basic education, and this allocation remains the highest among all forms of learning. Secondary education has become more important over time. The primary goal of increased allocation at the secondary level is to reduce dropout rates and enable students progress to the university level. A higher standard of education, particularly private tertiary education, is prohibitively expensive and out of reach for the lower-middle-income group. Despite the fact that the government provides a substantial subsidy only to public universities, it is inadequate in terms of the number of students attaining education. Even though the government is attempting to promote TEVT the program's service and quality are inadequate. Public health spending is relatively low, well below the 5% mark. The health sector's allocation is declining with time. Private investment in human capital accounts for barely 10% of individual earnings. The majority of money is spent on food, clothing, and shelter. Private family education expenditure varies greatly between rural and urban locations. Compared to the metropolis, the quality of education and health care and their availability is insufficient in rural areas. The massive influx of city migration throughout the years has also ensured the provision of quality education and health services and greater job prospects.

5.8 Recommendations

A long-term realistic strategy should be developed for the present and emerging labour force to meet the challenge of globalisation while ensuring the country's continuing growth and development. National human resource policy and an action plan, in particular, must be implemented promptly. Unemployment, underemployment, and increased participation in the informal sector must be addressed seriously by boosting human capital quality and skills. The ready-made clothes business accounts for over 80% of total export earnings. The

economy needs diverse skilled human capital for its many sectors to reduce reliance on earnings from a single industry.

Bangladesh must devote greater attention to improving the dimensions of its human resources. The government should devise a strategy to increase the share of the public education budget to at least 4 to 6% of GDP or 20% of overall budget. Government elementary schools should provide a high-quality education. More emphasis must be placed on the secondary level in order to reduce drop-out rates. It is critical to deploy a suitable number of instructors in order to maintain the teacher-learner ratio and offer adequate training. Enough finances should be devoted to secondary, university, and vocational education. TEVT should prioritise and become more market-oriented. The expense of a private institution should be affordable to people from all walks of life. The implementation of ADP on human development must be successful, efficient, and completed within the time frame specified. More monies should be allocated to various sectors of human development in order to assure greater growth and development in the future.

Bangladesh has made significant progress in the health sector, but much more has to be done in the future. The urgent need is for a national health insurance policy and a central health information system. The scope of public health services should be expanded. In terms of population, the quantity of fiscal allocation is insufficient. On average, private health spending accounts for two-thirds of overall health spending. Quality health care must be provided at the lowest feasible cost to all service providers as well as the quality of education and the availability of adequate health care services should be extended even to remote rural communities. The cost of everyday necessities should be kept within the average person's reach. The prices of food, lodging, and transportation, in particular, must be kept under strict supervision. Individuals will be able to spend more on human development sectors, and private expenditure on education and health will catch up.

Bangladesh's current human capital investment situation falls short in terms of public expenditures on education, health, and other crucial factors. The country's most valuable asset is its people. Other types of natural assets are limited and insufficient to meet the current and future demands of a large number of people. Public and private awareness have been established to shape a skillful information expenditure on education and health has grown in absolute terms. Still, the percentage allocation on public spending and GDP remains quite low. In contrast, private spending on education and health care has risen substantially. To tackle the harsh challenges of globalisation, Bangladesh needs stronger

allocation and distribution of resources for human capital development from both the public and private sectors.

According to the annual report of Bangladesh's economies, economic indices such as GDP, per capita income, and poverty levels have improved significantly despite a decrease in the share of resources allocated to education and health. Prospective scholars can investigate the negative association that exists between various economic indicators and the percentages of deployment of human capital accumulation in Bangladesh.

A long-term practical plan should be developed for the present and emerging labour force to meet the challenge of globalisation while ensuring the country's continuing growth and development. National human resource strategy and an action plan, in particular, must be effectively implemented. Unemployment, low employment, and increased participation in the informal sector must be addressed seriously by boosting human capital quality and skills. The ready-made clothes business accounts for over 80% of total export earnings. The economy needs diverse skilled human capital for its various sectors in order to reduce reliance on earnings from a single industry. Bangladesh has to focus more on improving the components of its Human Development Index. The government should devise a strategy to increase the proportion of the public education budget to at least 4 to 6% of GDP, or 20% of the total budget. Government primary schools should provide a high-quality education. More emphasis must be placed on the secondary level in order to reduce drop-out rates. It is critical to deploy a suitable number of teachers in order to maintain the teacher-learner ratio and provide adequate training. Enough finances should be devoted to secondary, university, and vocational education. TEVT (Technical and Vocational Education and Training) should prioritise and become more market-oriented. The expense of a private institution should be affordable to people from all walks of life. The implementation of ADP on human development must be successful, efficient, and completed within the time frame specified. More monies should be allocated to various sectors of human development to assure greater growth and development in the future. Bangladesh has made significant progress in the health sector, but much more has to be done in the future. The urgent need is for a national health insurance policy and a central health information system. The scope of public health services should be expanded. In terms of population, the quantity of fiscal allocation is insufficient. On average, private health spending accounts for two-thirds of total health spending. Quality health care must be provided at the lowest possible cost to all service providers. The cost of daily necessities should be kept within the reach of the average person.

The prices of food, lodging, and transportation, in particular, must be kept under strict supervision. By the way, people will be able to spend more on human sectors of development, and private expenditure on education and health will catch up.

Conclusion

Unit root test, co-integration, and OLS approaches were employed to achieve the objectives. As the long-term results show, all factors are statistically significant in this thesis, supporting the findings. A few variables are not predicted, such as health expenditure and education expenditure coefficient sign (here it is negative). Even though enrolment in primary schools, life expectancy, and tertiary education enrolment were all positively correlated with economic growth in Bangladesh, the country's educational and health sectors still need to be examined and given urgent attention if its economic growth is to be stable and sure. There is also a direct correlation between the development of human capital and an increase in income levels for the people. Increasing the quality and quantity of healthcare and education services and programmes is also recommended to have a greater impact on the country's overall economic performance.

For economic growth, this study indicated that life expectancy was the most significant factor. In recent years, the Bangladesh government has boosted its spending on health care, increasing life expectancy. Bangladesh's economic growth is boosted by better health and a longer life expectancy. Enrollment in postsecondary education has a positive coefficient and is statistically significant. As a result, a growing number of students are going to college and a growing number of students are going to college abroad. It has been shown that human capital development and economic growth are intertwined in this study, but more research is needed to determine the most effective ways to allocate public funds to the various sub-sectors (health and education) that contribute to human capital development and the most effective methods for boosting human capital contributions to Bangladesh's capacity building

The GDP per capita closely reflects the 'average' revenue per person in the economy because the GDP is divided by the total number of workers. It is expected that when GDP rises, everyone in the chain should benefit, and from that growth it will get a trickle-down effect on the community, raising the standard of living.

Long-term economic growth can have a highly favorable impact on a country. This study shows Bangladesh is achieving economic growth year after year since the last decade. Long-term growth can lead to economic development, which has advantages including higher employment rates and national wealth. These gains in economic development result in a rise in the Bangladesh's residents' standard of living. Increased economic development can help

a country's poverty rate decrease. Economic growth also generates greater tax revenue, which may be utilized to fund government spending and further economic development.

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Appendix

List of Supplements...

Variable	Obs	Mean	Std. Dev.	Min	Max
lnGDPPC	35	5.817396	.2924794	5.495162	6.431501
lnprimary	35	4.466806	.1685796	4.188033	4.744819
lnsecondary	35	3.480448	.4289592	2.804879	4.005179
lntertiary	35	1.711879	.4181698	1.097101	2.62985
lnlexpecta~y	35	4.138977	.0809383	3.990625	4.258352
lnhealex	35	1.074617	.1370809	.8415037	1.315732
lneduexp	35	.6024233	.320624	-.0644318	1.025977
lncapitaF	35	3.004768	.2252853	2.41626	3.346024