

Pre- and Post- COVID-19 Comparative Stock Return Analysis on Specific Industries in
Dhaka Stock Exchange

By

Samin Yasar
17104211
BBS Department
BRAC University

A thesis submitted to the Department of BRAC Business School in partial fulfillment of
the requirements for the degree of Bachelor of Business Administration

BRAC Business School
BRAC University
October 2021

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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at BRAC University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

Samin Yasar

Samin Yasar
17104211
BBS Department
BRAC University

Approval

The thesis titled “Analysis Between Jute and Telecommunication Sector Share Price in DSEX Before and After COVID-19 Pandemic and Which Sector is a Better Investment Opportunity submitted by Samin Yasar (17104211) of Spring Semester, 2017 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Business Administration on [Date-of-Defense].

Examining Committee:

Supervisor:
(Member)

Full Name
Designation, Department
Institution

Program Coordinator:
(Member)

Full Name
Designation, Department
Institution

Departmental Head:
(Chair)

Full Name
Designation, Department
Institution

Acknowledgement

I would like to appreciate, be grateful and be humble to the Almighty Allah. I would like to have this opportunity to share my heart-warming respect to Mr. Riyashad Ahmed who is the Assistant Professor of Finance, Director of Research, BRAC Business School and Director of Programs (MBA & EMBA), Graduate School of Management as he provided me the assistance, belief, inspiration and support in preparing and completing this whole internship report. I am very honored for his contribution for his precious time for checking my report and making all the correct adjustments. In addition to that, I express my gratitude to BRAC University and BRAC Business School for giving me the opportunity to research and add new information to the existing financial literacy database. Lastly, I am thankful that BBS Research Professional Development Center has verified that there are limited sets of annual reports which are available that was relevant for this study.

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List of Acronyms

COVID-19	Corona Virus Disease 2019
DSEX	Dhaka Stock Exchange

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Abstract

This paper examines the impact of COVID-19 on stock return in jute and telecommunication sectors listed under the Dhaka Stock Exchange (DSEX) in Bangladesh during the period from 3rd January 2016 till 30th September 2021. To measure the impact of COVID-19 on stock return, descriptive statistics and panel data regression model which comprises of Coefficient of Variation and Pearson Correlation Coefficient methods has been used where ROE is the independent variable and Annual Average Return is the dependent variable. All the secondary database is gathered and organized from the Dhaka Stock Exchange (DSEX) archive, annual reports of sector specific companies of jute and telecommunication and other financial websites. To certify the validity of the used framework, Pearson Correlation Coefficient analysis are conducted. During COVID-19 pandemic, the share prices are unpredictable that made the investors insecure on which sector to invest, withdraw and solve the decision-making dilemma as minimal research is examined to support the financial statements. The results disclosed that telecommunication sector is a fruitful investment opportunity during COVID-19 pandemic because Coefficient of Variation is the lowest as well as in Pearson Correlation Coefficient test, it proved that it is moving towards a positive relationship from a negative relationship in between ROE and Annual Average Return. The findings will be helpful for the investors to change, create and design a new optimum portfolio diversification of investments in the long run. In addition to that, there is not much of research done for the jute sector in Bangladesh and hence, this paper will add immense value to the research database in financial literacy.

Keywords: COVID-19, Dhaka Stock Exchange (DSEX), Investment, Jute Sector, Share Price, Telecommunication Sector.

Chapter 1

Introduction

Since the beginning of the humankind, many kinds of diseases are invented and discovered along the course of time which later on evolved to something new or become very deadly and contagious. In 2019, a new disease that emerged from China which spread all across every nation on Earth that is labelled as 'Pandemic' by the World Health Organization (WHO). This lethal disease is known as the Coronavirus disease of 2019 which abbreviates to COVID-19. It is a virus that is related to respiratory and vascular disease produced by the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2). As the current economy in Bangladesh and the whole world is very slowly recovering from the drastic downfall in the economy since the last quarter of 2019, in this shaken and fearful time, the most important mission is to take all the possible measures to save humankind. In addition to having strong concerns to protect the economy and their welfare. Moreover, the outcome that is on the basis of the statistics that is conducted by Johns Hopkins University, the world-wide death-to-case ratio of COVID-19 is 2.5% $[(1,287,051/52,304,064) \times 100]$ which is on the 12th of November 2020 (Worldometers, 2020).

For the cause of the worldwide spread of COVID-19, business sector is being adversely affected on a global level that leads to increase in unemployment as well as companies that are very profitable and lucrative are now suffering huge losses. Similar pandemic case is experienced back in 2003, that was the 'Severe Acute Respiratory Syndrome (SARS)' that continued less than a year in which the business sector of an economy faced gigantic downfall of their revenue earnings. As a result, COVID-19 epidemic is causing a significant negative impact on globalization of the businesses and the economy as a whole. A sharp decline in stock prices in the financial markets all across the globe was experienced that occurred from the 24th of February 2020 till 28th of

February 2020. This reported as the largest downward trend in the stock market price since the financial crisis of 2008.

Background of the Study

On 31st December 2019, the World Health Organization (WHO) discovered the first ever Novel Coronavirus case that was found in Wuhan China. As it spread like a wildfire, the World Health Organization (WHO) announced this situation as a pandemic on 11th March 2020 because it began to cause detrimental effects on human health, business sector and the economy as a whole all across the globe. One of the victims that severely suffered was the stock markets as well as the capital markets in all the nations.

In a country like Bangladesh which is very densely populated, the risk of COVID-19 spread is even more high. On 8th of March 2020, Institute of Epidemiology Disease Control and Research (IEDCR) assured the first case of COVID-19 in Bangladesh. As a result, the two capital markets in Bangladesh faced a significant negative impact that was occurred due to the COVID-19 pandemic. On 18th of March 2020, the Dhaka Stock Exchange (DSEX) had a benchmark of 4453 points that suddenly dropped to 3603 points. This is a huge loss for the investors in the financial market and 3603 point was the lowest from the past seven years. To protect the stock market from crashing as the natural decline of stock prices was in a downward spiral, a historic “Floor Price” was adjusted for each stock that included jute sector and telecommunication sector on the stock market on the 19th of March 2020. As there was a countrywide lockdown due to negative effects of COVID-19, the two capital markets were shut down from the 25th of March 2020 till 30th of May 2020 and keeping at halt of all forms of official transactions and activities, settlements and trading.

Hence, these circumstances led to the need for study and research in some specific sectors in the stock market for analyzing and evaluating the significant impact of COVID-19 pandemic on jute sector and telecommunication sector in Bangladesh. Also, this will help to find out which sector between jute and telecommunication is better and wise to invest during COVID-19 epidemic. Till now there are no such similar published papers that measures the significant impact of COVID-19 pandemic on stock return on each sector in the stock market neither in Bangladesh nor in any country. As a result, this is a topic of great interest which will help to discover between jute sector and telecommunication sector in Dhaka Stock Exchange (DSEX) of Bangladesh is a better investment opportunity during COVID-19 pandemic.

Objective of the Study

The purpose of this paper is to examine whether jute sector or telecommunication sector in Dhaka Stock Exchange (DSEX) will provide higher return during COVID-19 pandemic by analyzing the returns of before COVID-19 spread and during COVID-19 spread and know the investment opportunities in the fruitful sector.

Chapter 2

Literature Review

The adverse effect of the COVID-19 pandemic is immense towards the economy of Bangladesh. This attracts high allure because this originated in China that is much contemplated as one of the fundamental centers of foreign investments in the Asia continent. In the first quarter of 2019, COVID-19 started to have a strong influence all across the economies regionally in Bangladesh. According to Rowsell et al. (2021), the telecommunications sector in Canada flourished when they fought against COVID-19 pandemic because it can support social outcomes and public health as well as outcomes of the economy for their telecommunication policy. Hence, Rowsell et al. (2021)

found that telecommunication sector is profitable but also not correlated with increases in COVID-19 pandemic.

Dewatripont (2020), found in the paper that when COVID-19 virus affects a country on a vast level, it begins to affect other countries as well due to the rapid spread of the virus between the human race and across different countries for financial integration and rapid growth of globalization.

From February 2020, Haque (2020) mentioned that the stock market began to face detrimental effects due to the outbreak of COVID-19 in Bangladesh. As a result, The Dhaka Stock Exchange (DSEX) as well as Chittagong Stock Exchange (CSEX) was shut down from March 26th, 2020 till May 31st, 2020 to suppress the virus spread. This led to a sharp downturn in the activities of trading which was carefully examined and speculated owing to the financial and economic uncertainty. On June 5th, 2020 the Dhaka Stock Exchange (DSEX) trading value was worth 430 million BDT. Also, the daily market fluctuation was of 2.20% the market value of equities that collapsed by 11.50% since February 27th, 2020 till June 10th, 2020. The DSEX declined about 1% to 3960 points in June 2020.

The COVID-19 pandemic made a large change in the level of risk for investors as well as led the economists speculate and examine the socio-economic responses to threats of health which is likely to be very paramount and unbalanced. In the present time, it put an impact on capital markets too in addition to the health care markets as well. As a result, studies have been done and researched upon the link between the existence of COVID-19 and stock returns through exploration of available data set. In relation to this matter, Ali et al. (2010) found on their paper that the excessive response of the investors for the fear of share price drop due to COVID-19 rapid spread led to drastic fall in stock prices in the stock market.

Baker et al. (2020) stated in their paper that till date no such disease outbreak that even includes Spanish Flu is as dangerous as COVID-19 outbreak. In the stock market, the stock prices are observed to be more volatile in this catastrophe period than in a stable period in the daily activities of trading in the stock market.

According to M. Logesh et al. (2020), though the stock prices in the stock markets in different sectors decreased in this COVID-19 pandemic, there are no such significant change in the price in the jute sector of India compare to before and during the COVID-19 pandemic period. However, there was a difference in the quantity of jute in the market before and during COVID-19 pandemic period. The demand rose for jute bags as it was short in supply due to lockdown of jute mills for a particular period of time. Moreover, the farmers did not face as much burden as the employees in the jute mills because of their planning and execution of harvesting and sowing in the COVID-19 pandemic. Therefore, M. Logesh et al. (2020) found in their paper that jute sector is profitable but also not correlated with increases in COVID-19 pandemic.

In this 21st century, there are many studies conducted and examined about the connections between various infestation and the stock's performance. According to Liu et al. (2020), significant number of losses in the stock market occurs when individual investors fear the drop in stock prices on their future earnings because of any plaque that disappoints them which creates the fluctuation in the stock exchange. Such as, Nippani and Washer (2004) found in their paper that it is not correlated between the adverse effect of SARS on Vietnam and China stock markets.

There were many more studies that are researched and conducted upon the obstructive impacts of COVID-19 spread on stock markets around the world which have been documented and published. According to Trang & Gan (2020), they found in their paper by using panel-data regression model to observe and analyze the effects of COVID-19 on stock return and the result was not correlated

with COVID-19 confirmed daily cases in Vietnam. In addition, He et al. (2020) and Liu et al. (2020) conducted similar research but of different countries and found out that it is also not correlated with COVID-19 pandemic that involves the outbreak among European, Asian, and American nations. Moreover, in the work of Al-Awadhi et al. (2020) on the China stock market showed the same result that it is not correlated between the confirmed cases of COVID-19 and deaths due to COVID-19 and the stock market returns in all the sectors. In the study of Ashraf (2020) and Al-Awadhi et al. (2020), they found out in their paper that in 64 nations as COVID-19 confirmed cases increased the stock returns dropped. According to Alfaro et al. (2020), they found in their paper that there is an adverse relationship with COVID-19 virus and the USA stock market return. Zhang et al. (2020) found in their paper that in ten countries that have the highest number of confirmed cases in March 2020 that consists of Singapore, Korea and Japan, their stock markets discloses that the stock market of China experienced the maximum standard deviations in the month of February 2020 but a minimum standard deviation in March 2020.

Therefore, the possible outcomes of the COVID-19 pandemic on stock market distinguishes among all the industries and sectors in Dhaka Stock Exchange (DSEX) in Bangladesh. The reviews of literature made in the past shows that no study is found or examined in analyzing the sector-wise gainer and sufferer of jute sector and telecommunications sector on the basis of stock returns due to the vast and rapid spread of COVID-19 virus and which sector is more profitable to invest during this COVID-19 pandemic.

Chapter 3

Research Methodology

As this article contains vast amount of secondary collected raw data which are difficult to understand, the information can be evaluated, simplified and presented in a readable form for the

respective reader with the help of descriptive analysis so that it can be more accurate and reliable. According to Adam (2021), Descriptive Statistics are a definitive value that abridge a given particular database, which consists of either a sample of a population or a representation of the whole population. These are contracted into measures of variability (spread) and measures of central tendency. Variability measures involves skewness, kurtosis, minimum and maximum variables, variance and standard deviation whereas central tendency involves mean, median and mode. Moreover, Kent (2007) mentioned that, methods like Graphical representations can also be used that can consist of bar charts, pie charts, histograms and etc. for the organization of the data

To recognize the impact of COVID-19 on jute sector (comprises of Jute Spinners Limited, Northern Jute Manufacturing Co. Limited and Sonali Aansh Limited) and telecommunication sector (comprises of Bangladesh Submarine Cable Company Limited, GrameenPhone Limited and Robi Axiata Limited) in the Dhaka Stock Exchange (DSEX), panel data regression model has been used for the observations in stock returns of the six companies which involves Pearson Correlation Coefficient. The two variables that were taken into consideration was Return on Earnings (ROE) as the independent variable and Annual Average Return as the dependent variable to compare the impact of before and during COVID-19 pandemic.

The data regarding the daily closing share prices of all the companies in both jute sector and telecommunication sector in Dhaka Stock Exchange (DSEX) before COVID-19 pandemic (from 3rd January 2016 till 25th March 2020) and during COVID-19 pandemic (from 1st June 2020 till 30th September 2021) is gathered and organized from the official website of Dhaka Stock Exchange (DSEX) data archives as the sample population for analysis by using descriptive statistics and Coefficient of Variation. The beginning and ending date of each month's closing share price of each company is considered to get the monthly return. Then, each year's average

return is calculated and multiplied by twelve to get the annual average return to compare the impact of before and during COVID-19 pandemic. In addition to that, all the company specific data has been gathered from their published annual reports which were found available in their own official website or other financial websites.

On the contrary, as the outbreak of COVID-19 grew immensely in Bangladesh, the government suspended all forms of trading activities in Dhaka Stock Exchange (DSEX) from 26th March 2020 till 31st May 2020. The government implemented these actions to reduce the COVID-19 spread. Hence, the data from 26th March 2020 till 31st May 2020 cannot be included here.

Chapter 4

Data Analysis

Data Analysis Technique

In this study, Microsoft Excel Worksheet is used to interpret, analyze and summarize the information gathered and organized from various sources to assess the impact of before COVID-19 pandemic and during COVID-19 pandemic on jute sector and telecommunication sector in Dhaka Stock Exchange (DSEX) in Bangladesh.

Formula for calculating Standard Deviation

$$\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{N}}$$

σ = population standard deviation

N = the size of the population

x_i = each value from the population

μ = the population mean

It measures the fluctuation of return. Higher the standard deviation, higher the risk and volatility of each share return and vice-versa.

Formula for calculating Coefficient of Variation

$$CV = \frac{\sigma}{\mu}$$

σ = population standard deviation

μ = population mean

It measures risk per unit of return. Lower the CV, less the risk per unit of return from each share and vice-versa.

Formula for calculating Pearson Correlation Coefficient

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r = correlation coefficient

x_i = values of the x-variable in a sample

\bar{x} = mean of the values of the x-variable

y_i = values of the y-variable in a sample

\bar{y} = mean of the values of the y-variable

This determines the range of linear relationship between the independent and dependent variables. The output of this analysis measures and identifies the degree of correlation between those two variables corresponding to each other. The range of the value of correlation coefficient is from -1 to +1. Only three types of correlation might occur: positive, negative and zero. If dependent variable changes with respect to the independent variable in the similar way at the exact time, then, the variables are positively correlated. This refers that if independent variable increase, the dependent variable will also increase and vice-versa. If dependent variable changes with respect to the independent variable but in the opposite way at the exact time, then, the variables are

negatively correlated. Hence, if independent variable increase, the dependent variable will decrease and vice-versa. However, if there is no linear relationship between those two variables, it proves that there is zero correlation among them. The table below shows the rule of thumb for Pearson Correlation Coefficient.

Range of Coefficient	Degree of Correlation
± 0.91 to ± 1.00	Very Strong
± 0.71 to ± 0.90	High
± 0.41 to ± 0.70	Moderate
± 0.20 to ± 0.40	Small but definite relationship
± 0.00 to ± 0.20	Slight, almost negligible

Table 1: Pearson Correlation Coefficient Range & Degree

Formula for calculating Annualized Average Return

$$(\text{Average return} \times 12)$$

This measures yearly average return after calculating the average return of each month, then measure the average return per year and multiply by twelve to get the annual average return.

Formula for calculating Return

$$\{(\text{Each month's closing price} - \text{That month's beginning price}) / \text{That month's beginning price}\} \times 100$$

Chapter 5

Results and Discussion

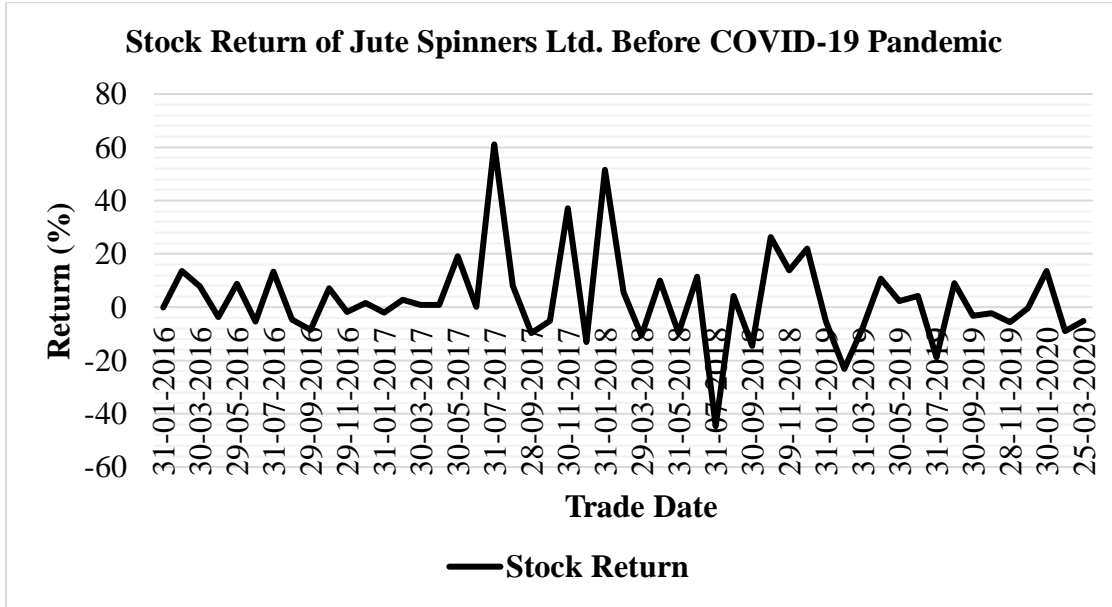


Figure 1: Stock Return of Jute Spinners Ltd. Before COVID-19 Pandemic

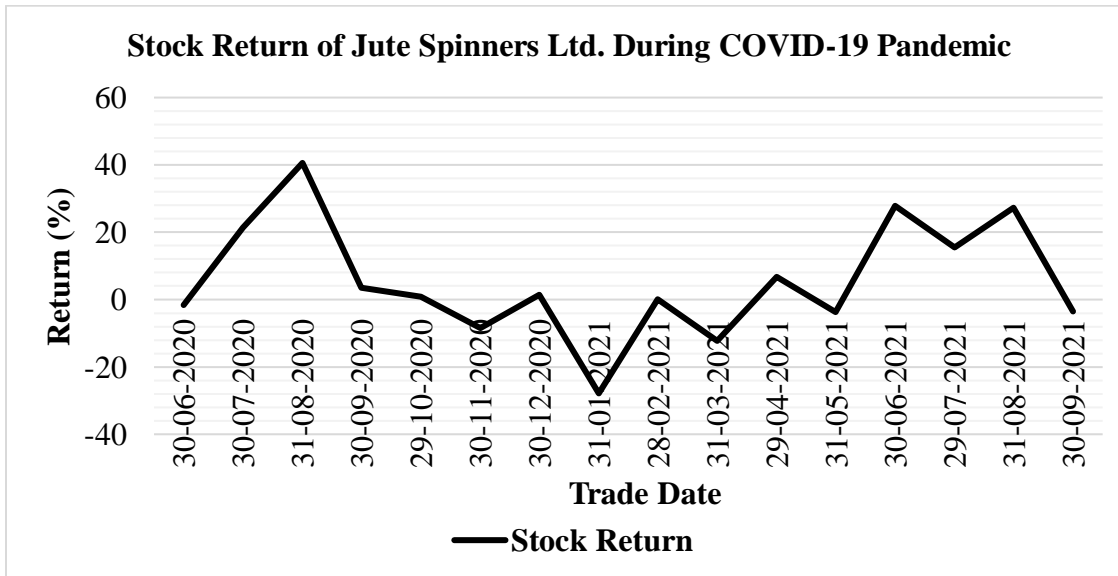


Figure 2: Stock Return of Jute Spinners Ltd. During COVID-19 Pandemic

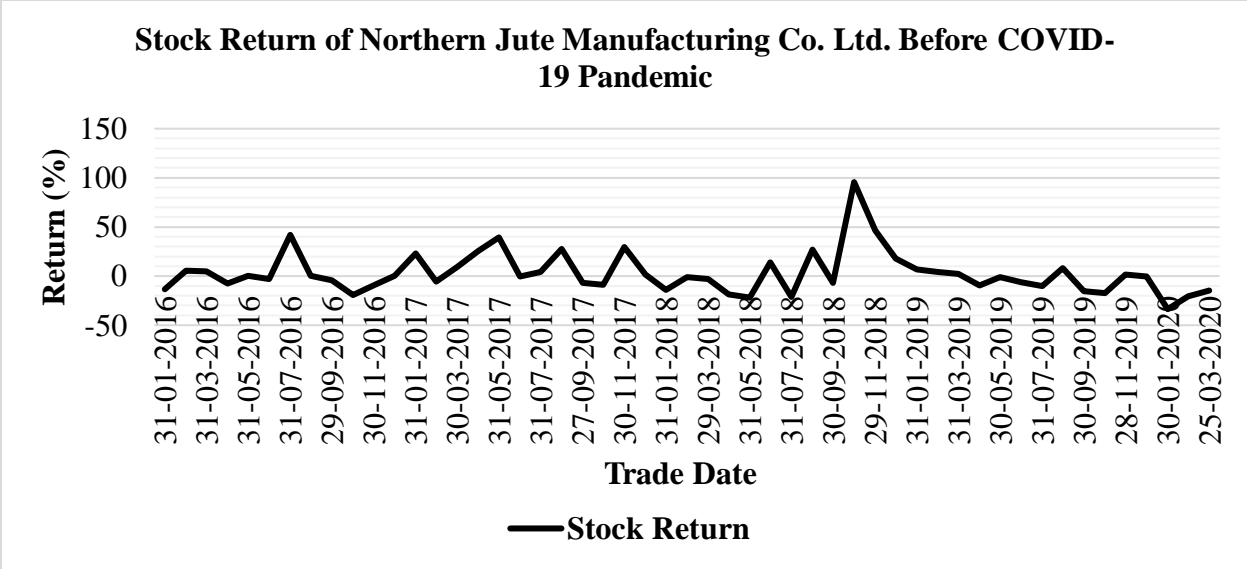


Figure 3: Stock Return of Northern Jute Manufacturing Co. Ltd. Before COVID-19 Pandemic

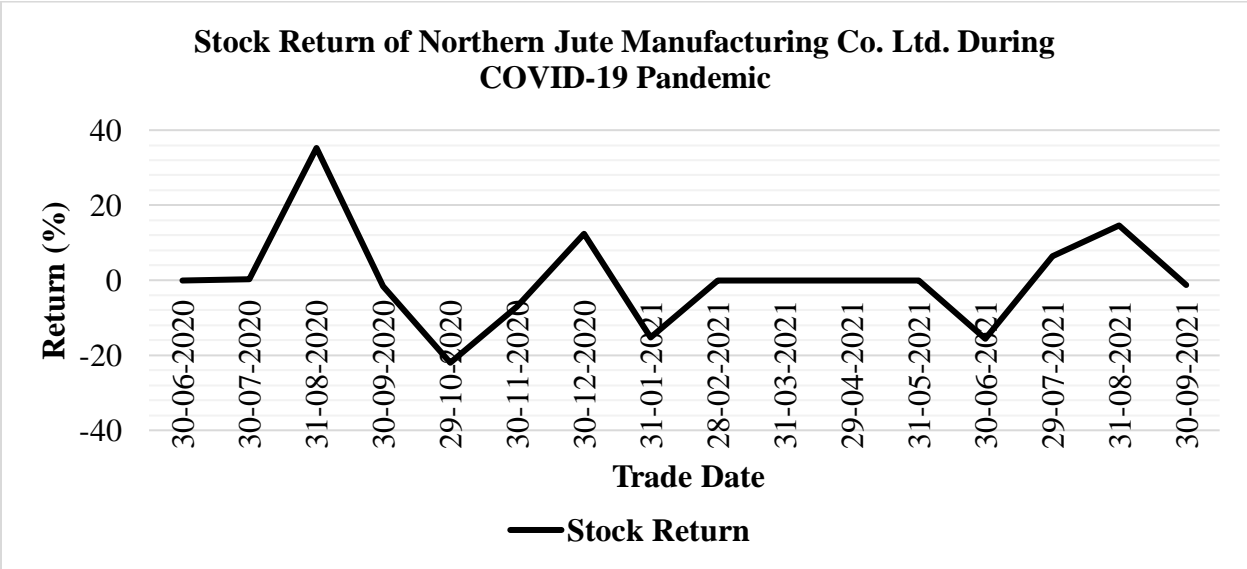


Figure 4: Stock Return of Northern Jute Manufacturing Co. Ltd. During COVID-19 Pandemic

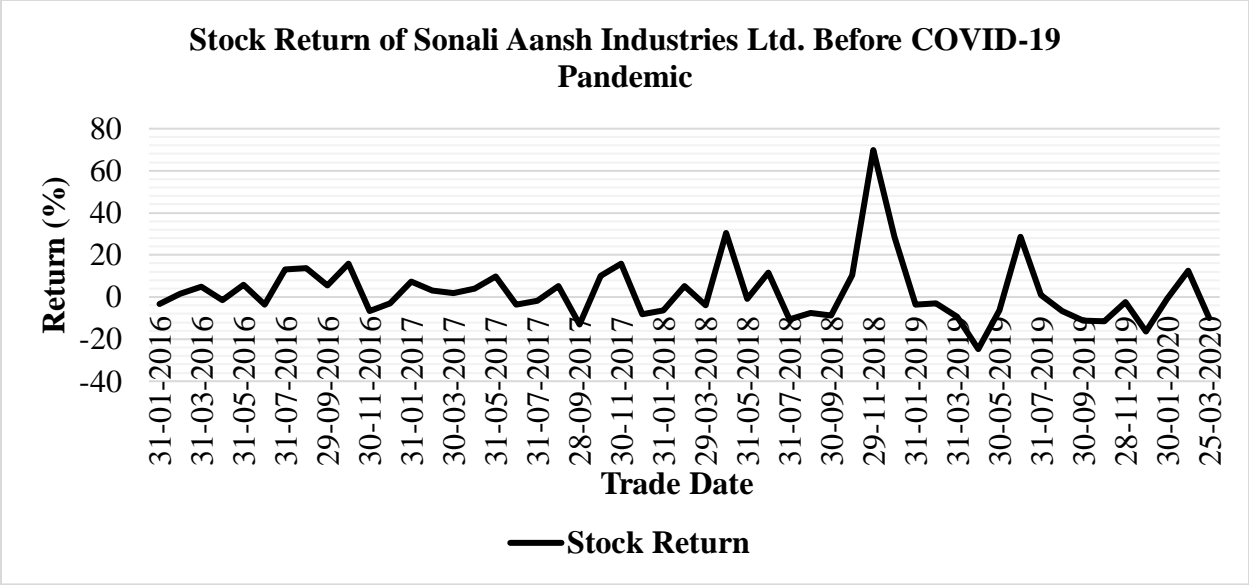


Figure5: Stock Return of Sonali Aansh Industries Ltd. Before COVID-19 Pandemic

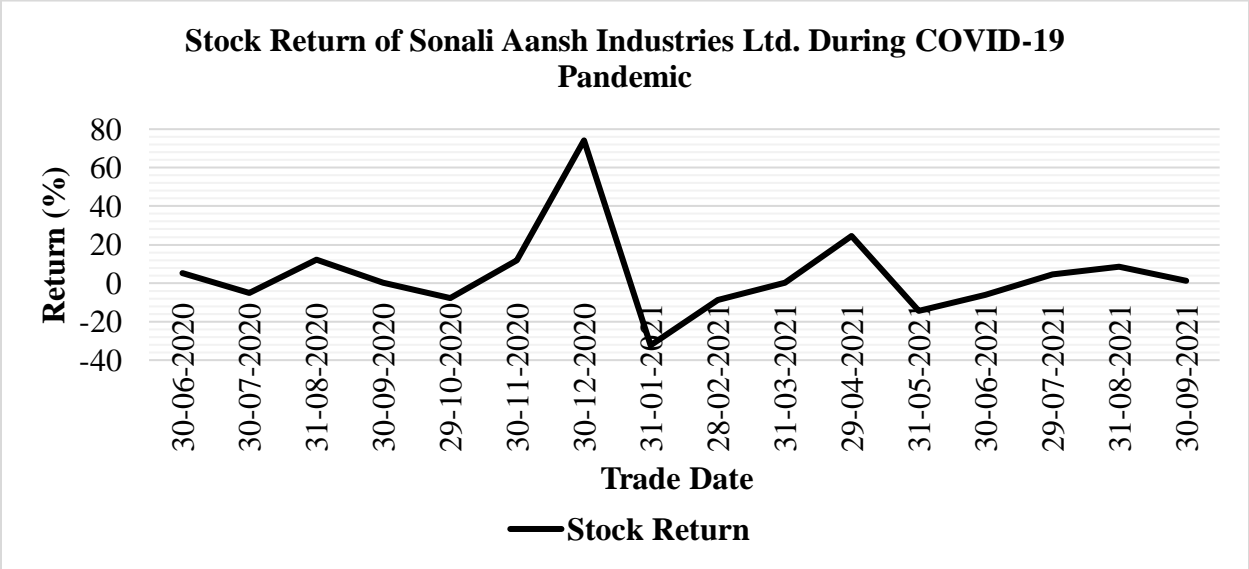


Figure 6: Stock Return of Sonali Aansh Industries Ltd. During COVID-19 Pandemic

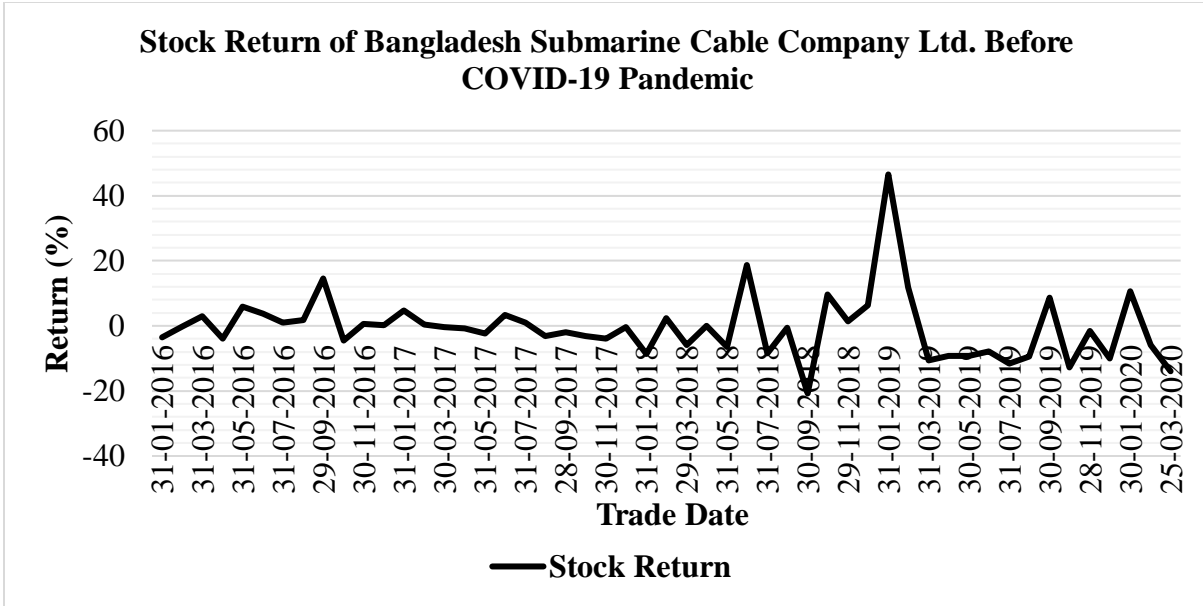


Figure 7: Stock Return of Bangladesh Submarine Cable Company Ltd. Before COVID-19 Pandemic

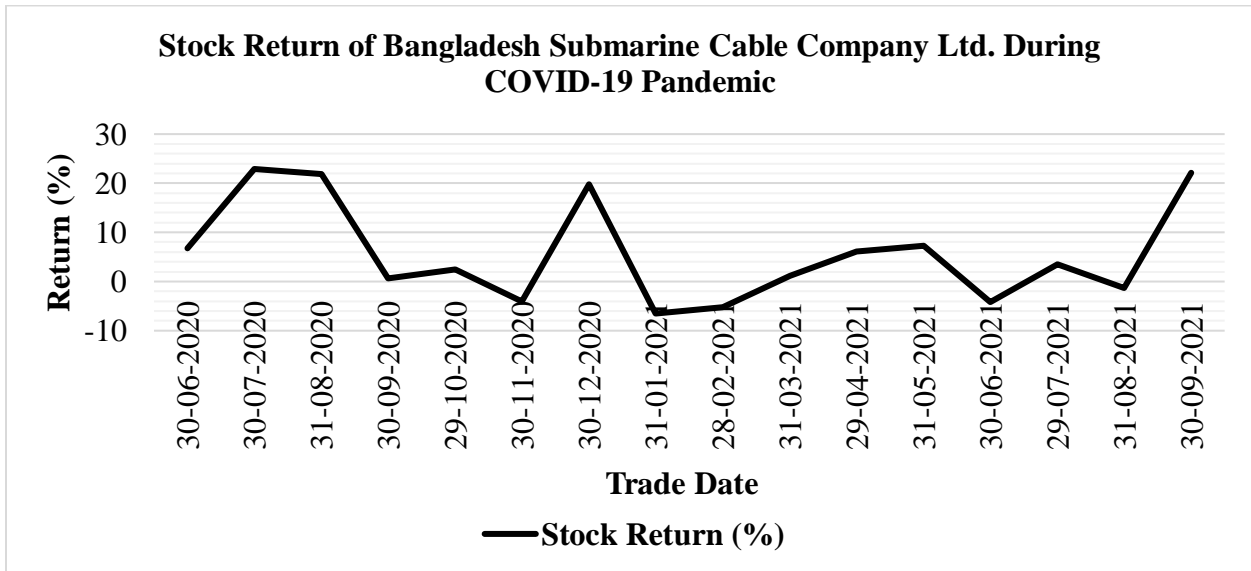


Figure 8: Stock Return of Bangladesh Submarine Cable Company Ltd. During COVID-19 Pandemic

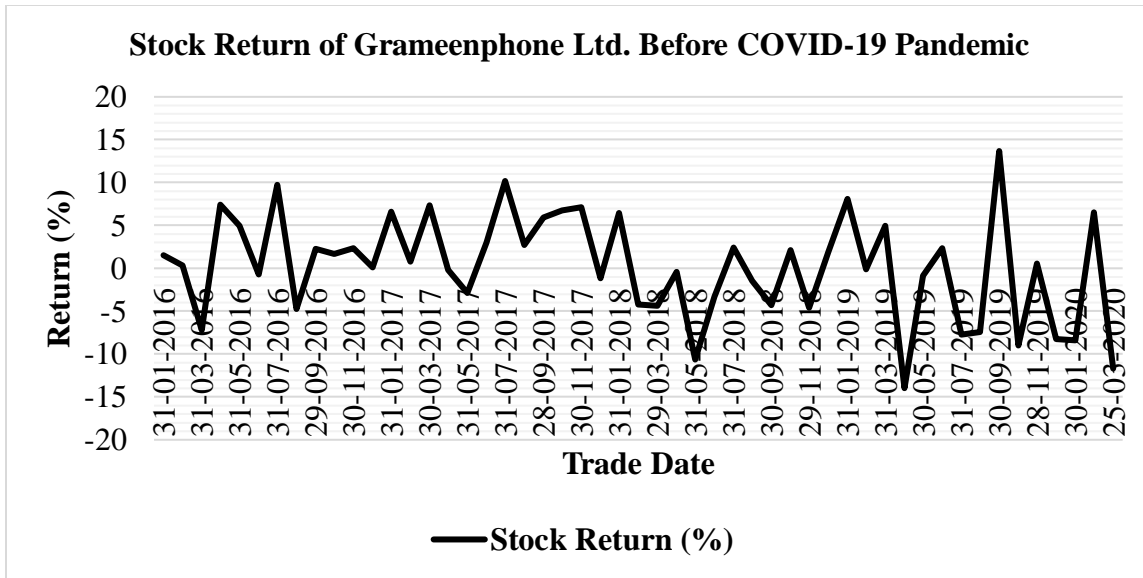


Figure 9: Stock Return of Grameenphone Ltd. Before COVID-19 Pandemic

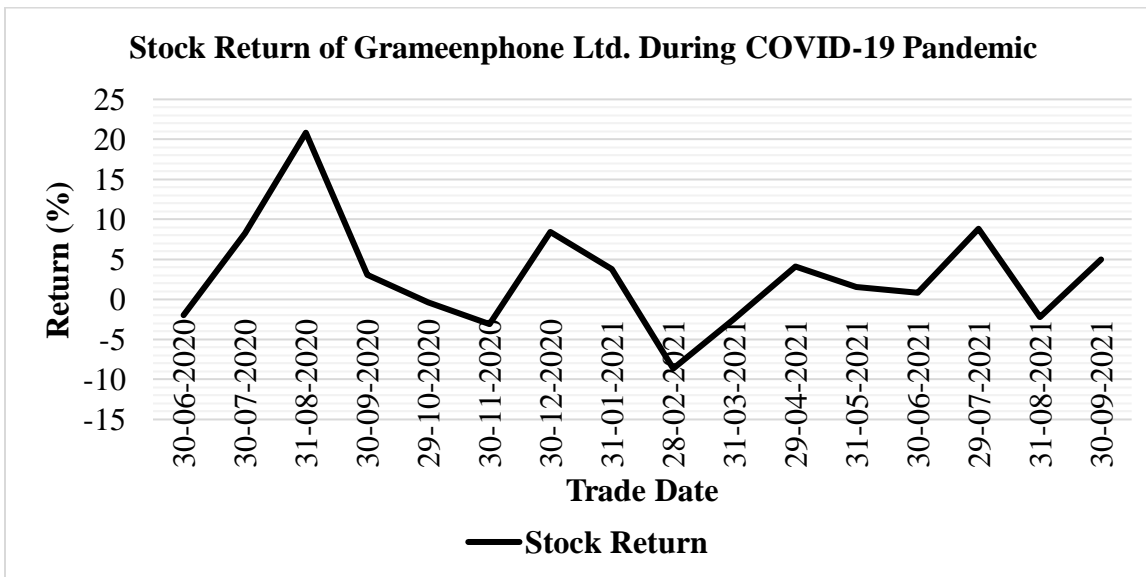


Figure 1: Stock Return of Grameenphone Ltd. During COVID-19 Pandemic

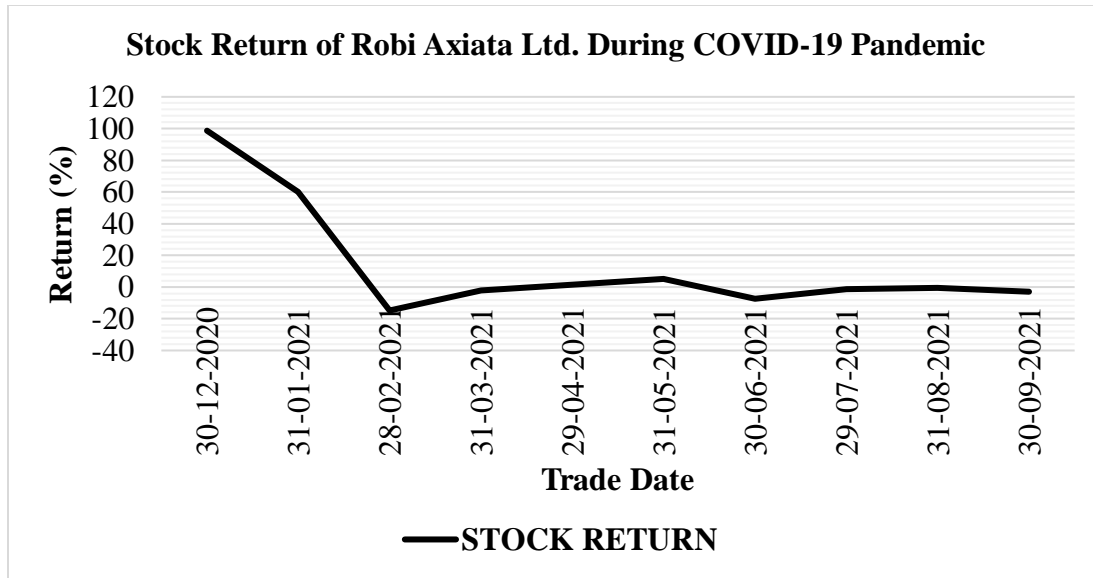


Figure 11: Stock Return of Robi Axiata Ltd. During COVID-19 Pandemic

Jute Sector Before COVID-19 Pandemic						
Range	Minimum	Maximum	Mean	Standard Deviation	Coefficient of Variation	Annual Average Return
140.29	-44.71	95.58	2.76	17.93	6.51	33.06

Table 2: Jute Sector Before COVID-19 Pandemic

Telecommunication Sector Before COVID-19 Pandemic						
Range	Minimum	Maximum	Mean	Standard Deviation	Coefficient of Variation	Annual Average Return
67.31	-20.77	46.54	-0.12	8.31	-69.08	-1.44

Table 3: Telecommunication Sector Before COVID-19 Pandemic

Jute Sector During COVID-19 Pandemic						
Range	Minimum	Maximum	Mean	Standard Deviation	Coefficient of Variation	Annual Average Return
106.48	-32.31	74.17	3.36	17.89	5.32	40.38

Table 4: Jute Sector During COVID-19 Pandemic

Telecommunication Sector During COVID-19 Pandemic						
Range	Minimum	Maximum	Mean	Standard Deviation	Coefficient of Variation	Annual Average Return
130.97	-32.31	98.67	6.58	19.02	2.89	78.95

Table 5: Telecommunication Sector During COVID-19 Pandemic

Pearson Correlation Coefficient						
	Jute Sector			Telecommunication Sector		
	Jute Spinners Ltd	Northern Jute Manufacturing Co. Ltd	Sonali Aansh Ltd	Bangladesh Submarine Cable Company Limited	Gramee nPhone Ltd	Robi Axiata Ltd
Before COVID-19 Pandemic	N/A	N/A	0.91	-0.41	-0.70	N/A
During COVID-19 Pandemic	N/A	N/A	0.08	0.70	-0.38	N/A

Table 6: Pearson Correlation Coefficient of Jute & Telecommunication Sector Before & During COVID-19 Pandemic

According to Table 2, the Mean stock return of Jute Sector before COVID-19 pandemic is BDT 2.76 but during COVID-19 pandemic it rose to BDT 3.36 that is shown in Table 4. This states that due to COVID-19 spread, the share price in Jute Sector in Dhaka Stock Exchange (DSEX) rose and hence, made a positive impact on stock return. As a result, the Annual Average Return rose from BDT 33.06 (shown in Table 2) to BDT 40.38 (shown in Table 4). These changes through the course of time are also graphically represented in Figure 2 and Figure 2 for Jute Spinners Ltd (Appendices A for details in tabular form and graphical representation of share prices for that particular time period), in Figure and Figure for Northern Jute Manufacturing Co. Ltd (Appendices B for details in tabular form and graphical representation of share prices for that particular time period) and in Figure 16 and Figure for Sonali Aansh Ltd (Appendices C for details in tabular form and graphical representation of share prices for that particular time period) about their Share Price

and Stock Return before and after COVID-19 pandemic for comparison and analysis that is provided above from the year 3rd January 2016 till 30th September 2021. Also, the Standard Deviation reduced slightly to 17.89% during COVID-19 pandemic in Jute Sector in Dhaka Stock Exchange (DSEX) that is shown in Table 4 in compare to before COVID-19 pandemic situation of 17.93% that is shown in Table 2. This proves that it has less fluctuation and volatility which are favorable for the companies and less risky. To certify the decline in the level of risk per unit of return, Coefficient of Variation analysis proved that during COVID-19 epidemic, the risk per stock return reduced to 5.32 (shown in Table 4) whereas before COVID-19 pandemic it is 6.51 (shown in Table 2) in the Jute Sector in Dhaka Stock Exchange (DSEX). Moreover, the Range decreased drastically from BDT 140.29 (Table 2) to BDT 106.58 (Table 4) which means that the share price has a low variation in distribution because of the changes in their Minimum and Maximum share price amount. This says that the Jute Sector in Dhaka Stock Exchange (DSEX) during COVID-19 pandemic has become more reliable to invest as the risk is less compare to before COVID-19 outbreak. According to Pearson Correlation Coefficient Analysis (Appendices G for details), the relationship between the variables ROE (independent variable) and Annual Average Return (dependent variable) of Sonali Aansh Ltd (Jute Sector) is positive which refers that if ROE increases then Annual Average Return will increase and therefore, the share price will increase. However, due to COVID-19 situation, it is showing that Annual Average Return has become less responsive to change in ROE in compare to before COVID-19 pandemic from 0.91 to 0.08 that is provided in Table 6.

As per Table 3, the Mean stock return of Telecommunication Sector before COVID-19 outburst is BDT 0.12 but during COVID-19 situation it rose immensely to BDT 6.58 that is shown in Table 5. This proves that due to COVID-19 spread, the share price in Telecommunication Sector in

Dhaka Stock Exchange (DSEX) rose enormously and hence, made a very strong positive impact on the stock return. This led to the Annual Average Return to rise from BDT -1.44 (shown in Table 3) to BDT 78.95 (shown in Table 5). These changes in the timeline are also graphically represented in Figure 3 and Figure for Bangladesh Submarine Cable Company Ltd (Appendices D for details in tabular form and graphical representation of share prices for that particular time period), in Figure 20 and Figure 1 for GrameenPhone Ltd (Appendices E for details in tabular form and graphical representation of share prices for that particular time period) and in Figure 6 for Robi Axiata Ltd (Appendices F for details in tabular form and graphical representation of share prices for that particular time period) about their Share Price and Stock Return before and after COVID-19 pandemic for comparison and analysis that is provided above from the year 3rd January 2016 till 30th September 2021. Moreover, the Standard Deviation increased more than double to 19.02% during COVID-19 pandemic in Telecommunication Sector in Dhaka Stock Exchange (DSEX) that is shown in Table 5 in compare to before COVID-19 pandemic situation of 8.31% that is shown in Table 3. This states that it has a lot more fluctuation and volatility which are unfavorable for the companies because it is very risky. To determine the huge downfall in the level of risk per unit of return, Coefficient of Variation analysis mentioned that during COVID-19 epidemic, the risk per stock return reduced drastically to 2.89 (shown in Table 5) whereas before COVID-19 pandemic it was -69.08 (shown in Table 3) in the Telecommunication Sector in Dhaka Stock Exchange (DSEX). In addition to that, the Range increased immensely from BDT 67.31 (Table 3) to BDT 130.97 (Table 5) which means that the share price has a high variation in distribution because of the changes in their Minimum and Maximum share price amount. This proves that the Telecommunication Sector in Dhaka Stock Exchange (DSEX) during COVID-19 pandemic has become a bit riskier to invest compare to before COVID-19 spread. As per Pearson Correlation

Coefficient model (Appendices H for details), the relationship between the variables ROE (independent variable) and Annual Average Return (dependent variable) of Bangladesh Submarine Cable Company Ltd and GrameenPhone Ltd (Telecommunication Sector) is negative which means that if ROE increases then Annual Average Return will decrease and therefore, the share price will drop. But, due to COVID-19 pandemic, it is showing that Annual Average Return has become a positive relationship with the change in ROE in compare to before COVID-19 pandemic from -0.41 to 0.70 for Bangladesh Submarine Cable Company Ltd and for GrameenPhone Ltd, the relationship is still negative but it is quickly being more responsive to a positive change by ROE to Annual Average Return from -0.70 to -0.38 that is provided in Table 6.

Therefore, the results mentioned above is providing the proof that among these two sectors which involves Jute and Telecommunication in Dhaka Stock Exchange (DSEX), the most lucrative and fruitful sector to invest is the Telecommunication Sector during COVID-19 pandemic because among all the possible outcomes of Coefficient of Variation, Telecommunication Sector has the lowest risk per unit of return of 2.89 that is shown in Table 5 as well as Pearson Correlation Coefficient model proved that it is rapidly changing the relationship between ROE and Annual Average variable from negative to positive and one of the three companies which is Bangladesh Submarine Cable Company Ltd has already changed from a negative relationship to a positive relationship that is mentioned in Table 6.

Limitations of the Study

In this paper, only two variables are used which involves ROE as the independent variable and Annual Average Return as the dependent variable for measuring the results of before and during COVID-19 pandemic in Pearson Correlation Coefficient analysis. There are some other instruments to get a better and accurate finding which are not included in this paper. Therefore,

more variables should be involved to disclose a more meaningful outcome. This paper has limited data that is within Dhaka Stock Exchange (DSEX) only but the sample size could be expanded by taking Chittagong Stock Exchange (CSE) and other stock markets from abroad. Lastly, secondary data from the Dhaka Stock Exchange (DSEX) archives, annual reports and other financial websites are used for this paper which are considered to be true and trustworthy but there might be some manipulation that might cause an adverse impact in the final outcome. These major limitations are because of some unavailability of required data due to shut down of Dhaka Stock Exchange (DSEX) for more than two months that is mentioned above and also not being able to find all the annual reports to analyze Pearson Correlation Coefficient properly for every company. The time frame to perform this paper is very constrained and thus, a complete study is hard to execute within this restricted time span.

Chapter 6

Conclusion

This paper is orchestrated to determine the impact of COVID-19 pandemic on the stock returns of Jute and Telecommunication Sector under Dhaka Stock Exchange (DSEX). In total six listed companies under these two sectors and secondary data were gathered and organized sector-wise. Descriptive analysis is performed to analyze the data set. For sector-wise analysis, panel data regression model has been used from 3rd January 2016 till 30th September 2021. In order to certify and validate the used model, Coefficient of Variation and Pearson Correlation Coefficient tests are conducted. The results states that during COVID-19 pandemic, investing in Telecommunication Sector is lucrative and fruitful for long term investment portfolio diversification and better decision-making process. Moreover, the interested parties like investors, banks and other financial institutions who wants to take a wiser investment diversification decision and opportunity to invest

in these two sectors will be able to interpret the present status and structure of these two sectors. The limitations faced during conducting this research is unavailability of more than 2 months of Share Prices due to shut down of Dhaka Stock Exchange (DSEX) as well as unavailability of some annual reports to support its ROE to calculate Pearson Correlation Coefficient for some of the companies in Jute and Telecommunication Sector in Dhaka Stock Exchange (DSEX). This study can be improved much further by integrating more COVID-19 related variables with the variables related with the economy of Bangladesh like inflation rate, interest rate and economic growth rate and also with different countries. As a result, more concrete and accurate results will be discovered about the performance of Jute and Telecommunication Sector in Dhaka Stock Exchange (DSEX). This will help future researchers as they will get benefit from this paper by getting new knowledge and database about the two sectors and can quickly improve the paper by taking on more variables as mentioned above and improve the analytical procedures immensely. This dissertation will contribute to adding new information to the existing financial literacy by determining the effects of COVID-19 pandemic on Jute and Telecommunication Sector in Dhaka Stock Exchange (DSEX). Finally, it will help the companies of these two sectors to change and modify to a new and solidified structure and allow them to concentrate on the major issues that will influence the performance of these six companies for an enriched performance achievement.

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Appendices A

Closing Price & Stock Return of Jute Spinners Ltd. Before & During COVID-19 Pandemic

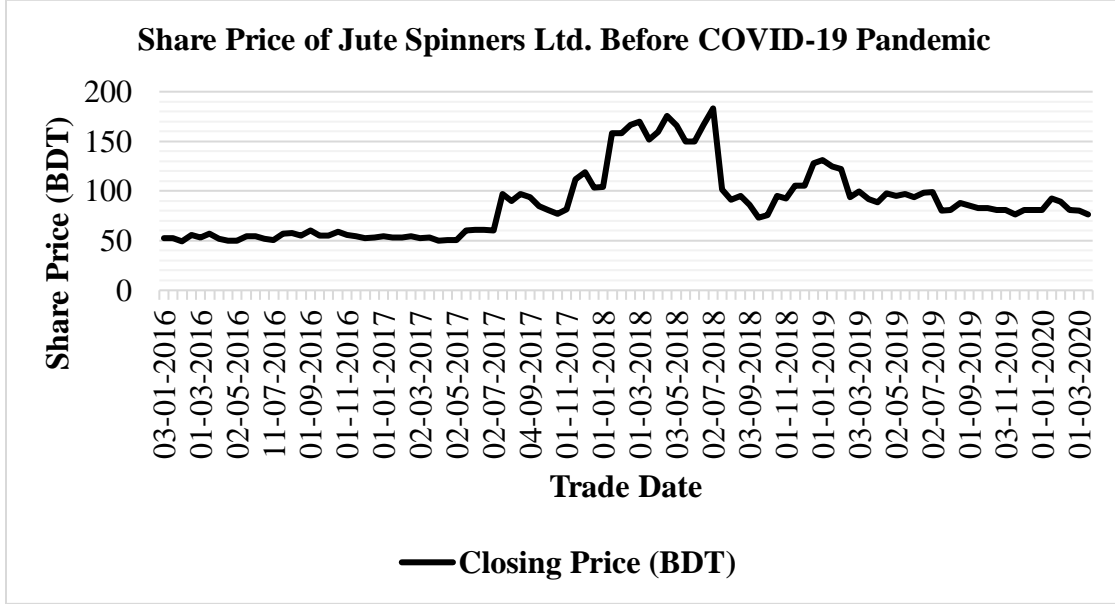


Figure 22: Share Price of Jute Spinners Ltd. Before COVID-19 Pandemic

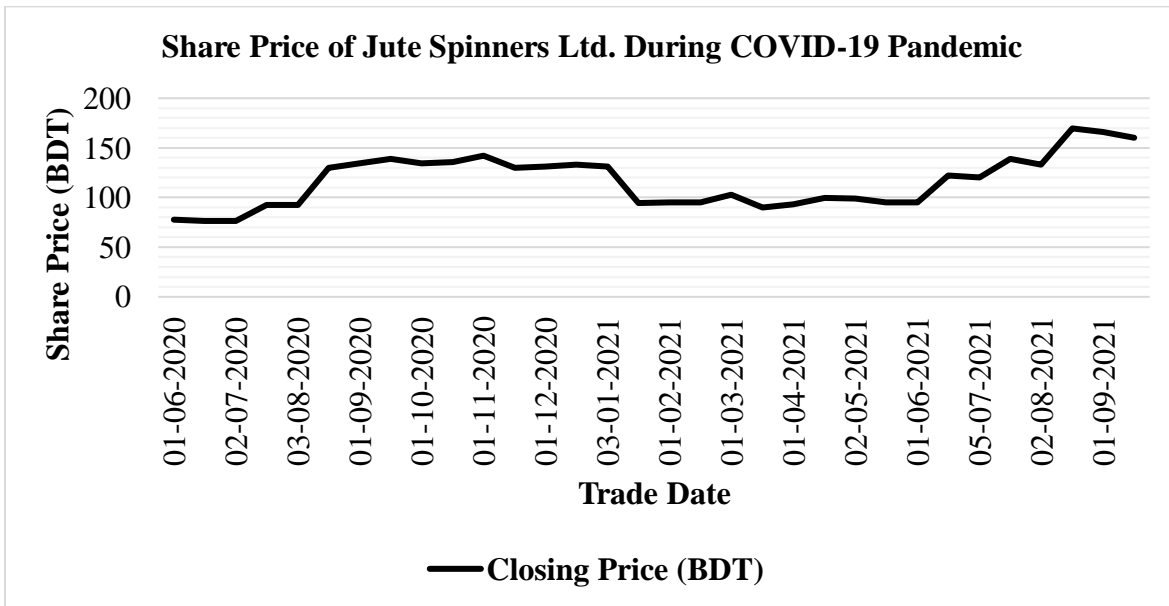


Figure 13: Share Price of Jute Spinners Ltd. During COVID-19 Pandemic

Before Covid			During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)	Trade Date	Closing Price (BDT)	Stock Return (%)
03-01-2016	52.70		01-06-2020	77.90	
31-01-2016	52.60	-0.19	30-06-2020	76.60	-1.67
01-02-2016	49.3		02-07-2020	76.40	
29-02-2016	56	13.59	30-07-2020	92.70	21.34
01-03-2016	53.10		03-08-2020	92.40	
30-03-2016	57.20	7.72	31-08-2020	129.90	40.58
03-04-2016	52.10		01-09-2020	134.30	
28-04-2016	50.20	-3.65	30-09-2020	138.90	3.43
02-05-2016	50.00		01-10-2020	134.50	
29-05-2016	54.40	8.80	29-10-2020	135.70	0.89
02-06-2016	54.5		01-11-2020	142.00	
26-06-2016	51.6	-5.32	30-11-2020	130.10	-8.38
11-07-2016	50.4		01-12-2020	131.30	
31-07-2016	57.1	13.29	30-12-2020	133.10	1.37
01-08-2016	57.50		03-01-2021	131	
31-08-2016	54.80	-4.70	31-01-2021	94.5	-27.86
01-09-2016	60.00		01-02-2021	95	
29-09-2016	54.90	-8.50	28-02-2021	95	0.00
03-10-2016	55.00		01-03-2021	102.6	
31-10-2016	58.90	7.09	31-03-2021	90.1	-12.18
01-11-2016	55.5		01-04-2021	93.1	

29-11-2016	54.5	-1.80	29-04-2021	99.3	6.66
01-12-2016	52.40		02-05-2021	99	
29-12-2016	53.20	1.53	31-05-2021	95.3	-3.74
01-01-2017	54.50		01-06-2021	95.4	
31-01-2017	53.40	-2.02	30-06-2021	121.9	27.78
01-02-2017	53.00		05-07-2021	120.1	
28-02-2017	54.50	2.83	29-07-2021	138.8	15.57
02-03-2017	52.60		02-08-2021	133.2	
30-03-2017	53.00	0.76	31-08-2021	169.6	27.33
03-04-2017	50.00		01-09-2021	165.8	
30-04-2017	50.40	0.80	30-09-2021	160	-3.50
02-05-2017	50.40				
30-05-2017	60.00	19.05			
01-06-2017	60.70				
29-06-2017	60.70	0.00			
02-07-2017	60.40				
31-07-2017	97.30	61.09			
01-08-2017	89.80				
31-08-2017	97.10	8.13			
04-09-2017	93.90				
28-09-2017	84.70	-9.80			
02-10-2017	81.00				
31-10-2017	76.80	-5.19			

01-11-2017	81.70	
30-11-2017	112.10	37.21
03-12-2017	118.90	
28-12-2017	103.30	-13.12
01-01-2018	104.30	
31-01-2018	158.00	51.49
01-02-2018	157.90	
28-02-2018	166.80	5.64
01-03-2018	169.80	
29-03-2018	151.50	-10.78
01-04-2018	159.80	
30-04-2018	175.70	9.95
03-05-2018	165.90	
31-05-2018	149.60	-9.83
03-06-2018	149.60	
28-06-2018	166.60	11.36
02-07-2018	183.20	
31-07-2018	101.30	-44.71
01-08-2018	91.40	
30-08-2018	95.30	4.27
03-09-2018	85.80	
30-09-2018	73.40	-14.45
01-10-2018	75.50	

31-10-2018	95.30	26.23
01-11-2018	92.30	
29-11-2018	105.10	13.87
02-12-2018	105.10	
27-12-2018	128.10	21.88
01-01-2019	131.10	
31-01-2019	124.40	-5.11
03-02-2019	122.20	
27-02-2019	93.80	-23.24
03-03-2019	99.40	
31-03-2019	91.90	-7.55
01-04-2019	88.40	
30-04-2019	97.80	10.63
02-05-2019	94.80	
30-05-2019	96.90	2.22
09-06-2019	94.00	
30-06-2019	98	4.26
02-07-2019	99.00	
31-07-2019	80.30	-18.89
01-08-2019	80.60	
29-08-2019	87.90	9.06
01-09-2019	85.50	
30-09-2019	82.70	-3.27

01-10-2019	82.50	
31-10-2019	80.70	-2.18
03-11-2019	81.10	
28-11-2019	76.60	-5.55
01-12-2019	80.90	
30-12-2019	80.70	-0.25
01-01-2020	81.20	
30-01-2020	92.30	13.67
02-02-2020	89.00	
27-02-2020	80.90	-9.10
01-03-2020	80.50	
25-03-2020	76.40	-5.09

Appendices B

Closing Price & Stock Return of Northern Jute Manufacturing Co. Ltd. Before & During
COVID-19 Pandemic

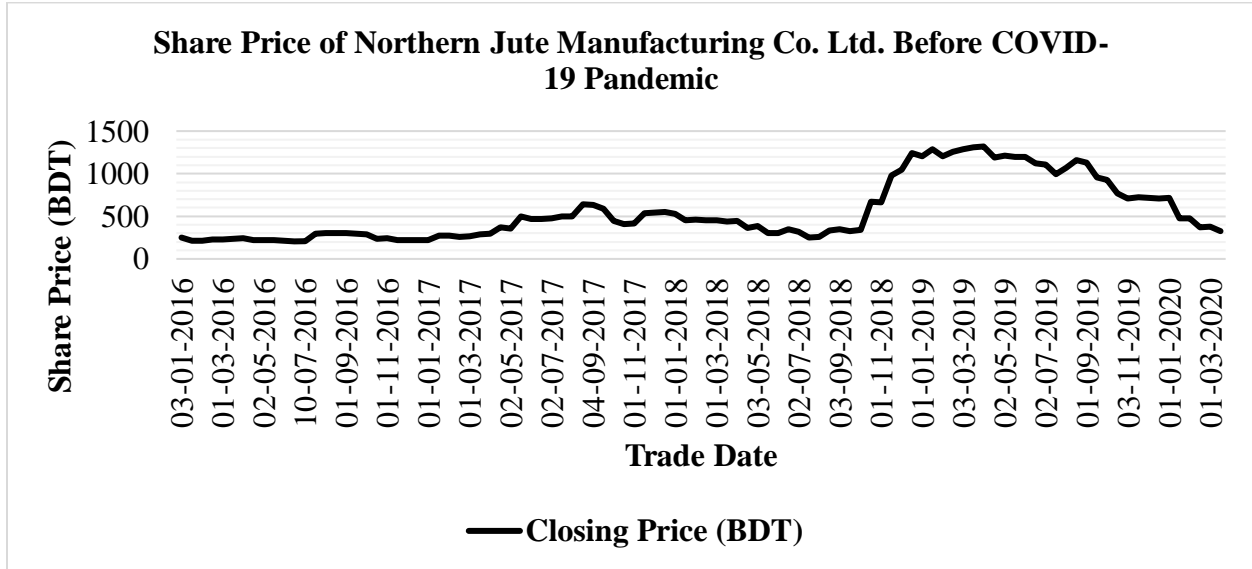


Figure 14: Share Price of Northern Jute Manufacturing Co. Ltd. Before COVID-19 Pandemic

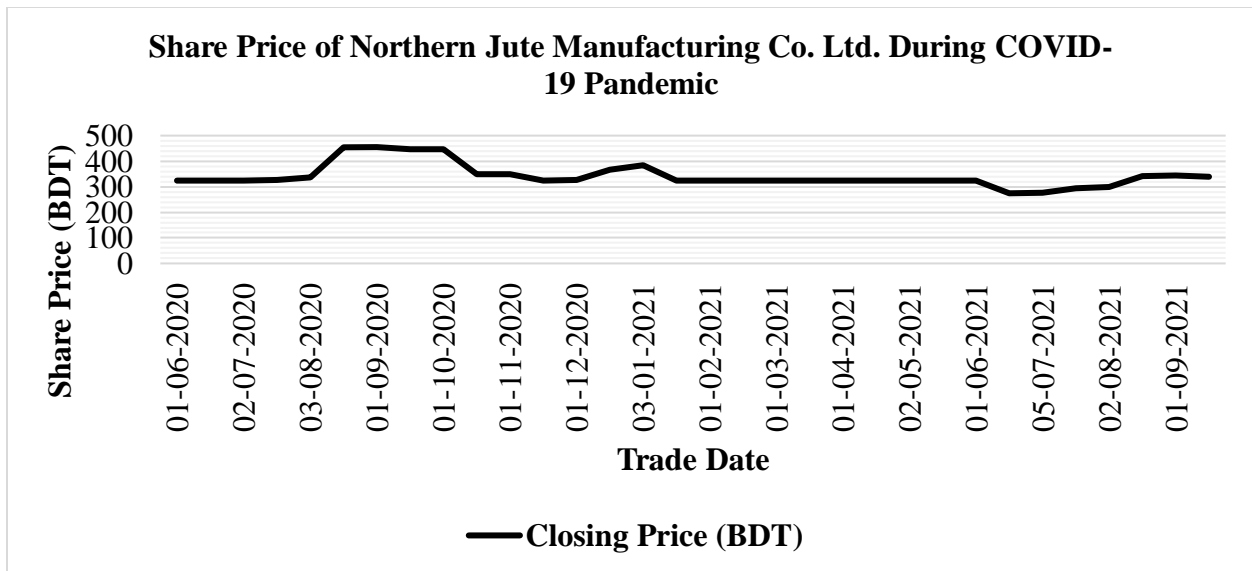


Figure 15: Share Price of Northern Jute Manufacturing Co. Ltd. During COVID-19 Pandemic

Before COVID-19 Pandemic			During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)	Trade Date	Closing Price (BDT)	Stock Return (%)
03-01-2016	247.40		01-06-2020	324.90	
31-01-2016	214.20	-13.42	30-06-2020	324.90	0.00
01-02-2016	215.6		02-07-2020	324.90	
29-02-2016	227.3	5.43	30-07-2020	325.50	0.18
01-03-2016	228.60		03-08-2020	335.90	
31-03-2016	238.90	4.51	31-08-2020	454.30	35.25
03-04-2016	242.40		01-09-2020	455.10	
28-04-2016	223.30	-7.88	30-09-2020	447.60	-1.65
02-05-2016	219.30		01-10-2020	447.10	
31-05-2016	219.50	0.09	29-10-2020	348.80	-21.99
01-06-2016	214.7		01-11-2020	350.00	
30-06-2016	208.5	-2.89	30-11-2020	325.00	-7.14
10-07-2016	207.6		01-12-2020	326.00	
31-07-2016	294.4	41.81	30-12-2020	366.40	12.39
01-08-2016	303.00		03-01-2021	383.6	
31-08-2016	303.50	0.17	31-01-2021	324.9	-15.30
01-09-2016	305.10		01-02-2021	324.9	
29-09-2016	292.10	-4.26	28-02-2021	324.9	0.00
02-10-2016	290.40		01-03-2021	324.9	
31-10-2016	233.70	-19.52	31-03-2021	324.9	0.00
01-11-2016	239.4		01-04-2021	324.9	

30-11-2016	217.4	-9.19	29-04-2021	324.9	0.00
01-12-2016	218.50		02-05-2021	324.9	
29-12-2016	218.60	0.05	31-05-2021	324.9	0.00
01-01-2017	219.10		01-06-2021	324.9	
31-01-2017	269.60	23.05	30-06-2021	274.4	-15.54
01-02-2017	276.40		05-07-2021	275.7	
27-02-2017	260.90	-5.61	29-07-2021	293.3	6.38
01-03-2017	264.40		02-08-2021	298.1	
30-03-2017	289.20	9.38	31-08-2021	341.6	14.59
02-04-2017	293.80		01-09-2021	343.8	
30-04-2017	370.10	25.97	30-09-2021	339.2	-1.34
02-05-2017	355.40				
31-05-2017	495.40	39.39			
01-06-2017	470.00				
29-06-2017	466.80	-0.68			
02-07-2017	479.00				
31-07-2017	500.40	4.47			
01-08-2017	500.30				
31-08-2017	639.90	27.90			
04-09-2017	631.90				
27-09-2017	589.20	-6.76			
02-10-2017	448.20				
31-10-2017	408.30	-8.90			

01-11-2017	415.00	
30-11-2017	536.90	29.37
03-12-2017	543.50	
28-12-2017	553.60	1.86
01-01-2018	529.60	
31-01-2018	454.50	-14.18
01-02-2018	459.30	
28-02-2018	453.50	-1.26
01-03-2018	455.00	
29-03-2018	441.10	-3.05
01-04-2018	444.80	
30-04-2018	361.90	-18.64
03-05-2018	384.70	
31-05-2018	300.50	-21.89
03-06-2018	305.30	
28-06-2018	348.10	14.02
02-07-2018	320.90	
31-07-2018	252.40	-21.35
01-08-2018	259.40	
30-08-2018	329.90	27.18
03-09-2018	350.00	
30-09-2018	325.80	-6.91
01-10-2018	341.90	

31-10-2018	668.70	95.58
01-11-2018	664.70	
29-11-2018	975.70	46.79
02-12-2018	1048.80	
27-12-2018	1239.10	18.14
01-01-2019	1205.10	
31-01-2019	1287.20	6.81
03-02-2019	1208.10	
27-02-2019	1259.50	4.25
03-03-2019	1284.90	
31-03-2019	1311.70	2.09
01-04-2019	1319.50	
30-04-2019	1192.80	-9.60
02-05-2019	1208.60	
30-05-2019	1199.00	-0.79
09-06-2019	1194.90	
30-06-2019	1123.2	-6.00
02-07-2019	1104.70	
31-07-2019	994.10	-10.01
01-08-2019	1068.50	
29-08-2019	1156.70	8.25
01-09-2019	1125.70	
30-09-2019	955.20	-15.15

01-10-2019	925.00	
31-10-2019	765.20	-17.28
03-11-2019	707.90	
28-11-2019	720.70	1.81
01-12-2019	713.40	
30-12-2019	711.00	-0.34
01-01-2020	719.90	
30-01-2020	477.70	-33.64
02-02-2020	472.30	
27-02-2020	373.90	-20.83
01-03-2020	380.90	
25-03-2020	324.90	-14.70

Appendices C

Closing Price & Stock Return of Sonali Aansh Industries Ltd. Before & During COVID-19

Pandemic

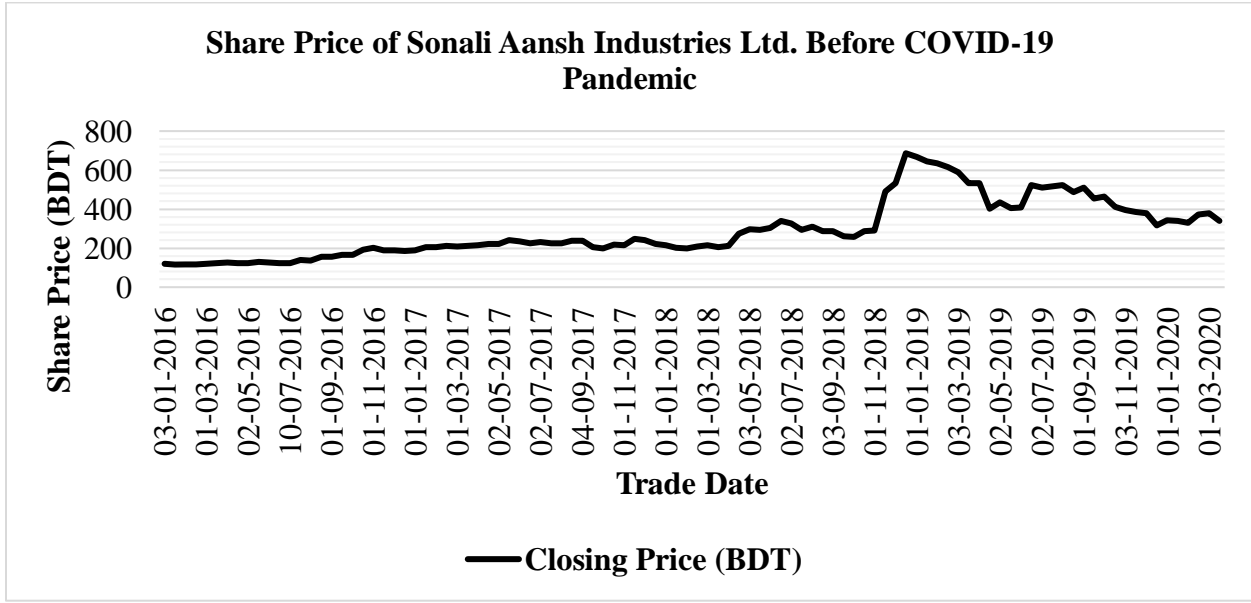


Figure 16: Share Price of Sonali Aansh Industries Ltd. Before COVID-19 Pandemic

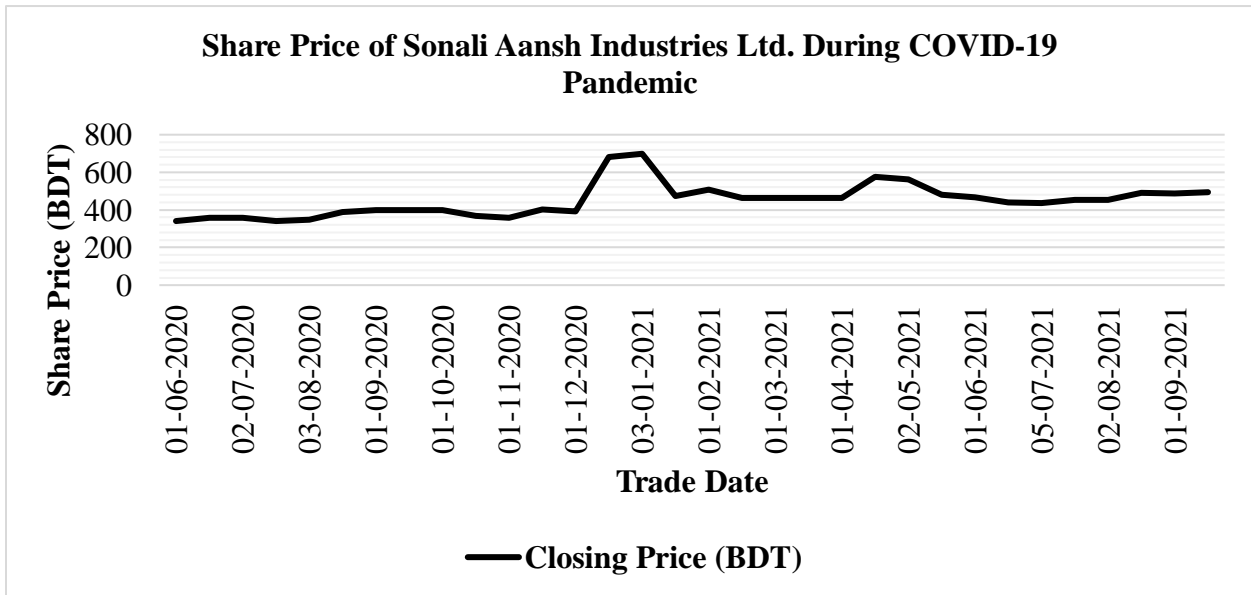


Figure 17: Share Price of Sonali Aansh Industries Ltd. During COVID-19 Pandemic

Before COVID-19 Pandemic			During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)	Trade Date	Closing Price (BDT)	Stock Return (%)
03-01-2016	247.40		01-06-2020	324.90	
31-01-2016	214.20	-13.42	30-06-2020	324.90	0.00
01-02-2016	215.6		02-07-2020	324.90	
29-02-2016	227.3	5.43	30-07-2020	325.50	0.18
01-03-2016	228.60		03-08-2020	335.90	
31-03-2016	238.90	4.51	31-08-2020	454.30	35.25
03-04-2016	242.40		01-09-2020	455.10	
28-04-2016	223.30	-7.88	30-09-2020	447.60	-1.65
02-05-2016	219.30		01-10-2020	447.10	
31-05-2016	219.50	0.09	29-10-2020	348.80	-21.99
01-06-2016	214.7		01-11-2020	350.00	
30-06-2016	208.5	-2.89	30-11-2020	325.00	-7.14
10-07-2016	207.6		01-12-2020	326.00	
31-07-2016	294.4	41.81	30-12-2020	366.40	12.39
01-08-2016	303.00		03-01-2021	383.6	
31-08-2016	303.50	0.17	31-01-2021	324.9	-15.30
01-09-2016	305.10		01-02-2021	324.9	
29-09-2016	292.10	-4.26	28-02-2021	324.9	0.00
02-10-2016	290.40		01-03-2021	324.9	
31-10-2016	233.70	-19.52	31-03-2021	324.9	0.00
01-11-2016	239.4		01-04-2021	324.9	

30-11-2016	217.4	-9.19	29-04-2021	324.9	0.00
01-12-2016	218.50		02-05-2021	324.9	
29-12-2016	218.60	0.05	31-05-2021	324.9	0.00
01-01-2017	219.10		01-06-2021	324.9	
31-01-2017	269.60	23.05	30-06-2021	274.4	-15.54
01-02-2017	276.40		05-07-2021	275.7	
27-02-2017	260.90	-5.61	29-07-2021	293.3	6.38
01-03-2017	264.40		02-08-2021	298.1	
30-03-2017	289.20	9.38	31-08-2021	341.6	14.59
02-04-2017	293.80		01-09-2021	343.8	
30-04-2017	370.10	25.97	30-09-2021	339.2	-1.34
02-05-2017	355.40				
31-05-2017	495.40	39.39			
01-06-2017	470.00				
29-06-2017	466.80	-0.68			
02-07-2017	479.00				
31-07-2017	500.40	4.47			
01-08-2017	500.30				
31-08-2017	639.90	27.90			
04-09-2017	631.90				
27-09-2017	589.20	-6.76			
02-10-2017	448.20				
31-10-2017	408.30	-8.90			

01-11-2017	415.00	
30-11-2017	536.90	29.37
03-12-2017	543.50	
28-12-2017	553.60	1.86
01-01-2018	529.60	
31-01-2018	454.50	-14.18
01-02-2018	459.30	
28-02-2018	453.50	-1.26
01-03-2018	455.00	
29-03-2018	441.10	-3.05
01-04-2018	444.80	
30-04-2018	361.90	-18.64
03-05-2018	384.70	
31-05-2018	300.50	-21.89
03-06-2018	305.30	
28-06-2018	348.10	14.02
02-07-2018	320.90	
31-07-2018	252.40	-21.35
01-08-2018	259.40	
30-08-2018	329.90	27.18
03-09-2018	350.00	
30-09-2018	325.80	-6.91
01-10-2018	341.90	

31-10-2018	668.70	95.58
01-11-2018	664.70	
29-11-2018	975.70	46.79
02-12-2018	1048.80	
27-12-2018	1239.10	18.14
01-01-2019	1205.10	
31-01-2019	1287.20	6.81
03-02-2019	1208.10	
27-02-2019	1259.50	4.25
03-03-2019	1284.90	
31-03-2019	1311.70	2.09
01-04-2019	1319.50	
30-04-2019	1192.80	-9.60
02-05-2019	1208.60	
30-05-2019	1199.00	-0.79
09-06-2019	1194.90	
30-06-2019	1123.2	-6.00
02-07-2019	1104.70	
31-07-2019	994.10	-10.01
01-08-2019	1068.50	
29-08-2019	1156.70	8.25
01-09-2019	1125.70	
30-09-2019	955.20	-15.15

01-10-2019	925.00	
31-10-2019	765.20	-17.28
03-11-2019	707.90	
28-11-2019	720.70	1.81
01-12-2019	713.40	
30-12-2019	711.00	-0.34
01-01-2020	719.90	
30-01-2020	477.70	-33.64
02-02-2020	472.30	
27-02-2020	373.90	-20.83
01-03-2020	380.90	
25-03-2020	324.90	-14.70

Appendices D

Closing Price & Stock Return of Bangladesh Submarine Cable Company Ltd. Before & During
 COVID-19 Pandemic

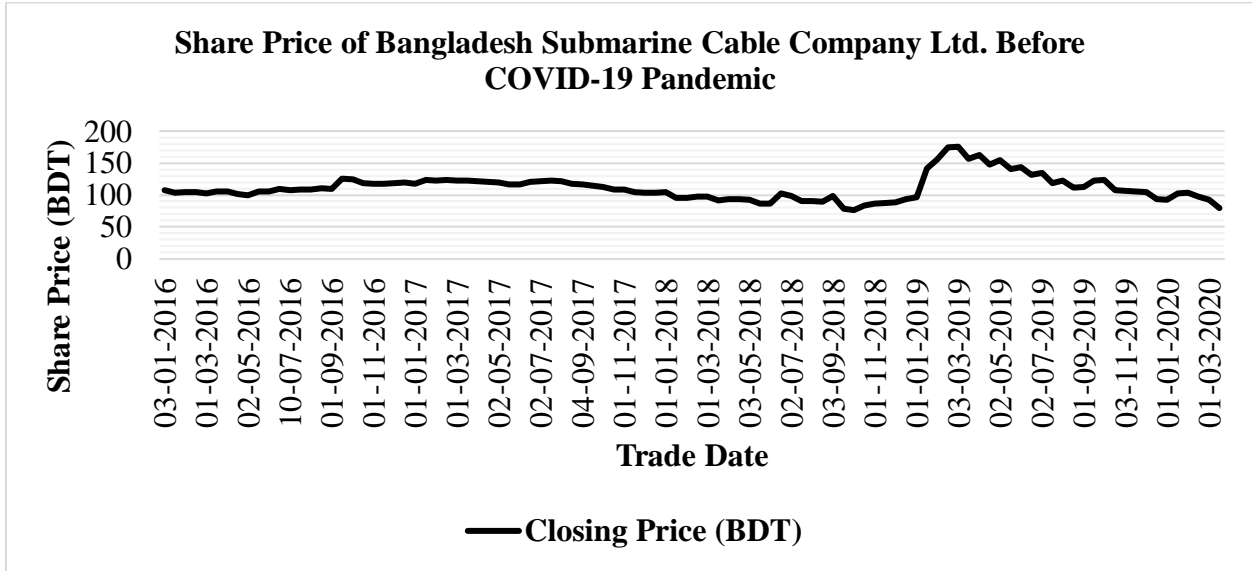


Figure 3: Share Price of Bangladesh Submarine Cable Company Ltd. Before COVID-19 Pandemic

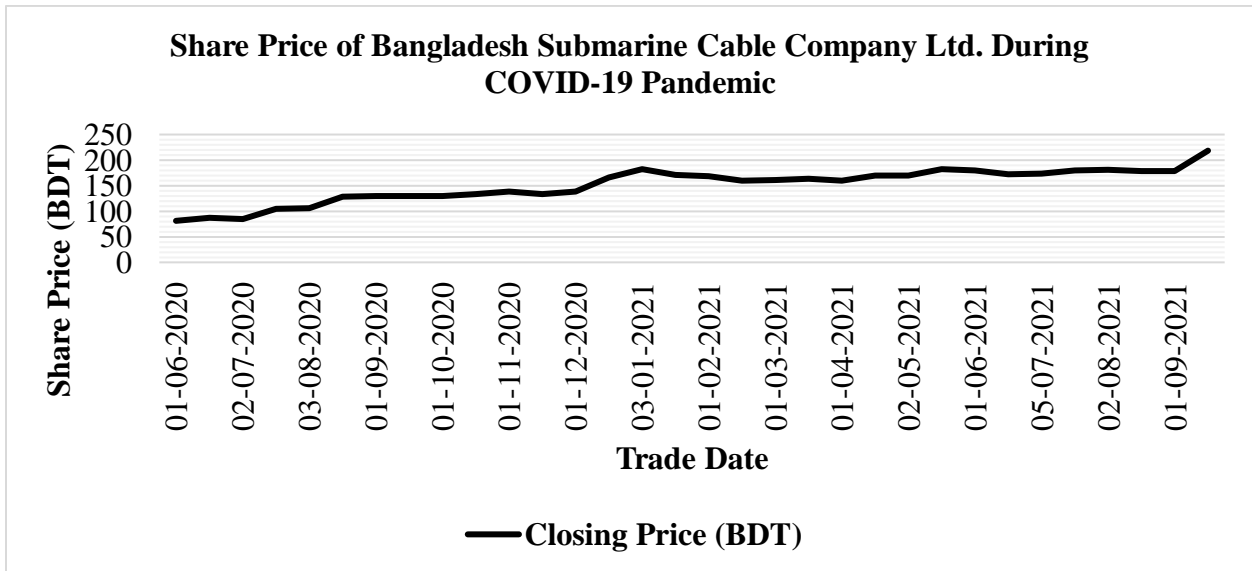


Figure 4: Share Price of Bangladesh Submarine Cable Company Ltd. During COVID-19 Pandemic

Before COVID-19 Pandemic			During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)	Trade Date	Closing Price (BDT)	Stock Return (%)
03-01-2016	107.40		01-06-2020	81.20	
31-01-2016	103.56	-3.58	30-06-2020	86.70	6.77
01-02-2016	104.22		02-07-2020	84.70	
29-02-2016	104.02	-0.19	30-07-2020	104.10	22.90
01-03-2016	102.84		03-08-2020	105.50	
31-03-2016	105.90	2.98	31-08-2020	128.60	21.90
03-04-2016	105.50		01-09-2020	129.30	
28-04-2016	101.43	-3.86	30-09-2020	130.20	0.70
02-05-2016	99.58		01-10-2020	130.20	
31-05-2016	105.47	5.91	29-10-2020	133.40	2.46
01-06-2016	105.53		01-11-2020	138.50	
30-06-2016	109.54	3.80	30-11-2020	132.90	-4.04
10-07-2016	107.84		01-12-2020	138.70	
31-07-2016	108.93	1.01	30-12-2020	166.10	19.75
01-08-2016	108.33		03-01-2021	182.7	
31-08-2016	110.33	1.85	31-01-2021	170.8	-6.51
01-09-2016	109.62		01-02-2021	168.8	
29-09-2016	125.54	14.52	28-02-2021	160	-5.21
02-10-2016	124.34		01-03-2021	161.6	
31-10-2016	118.81	-4.45	31-03-2021	163.4	1.11
01-11-2016	117.14		01-04-2021	160.4	

30-11-2016	117.74	0.51	29-04-2021	170.1	6.05
01-12-2016	118.92		02-05-2021	169.3	
29-12-2016	119.28	0.30	31-05-2021	181.7	7.32
01-01-2017	117.70		01-06-2021	179.5	
31-01-2017	123.30	4.76	30-06-2021	171.9	-4.23
01-02-2017	122.90		05-07-2021	173.7	
28-02-2017	123.50	0.49	29-07-2021	179.9	3.57
01-03-2017	123.00		02-08-2021	180.9	
30-03-2017	122.60	-0.33	31-08-2021	178.6	-1.27
02-04-2017	121.40		01-09-2021	178.9	
30-04-2017	120.50	-0.74	30-09-2021	218.5	22.14
02-05-2017	119.20				
31-05-2017	116.50	-2.27			
01-06-2017	116.20				
29-06-2017	120.10	3.36			
02-07-2017	121.40				
31-07-2017	122.70	1.07			
01-08-2017	121.50				
31-08-2017	117.70	-3.13			
04-09-2017	116.90				
28-09-2017	114.60	-1.97			
02-10-2017	112.60				
31-10-2017	109.00	-3.20			

01-11-2017	108.70	
30-11-2017	104.40	-3.96
03-12-2017	103.50	
28-12-2017	103.10	-0.39
01-01-2018	104.20	
31-01-2018	95.20	-8.64
01-02-2018	95.50	
28-02-2018	97.70	2.30
01-03-2018	97.50	
29-03-2018	91.80	-5.85
01-04-2018	93.70	
30-04-2018	93.80	0.11
03-05-2018	92.90	
31-05-2018	86.80	-6.57
03-06-2018	86.70	
28-06-2018	102.90	18.69
02-07-2018	98.80	
31-07-2018	90.40	-8.50
01-08-2018	90.40	
30-08-2018	89.80	-0.66
03-09-2018	98.70	
30-09-2018	78.20	-20.77
01-10-2018	76.40	

31-10-2018	83.80	9.69
01-11-2018	86.30	
29-11-2018	87.50	1.39
02-12-2018	88.00	
27-12-2018	93.50	6.25
01-01-2019	96.70	
31-01-2019	141.70	46.54
03-02-2019	155.80	
27-02-2019	174.20	11.81
03-03-2019	175.50	
31-03-2019	156.90	-10.60
01-04-2019	162.20	
30-04-2019	147.30	-9.19
02-05-2019	154.20	
30-05-2019	140.10	-9.14
09-06-2019	143.20	
30-06-2019	132	-7.82
02-07-2019	134.30	
31-07-2019	118.80	-11.54
01-08-2019	123.00	
29-08-2019	111.30	-9.51
01-09-2019	112.50	
30-09-2019	122.20	8.62

01-10-2019	123.50	
31-10-2019	107.80	-12.71
03-11-2019	107.00	
28-11-2019	105.40	-1.50
01-12-2019	104.20	
30-12-2019	93.80	-9.98
01-01-2020	92.70	
30-01-2020	102.60	10.68
02-02-2020	103.30	
27-02-2020	97.30	-5.81
01-03-2020	92.60	
25-03-2020	79.60	-14.04

Appendices E

Closing Price & Stock Return of Grameenphone Ltd. Before & During COVID-19 Pandemic

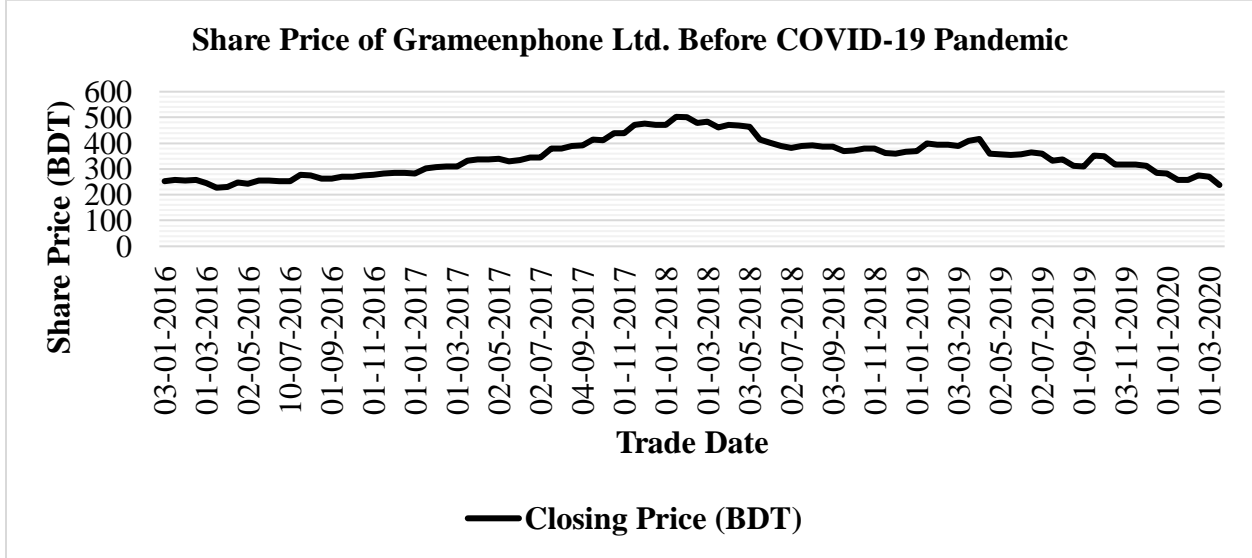


Figure 20: Share Price of Grameenphone Ltd. Before COVID-19 Pandemic

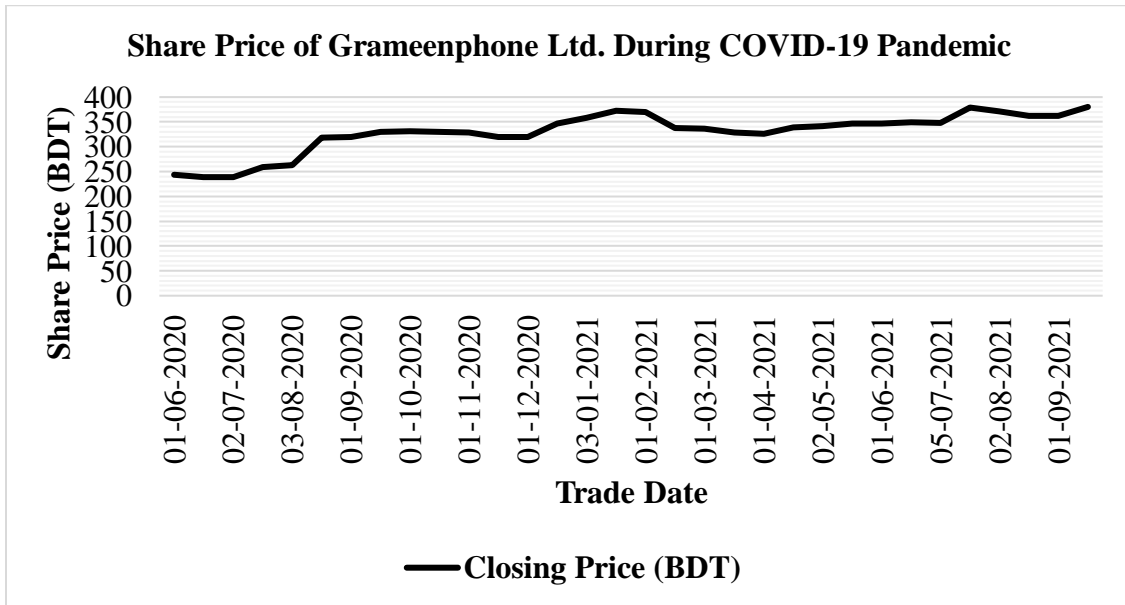


Figure 25: Share Price of Grameenphone Ltd. During COVID-19 Pandemic

Before COVID-19 Pandemic			During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)	Trade Date	Closing Price (BDT)	Stock Return (%)
03-01-2016	253.49		01-06-2020	243.50	
31-01-2016	257.27	1.49	30-06-2020	238.80	-1.93
01-02-2016	255.73		02-07-2020	238.80	
28-02-2016	256.49	0.30	30-07-2020	258.50	8.25
01-03-2016	245.20		03-08-2020	263.50	
31-03-2016	227.48	-7.23	31-08-2020	318.40	20.83
03-04-2016	231.18		01-09-2020	320.10	
28-04-2016	248.32	7.41	30-09-2020	330.00	3.09
02-05-2016	243.56		01-10-2020	331.00	
31-05-2016	255.58	4.94	29-10-2020	329.70	-0.39
01-06-2016	255.66		01-11-2020	329.20	
30-06-2016	253.88	-0.70	30-11-2020	319.10	-3.07
10-07-2016	252.51		01-12-2020	320.00	
31-07-2016	277.12	9.75	30-12-2020	347.10	8.47
01-08-2016	275.68		03-01-2021	358.4	
31-08-2016	262.61	-4.74	31-01-2021	371.9	3.77
01-09-2016	263.84		01-02-2021	370.3	
29-09-2016	269.78	2.25	28-02-2021	338.3	-8.64
02-10-2016	269.72		01-03-2021	336.7	
31-10-2016	274.20	1.66	31-03-2021	328.5	-2.44
01-11-2016	276.57		01-04-2021	325.5	

30-11-2016	283.13	2.37	29-04-2021	339	4.15
01-12-2016	283.95		02-05-2021	341	
29-12-2016	284.18	0.08	31-05-2021	346.3	1.55
01-01-2017	283.00		01-06-2021	346.4	
31-01-2017	301.60	6.57	30-06-2021	349.4	0.87
01-02-2017	306.50		05-07-2021	348.4	
28-02-2017	309.00	0.82	29-07-2021	379.3	8.87
01-03-2017	309.40		02-08-2021	370.7	
30-03-2017	332.10	7.34	31-08-2021	362.6	-2.19
02-04-2017	338.30		01-09-2021	362.1	
30-04-2017	337.60	-0.21	30-09-2021	380.2	5.00
02-05-2017	338.40				
31-05-2017	328.70	-2.87			
01-06-2017	334.30				
29-06-2017	344.40	3.02			
02-07-2017	344.50				
31-07-2017	379.50	10.16			
01-08-2017	379.30				
31-08-2017	389.60	2.72			
04-09-2017	392.00				
28-09-2017	415.30	5.94			
02-10-2017	410.60				
31-10-2017	438.30	6.75			

01-11-2017	440.00	
30-11-2017	471.40	7.14
03-12-2017	476.20	
28-12-2017	470.80	-1.13
01-01-2018	472.00	
31-01-2018	502.40	6.44
01-02-2018	500.00	
28-02-2018	478.70	-4.26
01-03-2018	483.10	
29-03-2018	462.00	-4.37
01-04-2018	471.70	
30-04-2018	469.60	-0.45
03-05-2018	464.10	
31-05-2018	414.80	-10.62
03-06-2018	402.40	
28-06-2018	388.90	-3.35
02-07-2018	381.00	
31-07-2018	390.20	2.41
01-08-2018	392.40	
30-08-2018	386.60	-1.48
03-09-2018	386.90	
30-09-2018	370.40	-4.26
01-10-2018	371.90	

31-10-2018	379.80	2.12
01-11-2018	380.10	
29-11-2018	362.70	-4.58
02-12-2018	360.40	
27-12-2018	367.30	1.91
01-01-2019	368.30	
31-01-2019	398.20	8.12
03-02-2019	394.00	
27-02-2019	393.50	-0.13
03-03-2019	390.00	
31-03-2019	409.20	4.92
01-04-2019	417.00	
30-04-2019	358.70	-13.98
02-05-2019	358.20	
30-05-2019	355.10	-0.87
09-06-2019	356.40	
30-06-2019	364.7	2.33
02-07-2019	360.30	
31-07-2019	332.40	-7.74
01-08-2019	337.10	
29-08-2019	312.00	-7.45
01-09-2019	310.00	
30-09-2019	352.40	13.68

01-10-2019	348.90	
31-10-2019	317.50	-9.00
03-11-2019	316.50	
28-11-2019	318.20	0.54
01-12-2019	311.40	
30-12-2019	285.80	-8.22
01-01-2020	281.40	
30-01-2020	257.80	-8.39
02-02-2020	257.60	
27-02-2020	274.40	6.52
01-03-2020	270.50	
25-03-2020	238.80	-11.72

Appendices F

Closing Price & Stock Return of Robi Axiata Ltd. During COVID-19 Pandemic

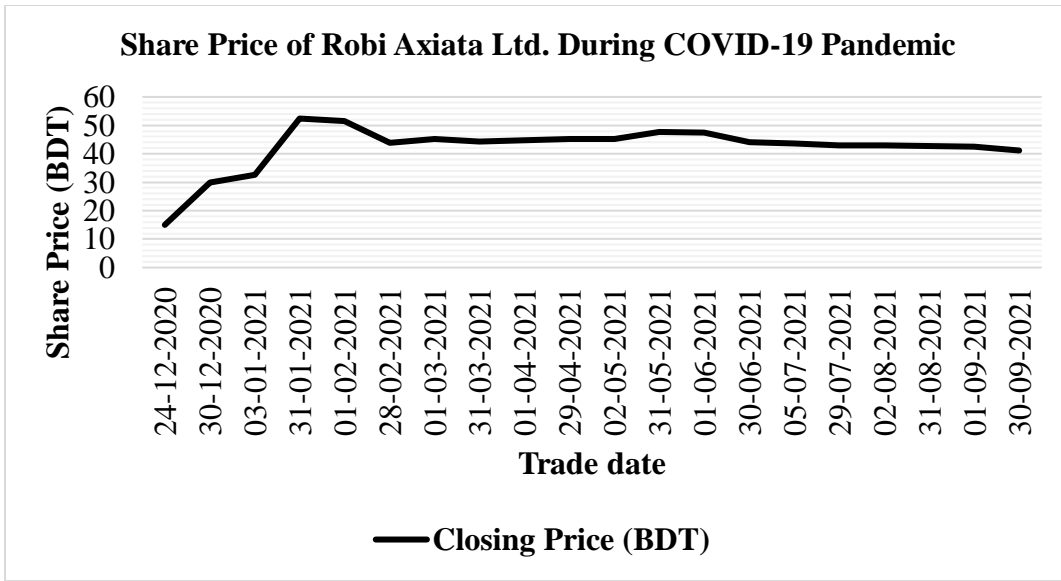


Figure 6: Share Price of Robi Axiata Ltd. During COVID-19 Pandemic

During COVID-19 Pandemic		
Trade Date	Closing Price (BDT)	Stock Return (%)
24-12-2020	15.00	
30-12-2020	29.80	98.67
03-01-2021	32.7	
31-01-2021	52.4	60.24
01-02-2021	51.5	
28-02-2021	43.9	-14.76
01-03-2021	45.3	
31-03-2021	44.3	-2.21
01-04-2021	44.7	
29-04-2021	45.3	1.34
02-05-2021	45.3	
31-05-2021	47.7	5.30
01-06-2021	47.4	
30-06-2021	44	-7.17
05-07-2021	43.6	
29-07-2021	43	-1.38
02-08-2021	42.9	

31-08-2021	42.7	-0.47
01-09-2021	42.4	
30-09-2021	41.2	-2.83

Appendices G

ROE & Annual Average Return for the calculation of Pearson Correlation Coefficient of Jute Sector Before & During COVID-19 Pandemic

	Jute Sector					
	Jute Spinners Ltd		Northern Jute Manufacturing Co. Ltd		Sonali Aansh Ltd	
	ROE	Annual Average Return	ROE	Annual Average Return	ROE	Annual Average Return
2016	N/A	27.87	7.17	-5.12	15.94	42.31
2017	N/A	99.75	51.27	139.45	16.47	30.11
2018	N/A	64.92	-171.53	114.43	17.15	117.50
2019	N/A	-39.88	232.94	-35.95	10.08	-65.64
2020	N/A	68.44	N/A	-62.56	6.16	110.98

Appendices H

ROE & Annual Average Return for the calculation of Pearson Correlation Coefficient of Telecommunication Sector Before & During COVID-19 Pandemic

	Telecommunication Sector					
	Bangladesh Submarine Cable Company Limited		GrameenPhone Ltd		Robi Axiata Ltd	
	ROE	Annual Average Return	ROE	Annual Average Return	ROE	Annual Average Return
2016	10.04	18.81	166.82	17.59	N/A	N/A
2017	19.30	-6.29	206.47	46.24	N/A	N/A
2018	4.44	-12.56	245.52	-20.48	N/A	N/A
2019	35.52	-15.02	256.19	-17.80	N/A	N/A
2020	57.97	73.53	271.92	26.01	2.20	26.36