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**Impact of Non-Pharmaceutical Measures on Pakistan Stock Exchange**  
**Return**



**By:**

**Muhammad Shaharyar 01-322201-007**

**MBA-Finance**

**Supervisor:**

**Mr. Mohsin Raza**

**Department of Business Studies**

**Bahria University Islamabad**

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**Name of Student: Muhammad Shaharyar**

**Enrollment # 01-322201-007**

**Class: MBA-Finance (2years)**

**Approved by:**

---

**Dr. Mohsin Raza**

**Supervisor**

---

**Dr. Syed Haider Ali Shah**

**Internal Examiner**

---

**Bushra Rashid**

**External Examiner**

---

**Dr. Khalil Ullah Mehmood**

**Head of Department-Business Studies**

## **ABSTRACT**

The study is focused on non-pharmaceutical measures taken by the government of Pakistan during Covid-19 on the outcomes of Pakistan stock exchange return. The goals of this study to determine the impact of non- pharmaceutical measures of COVID- 19 on the performance of Pakistan Stock Exchange return. This study uses the data of COVID-19 related non- Pharmaceutical Measures (Lock Down, Travel Restrictions, Educational Institution Closure, Border Closure) and the closing prices of PSX 100 index of 1st January to 31<sup>st</sup> August of 2020. The findings of the study suggest that non- pharmaceutical measures are insignificantly related to the performance of Pakistan stock exchange.

**Keywords:**

“Covid-19, Pandemic, Non-Pharmaceutical Measures, Stock Exchange Return, Lockdowns, Government”

## **DECLARATION**

I, Muhammad Shaharyar, purposefully declare that this research report is written by me and all of the data used is referenced in Harvard style. This research report is my work fulfilling the requirements of the degree of Master in Business Administration (MBA) in Finance at Bahria University, Islamabad. I assure you that the work has not been submitted for any degree or examination in this university or any other university before.

Muhammad Shaharyar

Signatures \_\_\_\_\_

**Supervisor: Dr. Mohsin Raza**

Signatures \_\_\_\_\_

Date \_\_\_\_\_

## **DEDICATION**

This research report is dedicated to my teachers who made me eligible to write this report – My parents who fulfilled my every desire and let me study – My siblings who always supported me – My grandparents, who prayed for me and Allah Almighty who supported and guided me in all aspects of my life.

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# Chapter-1

## Introduction

### 1.1 Background:

In 2019 the world was captured by the pandemic and no individual was prepared for it. It originated without any prior notice. The pandemic has impacted the way individuals live, work and perform other duties. The disease was first discovered in Wuhan, China, in December 2019. The virus then spread worldwide. The countries have faced unique challenges to fight the pandemic. The countries have to fulfil the health care demands and have to shut down the markets. Moreover, the countries have to focus on social distancing to minimize the impact of the pandemic as it spreads from one person to another. Several lock downs were made and many international and national flights were canceled, the restaurants were closed completely, the shopping arenas for luxury items was closed permanently, the offices went online, the public and private educational institutions went online and many more. Through research, it is found that corona has impacted the countries overall economic conditions in a negative way. The countries that are dependent on the tourism industry got impacted a lot and have faced a great economic decline in 2020. By this the overall economic condition of the countries went down and ultimately effected the stock market. The stock market will reflect an economy's economic conditions. If an economy is growing, output will rise, and most businesses should earn more. These increased earnings make the company's stock more appealing to investors since it allows it to pay larger dividends to shareholders. (Zafar & Durrani, 2020).

The coronavirus outbreak, which started as pneumonia of unknown origin in Wuhan, China, in December 2019, has been rapidly expanding outside of Wuhan to other nations. The COVID-19 outbreak was listed by the World Health Organization (WHO) as the sixth PHEIC on January 30, 2020, and on March 11, 2020, the WHO proclaimed COVID-19 to be a pandemic. Nearly 1 436 198 instances of the 2019-novel coronavirus were reported on April 9, 2020, and 85 522 of those cases resulted in death, with a case fatality rate (CFR) of 5.95 percent. The WHO rated the COVID-19 risk as very high on a worldwide scale. The number of incidents, fatalities, and affected nations is expected to rise significantly over the next few days and weeks. (Abid K, Bari YA, Younas M, 2020).

It is believed that COVID-19 is spreading in Pakistan. On February 26, 2020, Karachi reported the first COVID-19 case. Pakistan's population is expected to be 204.65 million. 3,4 The virus gradually spreads to different areas of the country and is already epidemic. On April 10, 2020, Pakistan's COVID-19 case count will reach 4601 confirmed cases, 727 recovered patients, and 66 fatalities. (Abid K, Bari YA, Younas M, 2020).

## **1.2 Stock Market:**

Because it connects savings from small investors to successful investments, the stock market serves as a conduit between investors and borrowers. The national economy and the daily lives of people are both greatly affected by changes in stock prices. A stock's price decline has a greater likelihood of causing economic instability. The fluctuation in share prices over time is referred to as the stock price volatility. (Abdioglu & Hasan (2010)).

A stock index, sometimes referred to as a stock market index, is a financial index that analyses the stock exchange market and enables investors to compare the current market price and prior market to assess the success of the nation's market. The metric, which is computed using the prices of a few stocks, is essentially a weighted average. Before making any type of investment decision, shareholders and investors utilize it to understand the market and compare the returns on different assets. This is done by the controlling/monitoring authority in any company. (Al-Assaf, 2014).

## **1.3 Problem Statement:**

Pakistan is already an underdeveloped country & it has not that stable economic condition so when the COVID outcomes it strongly hit the financial market of Pakistan. A simple examination of the stock market reveals that the corona virus has resulted in a turbulent economy. The spread of this infectious disease has an impact not only on the health and well-being of the community but also on the economy. This incident has had a significant influence on the world economy, especially the stock market (Nshom; 2020). The government has taken some non-pharmaceutical measures to stop the COVID spread. The non- pharmaceutical measures include lockdown, Smart lockdown, Social Distancing.

This is obvious that Covid-19 has impacted the stock market and several types of research have been done on this issue to prove the facts but the studies on only the non-pharmaceutical effects carried out, during and post Covid-19 situations are very limited.

The study is more focused on non-pharmaceutical measures (lockdown, smart lockdown, social

distancing etc.) impact on the Pakistan stock market. The scarcity of the literature review in this perspective needs attention and therefore this research will contribute.

#### **1.4 Research Objective:**

The objectives of this particular study are to develop a strong understanding on how the Pakistani stock market reacted to the COVID-19 epidemic and how it affected the market's performance. The performance of the Pakistani stock market is said to be impacted by COVID-19 Active cases, borders closure, market closure, deaths, recoveries. This study uses the data of no of active cases, borders closure, markets closure, education institution close implications during COVID-19. We will take PSX Stock Prices from 1st January 2020 to 31 August 2020 of Karachi Stock Exchange (KSE-100 index) because during this time the Covid is at its peak in Pakistan & the government is taking the most measures to stop its spread. On 19 June 2020 6604 cases was recorded in a single day in Pakistan.

This research is limited to the Pakistan stock exchange only as it is conducted in Pakistan. The study is conducted by using secondary data and have gathered all of the information using the official websites and other internet forums (Gu et al., 2021). The data that is incorporated in this research is hundred per cent accurate and provides a great contribution for future researchers.

#### **1.5 Research Question:**

By the purpose of the study and the problem of the study, I have identified two research questions. The questions are:

- What is the impact of non-pharmaceutical measures taken during the pandemic on the return of Pakistan stock exchange?

To answer these specific research questions, all of the required terms and conditions will be fulfilled. After addressing this issue, the thesis will focus on a literature review. To close the research gap, I have decided to use a quantitative approach and has studied the literature of the previous researchers, explored various websites and have visited official websites to take the correct and accurate data. The results will assist to get true results and to develop a great understanding that how non-pharmaceutical measures taken during Covid-19 have impacted the Pakistan stock exchange return.

## **1.6 Research Gap:**

Previously the research is done on this topic but there is a scarcity of the impact of measures taken during pandemic on the Pakistan stock exchange market. In order to address this particular issue and to fulfil the gap, this research is conducted. In order to close the research gap, I decided to use a quantitative approach and has studied the literature of the previous researches, explored various websites and have visited official websites to take correct and accurate data. The results will assist to get true results and to develop a great understanding that how non- pharmaceutical measures taken during Covid-19 have impacted Pakistan stock exchange return. The previous research which has been done is on the whole Covid-19 impact on Pakistan stock exchange return.

This study has an objective that to what extent non-pharmaceutical measures that would include lockdown, smart lockdown, borders closure, many more during an event (Covid-19) has impacted the stock exchange return of the Pakistan market.

## **1.7 Scope:**

The study is focused on non-pharmaceutical measures (lockdown, smart lockdown, social distancing, borders closed, travel restrictions etc.) taken during the event of Covid-19 have impact on the stock exchange market return. To further minimize the scope of the study and to further enhance the validity of the study there are certain limitations. The data is limited to Pakistan only. However, the overall impact is also discussed in the literature review but the main focus of this study is on Pakistani stock exchange market return.

## **1.8 Contribution:**

This research is constructive and exploratory. It aims to give an understanding of the non-pharmaceutical measures impacts on the Pakistan stock exchange return during Covid-19.

This research paper is expected to fulfil the research gap as very limited research are done on the respective topic. This research paper is further helpful to the future potential students and to the organizations that need such accurate data. This research paper is also helpful for the companies associated or that have a link with or they are contributing towards the Pakistan stock exchange market.

## 1.9 Research Framework:



### 1.9.1 Independent variable:

Independent variable is defined as the variable/experimenter that changes, manipulates and possess a strong impact over the dependent variable. In other words, it is a variable that is itself not impacted but poses a strong impact on other variables which are categorized as dependent variables.

The independent variable is non-pharmaceutical measures taken by the government and other higher bodies. The non-pharmaceutical measures would include lockdown and other restrictions like social distancing, borders closure. These measures will be shared in the literature review in detail.

### 1.9.2 Dependent variable:

This variable is so named because of its dependency on the independent, mediating and moderating variables. Dependent variable is defined as the variable that needs to be tested and accounted by conducting several experiments.

In this study the dependent variable is Pakistan stock exchange return. Stock exchange is defined as “A stock exchange facilitates stock brokers to trade company stocks and other securities. A stock may be bought or sold only if it is listed on an exchange. Thus, it is the meeting place of the stock buyers and sellers”. The major stock exchanges of Pakistan are situated in all three big cities of Pakistan that are Karachi, Islamabad and Lahore and so termed as Karachi stock exchange market (KSE), Islamabad stock exchange market (ISE) and Lahore stock exchange market (LSE) respectively.

In this research paper, the Pakistan stock exchange return is taken as a dependent variable which is dependent on the non-pharmaceutical activities and measures taken by the Pakistani government

during the event of the covid-19 pandemic.

### **1.10 Hypothesis:**

- H1: “Non- Pharmaceutical measures taken by the government of Pakistan has a strong effect on the Pakistan stock exchange market”.
- H2: “Non-Pharmaceutical measures taken by the government of Pakistan does not possess any effect on the Pakistan stock exchange market”.



## **Chapter-2**

### **Literature Review**

#### **2.1 Covid-19:**

The infectious illness New COVID-19 first appeared in “Wuhan City, Hubei Province, China, in December 2019. (WHO, 2020)”. It swiftly attracted the attention of the globe owing to its wide spread in January 2020, when compared to other viruses. The Chinese government's response to the new virus was a total lockdown of the disease's epicenter, Wuhan, which eventually proved to be a successful tactic in containing the pandemic as a whole in other nations across the world. On the 23rd of January 2020, the entire city was placed under lockdown in an attempt to halt the sickness from spreading. (Abbas, Z (2020)).

After “China, South Korea was the second nation” to have a big COVID-19 outbreak, and as of today, over 363 million positive COVID-19 cases have been documented globally, with 5.5 million deaths. While the Covid-19 epidemic affected practically every country, the severity of the impacts differed from one country to the next. According to the facts of the pandemic numbers as of October 18, 2020, the United States of America (US), India, Brazil, Russia, and Argentina have the greatest confirmed number of cases (WHO 2020b). China, on the other hand, the epidemic's origin nation, is shockingly among the countries with the lowest pandemic statistics. In Pakistan till now there are 1.39 million COVID-19 cases has been recorded with 29,162 deaths. There are since the deadly virus discovery, the number of positive cases and fatalities has risen, and its growth has slowed in certain regions of the world. However, a new variant of this disease (Omicron) has been discovered, and it is spreading rapidly. The global tragedy of 2020, the Covid- 19 outbreak, has unanticipated severe implications for human health and the economy. (Nshom; 2020)

Since the Great Depression, COVID-19 infection has shocked the global economy and financial markets. Preventive measures such as social separation, lock downs compulsory vaccinations have proven their worth to a larger extent. The worldwide financial markets have been impacted by the economic losses caused by COVID-19. The pandemic's contagion effect on global financial markets has been witnessed on practically every continent, and the Pakistani stock market is one of the exchanges that has been impacted by COVID-19.

## **2.2 Stock Exchange:**

Stock exchange is defined as “A stock exchange facilitates stock brokers to trade company stock and other securities. A stock may be bought or sold only if it is listed on an exchange. Thus, it is the meeting place of the stock buyers and sellers”. “The major stock exchanges of Pakistan are situated in all three big cities of Pakistan that are Karachi, Islamabad and Lahore and so termed as Karachi stock exchange market (KSE), Islamabad stock exchange market (ISE) and Lahore stock exchange market (LSE) respectively”. (Al-Assaf, 2014).

Because it connects small investors' funds to lucrative ventures, the stock market serves as a conduit between investors and borrowers. The national economy and people's everyday lives are both affected by stock price swings. A drop in a stock's price has a higher risk of contributing to economic instability. The variation in share prices over time is referred to as stock price volatility.

“A stock index, also known as a stock market index, is a financial index that evaluates the stock exchange market and allows investors to compare current and past market prices to estimate the country's market performance”. The metric is essentially a weighted average generated from the values of a few different equities. Before making any form of investment choice, the controlling/monitoring authority in any business and shareholders/investors utilize it to explain the market and compare the returns on various assets. (Maheen J, Mr Naeem U; 2013)

The Stock Trading did not exist as a formally formed entity until 1773, although it had operated as an open yet well-established market for securities exchange for about a century before to then. Following commercial rise and the creation of joint stock companies, such markets were automated to meet the financial requirements of emerging businesses. The marketing structure of trading securities for generating a firm's capital was not only recognized and embraced by the British, but it was also supported by Holland, which served as Europe's commercial marketing center. The speculation was motivated by the possibility of significant gains and earnings from these traded assets. (Abdioglu & Hasan ;2010)

## **2.3 Covid-19 restrictions/measures during Pandemic in Pakistan:**

Pakistan Government adopted a reasonable restrictions and lockdown plan over business and other sectors and the whole world praised it later on. The plan included a complete lockdown in the initial phase, followed by time restrictions and Sop's (Wearing masks, vaccinations, sanitizing

hands and other items that are in contact with individuals, maintain a six-foot social distance and many more) in a later stage and then after vaccination of the majority, it was left on the general public's own will to protect them and others; however, the awareness campaigns still went on. There has been a compromise between the public's health and the earning capacity, because otherwise, the poverty would have taken a worst shape and the people would have died due to hunger rather than due to sickness. By the grace of God, Covid-19 also remained under control. This policy worked out and thus the businessmen suffered less as compared to some other countries where complete lockdown was imposed. However, Covid-19 still has a great impact over the country's economy and over the conditions of all businesses including many sectors and thus impacted the Pakistan stock exchange market as well. The results and conclusions of many of the research articles, published journals, official websites and other internet sources also describe and have evidences for the negative impact of Pakistan stock exchange.

#### **2.4 Impact of Covid-19 on stock Market Return:**

“The outbreak of Covid-19 has not only impacted the general life but it has casted huge impact on the Pakistani stock market as well. The number of Covid-19 positive cases, the death rate and the recovery rate these all are the factors that are responsible for the fluctuations in the Pakistani stock market but the studies show that the recovery rate was the most important statistical factor impacting the Pakistani stock market whereas the positivity rate and the death rate were not statistically significant factors”. (Shaharyar Ahmed, 2020)

The study reveals that the improvement has been seen in the consumer product industry with increase in activities and profit along with the decrease in leverage. Medicines, food and beverages, housewares, personal care products, cosmetics, the agricultural products they all fall under the category of consumer product industry. Despite of all the situation caused by the Covid-19 pandemic the common needs of people like food, house or health care has not alleviated but has caused the sub-sector to grow even more financially whereas Property, real estate, building construction, banking, commerce services, and investment are among those industries that have seen a fall in their activity and profitability. During the pandemic a decrease was observed in the liquidity and profitability ratio with an increase in the leverage and activity ratio in all the public firms. The variation observed in the liquidity and leverage ratio was not that much significant when compared with the ratio of before the pandemic with during pandemic but a significant variation

was observed in the profitability and activity ratios. (Ni Made Sindy Warasnasih, Putu Riesty Masdiantini, 2020).

The aim of the study is to get to know the impact of the Covid-19 on the Pakistani stock market, it is to know that what sort of impact it had on the stock market a positive impact or a negative impact. The previous studies revealed that financial markets in industrialized economies have struggled greatly during the pandemic. “Several times over this time, the stock markets of industrialized nations have experienced circuit breakdowns but on the other hand the stock market of the developing nations like that of Pakistan has suffered greatly. The fall in the stock market has been observed during the onset of pandemic but now the situation seems to be improving with the measures taken by the government against the pandemic”. (Rida Waheed, Suleman Sarwar, Sahar Sarwar, Muhammad Kaleem Khan, 2020).

In order to see that what was causing these disparate reactions on the stock exchange of Shanghai and Shenzhen we looked at the industrial characteristics of the businesses listed on these stock exchanges. The Shanghai Stock Exchange's mainly consists of the Chinese central enterprises and state-owned firms that are mostly conventional industries, whereas the Shenzhen Stock Exchange's had mostly the high-tech organizations. In conclusion, the COVID-19 pandemic has caused a havoc on China's conventional sectors with some growth of high-tech companies. (Pinglin He, Yulong Sun, Ying Zhang: 2021).

The main purpose of the study was to know the impact of Covid-19 on the key indexes of the East Asian stock market. In this study the pre and post pandemic situation, positivity ratio, and the fatality rate caused by the pandemic, the uncertainty, movements and foreign currencies has been investigated using the quantile regression. The findings of the study revealed that the pandemic had a huge impact on the indices trajectory even if they differ for every single nation. The influence of every single factor differs greatly. (Mustafa Tevfik Kartal Orcid Icon, Serpil Kiliç Depren Orcid Icon & Özer Depren, 2021).

The financial sector along with the construction and real estate sector first had a decline but later it showed the abnormal return during the period of 30 days before and after the pandemic whereas as the sectors of utilities, transportation and the infrastructure had not been affected by the pandemic. While the other sectors showed the abnormal return values with an increase in them. (HERWANY, Aldrin, Erie, ANWAR, Mokhamad, GUNARDI, Ardi: 2021)

The influence of the COVID-19 epidemic on 21 important stock market indexes in major impacted nations such as Japan, Korea, Singapore, the United States, Germany, Italy, and the United Kingdom, among others. They analyzed data on daily closing prices of stock market indexes from February 21, 2019 to March 18, 2020, and employed an event study approach. The COVID-19 epidemic appears to have had a negative and severe influence on stock market returns in all affected nations and localities, according to the findings. Furthermore, data show that COVID-19 has a considerable negative impact on key stock indexes' performance, with Asian indices experiencing the greatest reduction in anomalous returns. (Sahar Sarwar, Muhammad Kaleem Khan, 2020).

The shock and stimulus are represented by the WHO statement on March 11, 2020, and the Federal Reserve Bank announcement on April 9, 2020, respectively, in the event research technique. COVID-19 created a negative shock to global stock markets, particularly in emerging nations and for small businesses, according to the findings. In comparison to other industrialized nations and developing economies, the US stock market had positive anomalous returns from the Fed stimulus, according to another research. Their research also discovered that major enterprises in the United States, rather than small businesses, reaped the benefits of the stimulus. (Aneel Ashar, 2020)

During the pandemic a decrease was observed in the liquidity and profitability ratio with an increase in the leverage and activity ratio in all the public firms. The variation observed in the liquidity and leverage ratio was not that much significant when compared with the ratio of before the pandemic with during pandemic but a significant variation was observed in the profitability and activity ratios. (Ni Made Sindy Warasniasih, Putu Riesty Masdiantini, 2020).

What was causing these disparate reactions on the stock exchange of Shanghai and Shenzhen we looked at the industrial characteristics of the businesses listed on these stock exchanges. The Shanghai Stock Exchange's mainly consists of the Chinese central enterprises and state-owned firms that are mostly conventional industries, whereas the Shenzhen Stock Exchange's had mostly the high-tech organizations.

After adjusting for country characteristics and systematic risk owing to international variables, uses a panel data analysis to analyze the influence of growth in COVID-19 confirmed cases and fatalities on stock market returns. From January 22, 2020 to April 17, 2020, he used daily COVID-19 and stock market returns data from 64 nations. The findings reveal that in proven cases, stock

markets react substantially to negative returns to growth, but that the response to increases in mortality is not statistically significant. Other data suggest that stock markets respond substantially during the early days of confirmed cases and then again between 40 and 60 days afterwards.

The influence of the COVID-19 epidemic on 21 important stock market indexes in major impacted nations such as Japan, Korea, Singapore, the United States, Germany, Italy, and the United Kingdom, among others. They analyzed data on daily closing prices of stock market indexes from February 21, 2019 to March 18, 2020, and employed an event study approach. The COVID-19 epidemic appears to have had a negative and severe influence on stock market returns in all affected nations and localities, according to the findings. Furthermore, data show that COVID-19 has a considerable negative impact on key stock indexes' performance, with Asian indices experiencing the greatest reduction in anomalous returns. (HERWANY, Aldrin, Erie, ANWAR, Mokhamad, GUNARDI, Ardi: 2021)

The year 2020 was a year of the atypical evolution for both the local capital market and the global market, this atypical evolution occurred as a result of the Covid-19 pandemic that brought health crisis to the human. The first signs of the pandemic were observed at the end of the February at the Bucharest exchange, a decrease that followed the trend of the European and international markets. Panic caused by the Covid-19 pandemic resulted in further decline.

Introduced the first event research, which may be used to determine if market security prices are connected to specific occurrences. In recent years, event studies have grown increasingly popular in the fields of accounting and finance, and they have steadily evolved into a typical research tool in business studies. Terrorist attacks, natural catastrophes, political conduct, and financial crises are all covered in the extant study literature on the association between emergencies and stock prices. (Fama et al, 1969).

The influence of COVID-19 on the stock market of emerging economies has been classified regionally by opcu and Gulal (2020). According to their findings, the outbreak's impact was greatest in Asian developing economies, whereas it was least in European emerging markets.

The study stated that "Equity markets saw the fastest collapse in history..." in response to the impact of the COVID-19 outbreak on the financial markets (Global Financial Stability Report, 2020).

Based on specific assumptions, Wren-Lewis (2020) projected that the COVID-19 pandemic would have a major impact on GDP because to decreased output and changes in consumer demand. Furthermore, the pandemic would aggravate the problem if banks fail to satisfy the companies' funding demands owing to a rapid drop in demand.

The year 2020 was a year of the atypical evolution for both the local capital market and the global market, this atypical evolution occurred as a result of the Covid-19 pandemic that brought health crisis to the human. The first signs of the pandemic were observed at the end of the February at the Bucharest exchange, a decrease that followed the trend of the European and international markets. Panic caused by the Covid-19 pandemic resulted in further decline. (Suriani 2021).

The study emphasizes on the three main points: (1) the stock exchange market became riskier because of the situation caused by the pandemic and the policymakers were required to be more active in order to cope up with all the situation of pandemic and in order to overcome it. (2) Financial model based on assumptions were also insignificant in predicting the outcome of the returns in this situation of the Covid-19 pandemic. (3) The fluctuation in the pricing of the stocks lead to the increased likelihood of the abnormal return during the pandemic.

The empirical results of the study showed two points: (1) the impact of the Covid-19 on the stock market of the affected countries was negative but it was short termed (2) the impact of COVID-19 on stock markets has bidirectional adverse effects between Asian, European and the American countries. However, there is no specific evidence that proves that the stock market of these countries had a more negative impact due to Covid-19 than it did the global average. The empirical results of the study revealed that the Covid-19 has a spill-over impact on the stock markets of the countries. The empirical results of the study also helped in providing a basis that led to assessing the trends in the stock markets of the world when the situation will be alleviated. (Emrah (2020)

The descriptive statistics of the study show that the number of the active cases during the study period and the stock market returns during the study period are volatile, and they represent the fluctuations in the variables over the period of the study. The correlation matrix for stock market returns and the COVID-19 infection cases provides information about the relationship between the Covid-19 active cases and the stock market return. There exist a weak and negative relationship between the infectious cases of the Covid-19 and the stock exchange returns. The stock market return reacted strongly and negatively to the number of Covid-19 infectious cases at first and

during the second period but the effect started to subside during the third and the fourth period, the effect was totally subsided and became moderate after the fourth period. It means that the respond at first was quite strong and negative at the beginning of the pandemic but with time the affect started to decline and by the end it became moderate. The effect of infectious cases of Covid-19 had a strong negative impact on the stock market returns during the study period, that was an early period but later on it became weak and moderate after fourth period. (Khalid and Altaf; 2021)

The study also found that the number of active cases in Vietnam has a negative influence on the stock exchange market's return. When compared to the lockdown period, the negative impact was more significant during the re-lockdown and second waves. Different industries are affected to varying degrees, with the financial industry being the most affected. However, the financial sector was projected to absorb some of these effects due to the government's strong actions. Such sentiments were echoed in the financial market during the epidemic. (Aneel Ashar, 2020)

“The goal of this research was to see how COVID-19 affected global financial markets right away. In addition, this study investigates the unanticipated financial market effects of a feared illness pandemic. The epidemic of the Corona virus has a fast impact on global supply and industry. The effect of COVID-19 has led in the development of new strategies and approaches in the future. The link between production and consumption has been severed, resulting in the spread of the disease. COVID-19 is trustworthy for quantifying its influence on public consideration of stock exchange volatility; lead-laying connections in the period-frequency field were identified using wavelet approaches to solve some inherent issues such as static and intermittence”.

“Rehan, Alvi, and Karaca (2020) examine the short-term stress of COVID-19 on stock market indexes in the United States, Europe, Asia, and the Pacific, utilizing data from 41 stock exchanges in 32 countries from July 1, 2019 to May 14, 2020. The number of COVID-19 instances and market indices had a substantial negative association, according to the findings. Furthermore, according to Liu, Manzoor, Wang, Zhang, and Manzoor (2020), there is a negative association between the growth in the number of instances and the return of 21 main stock indexes. According to the findings, Asian nations are more impacted than other areas”.

With the onset of the outbreak of Covid-19 the markets of both developed and under developed countries have suffered a lot. Both are equally disturbed. A noticeable decrease in the prices of oil was observed and it triggered the stock markets. In several countries like US the disturbance was



tremendous and it leads to oil price war. By this a severe uncertainty in the economic policies was observed. Moreover, the risks in geopolitical states were also increased. The risk in geopolitical were much higher than the economic uncertainty in US. Covid-19 has impacted the economy of the nations and have brought economic crisis. Besides of the economic conditions of US, UK also have faced negative reactions. (Ni Made Sindy Warasnasih, Putu Riesty Masdiantini, 2020).

Several researches have shown in their research articles that Covid- 19 have impacted a negative influence on “daily market returns and liquidity”. This is not only observed in US and UK market but this is obvious in overall Europe and Asian countries as well. Hence all the world was impacted by Covid-19. “The impact of COVID–19 to stock indices is mostly felt in Asia and Europe with both having a –0.17% mean change in daily prices from January to May 2020. Asian and European indices also suffered a 0.28% decrease in the mean change in daily prices as compared during November to December 2019”. The outbreak was firstly observed in Wuhan China and it impacted China’s stock market as well. However, a study has identified that there is a positive relation between COVID-19 confirmed cases and the financial markets of China and the US in between one to twenty-five march 2020. The after-effects of the global value chains have identified the worst returns for the stock for the companies that are working with China and US. This was first observed for the firms that are with China. Japanese stock market is also affected as much as of US stock market. (Aneel Ashar, 2020)

The market that was suffered a lot due to Covid-19 was Asia. Major studies reveal that the BSE stock market has responded negatively as the cases of covid-19 rise. Furthermore, if the impact in Pakistan is observed then the studies reveal and highlights that besides the stock market negative outcomes the economy of Pakistan has suffered a lot and that is the only reason that has changed the attitudes of humans and their preferences and choices have deviated a lot. For example, due to severe lockdown, the availability of some items especially electronics was less and many people suffered a lot. However, Pakistan Govt adopted a reasonable restrictions and lockdown plan over business and other sectors and the whole world praised it later on. The plan included a complete lockdown in the initial phase, followed by time restrictions and Sops (Wearing masks, vaccinations, sanitizing hands and other items that are in contact with individuals, maintain a six-feet social distance and many more) in a later stage and then after vaccination of the majority, it was left on the general public’s own will to protect them and others; however, the

awareness campaigns still went on. There has been a compromise between the public's health and the earning capacity, because otherwise, the poverty would have taken a worst shape and the people would have died due to hunger rather than due to sickness. By the grace of God, Covid-19 also remained under control. However, Covid-19 still has a great impact over the country's economy and over the conditions of all businesses including many sectors and thus impacted the Pakistan stock exchange market as well. The results and conclusions of many of the research articles, published journals, official websites and other internet sources also describe and have evidences for the negative impacts of Pakistan stock exchange. Another study conducted on Pakistan showed that "the KSE-100 index has confirmed positive increment in stock returns. In addition, by using three predicted scenarios of COVID-19, they report the significant increase in the KSE-100 index".

Moreover, this study was then continued by Shehryar Ahmed (4 July 2020). He argument that "only COVID-19 recoveries are influencing the performance of the index and the daily positive cases and fatalities are insignificantly related to the performance". "He further suggested that future studies are required by considering other variables. The variables could be economic growth, interest rate, inflation and many more. These all variables are affected by covid-19 globally. The goal of this study is to see how the Pakistani stock market reacted to the non-pharmaceutical measures taken on the COVID-19 epidemic and how it affected the market's performance. The performance of the Pakistani stock market is said to be impacted by COVID19 positive cases, complete lockdown, smart Lockdown, deaths, recoveries. The objective of this study is to determine the non-pharmaceutical measurements taken during Covid-19 impact on the performance of the Pakistani Stock Market". This study uses the data of No of active cases, lockdown implications during COVID-19. The purpose of this study is to investigate the impact of non-pharmaceutical measures on PSX return.

We will take PSX Stock Prices from 26 February 2020 to 31 August 2020 of Karachi Stock Exchange (KSE-100 index) because in this time the Covid is on its peak in Pakistan & the government is taking the most measurements to stop its spread. On 19 June 2020 6604 case was recorded in a single day in Pakistan. This study has an objective that to what extent non-pharmaceutical measures that would include lockdown, smart lockdown, borders closure and many more during an event (Covid-19) has impacted the stock exchange return of the Pakistani market. The outbreak has impacted many nations in different ways. It is evident and have been observed that

Covid-19 has negative effects on the stock market returns. Many studies in the previous year have proven that there is an adverse effect on the stock indices performances. The firms that are with Asia have suffered a lot and a greater decrease in abnormal returns have been observed. The stock markets of Asian countries have suffered a lot due to this pandemic.

This research is limited to the Pakistan stock exchange only as it is conducted in Pakistan. The study is conducted by using secondary data and have gathered all of the information using the official websites and other internet forums. The data that is incorporated in this research is hundred per cent accurate and provides a great contribution for future researchers.

In this respected study the author has chosen two independent variables. The variables are pharmaceutical and non-pharmaceutical measurements taken by the government and other higher bodies. These variables have various measurements like wearing mask, vaccination, drugs, hand sanitizing, things sanitizing and many more (pharmaceutical measurements) whereas, the on pharmaceutical would include lockdown and other restrictions like social distancing etc.

## **2.6 Non-Pharmaceutical measures:**

### **2.6.1 Closure of borders:**

With the onset of the pandemic several precautionary measures were taken. The closure of the borders was one of the major ones. As different countries have different variants and severity of the disease this step was very important to take. Pakistan also closes its borders for all of the countries when the pandemic was on its peak. Now, as the severity of the pandemic has reduced and the cures and other precautions are developed the borders for some of the countries are however opened.

### **2.6.2 Restrictions in travelling:**

Not only the borders were closed people within the cities were wrapped too. This was also a precautionary measure taken by the government of not only Pakistan but many countries like India, China, America etc. this was also done to limit the exposure of the citizens.

### **2.6.3 Smart Lockdown:**

Besides of the complete lockdown, smart lockdown were implemented by the governments to ensure public health and safety. As soon as the cases in a specific region were reported the authorities were assigned to limit the people of that area to their homes and housing colonies. The

sole purpose of this precautionary measure was to limit the exposure of the infected people.

#### **2.6.4 Closure of educational setups, workplaces and markets:**

Besides of the lockdown, smart lockdown, travelling restrictions and closure of borders with other countries the governments took some other precautionary measures to limit the interaction of people. First of all, the schools, universities, colleges and other educational setups were closed as students come from different homes, different areas and cities to study. They can infect one another. Similarly, the workplaces and markets were closed too because of the same reason. However, markets for groceries and other such essentials were opened for a limited time in a day.

## **Chapter-3**

### **Research Methodology**

#### **3.1 Research Approach:**

There are two main two main types of research approaches. They are called the qualitative research approach and the quantitative research approach. The quantitative research approach is where the data collection and analyzing of the data takes place with the help of numbers. The quantitative data does not extract detailed information from the participants but uses huge number of participants for the data so the results can be generalized. The reason for the assessment of the data is find correlation between the variables and the confirmation or the rejection of the hypothesis of the research. Impartial data collection takes place in the quantitative method due to which, the data can be decreased. Since the study is collecting and analyzing large data set, the research method is a quantitative one.

#### **3.2 Secondary Method:**

Secondary research is also known as desk research. It is a method that gives the information from the already discussed and existing valuable dat. The data is then summarized and arranged to enhance the effectiveness of the research. The data that is collected by secondary resources could be from: published in research reports, documents, websites, already filled in surveys etc. some agencies (governmental or non-governmental) also store some data. That data is ready to use for the research purposes. This research is cost-effective research as it used prior studies. This is the only reason that this method is used by most of the researchers. One of the most used methods to collect secondary data is by using internet. The data is readily available on internet. The data obtained from internet sources is mostly free of cost. However, in some cases a certain set of amounts is required to open a document. On internet, published journals, articles and research papers are readily available and several websites provides the data too. However, websites must be authentic. The other source to collect secondary data from the agencies which might be governmental or non-governmental. There is a certain cost to be paid to download or open their websites and collect data. Public libraries are another important source to get the data for secondary

researches. They have direct copies of the researches conducted previously. That data is authentic, plagiarisms free and is ready to use for the research purposes. The data for secondary research can also be obtained from commercial information sources. The commercial informational sources could be local newspapers, journals, magazines and many more even radio and television.

In this research paper the data is obtained from internet sources for example: websites, previous research papers, journals and articles.

### **3.3 Research Design:**

“The significance of research design is that it provides the correct road map to conduct any research in an effective way that meets the objectives of the research. A good research design is considered as the blueprint of the research as it guides and demonstrates every step and stage of the research. Meta analyses research design requires more attention, time and focus to conduct any research. The research design of this study gives the knowledge about the topic of the research and gives a holistic view of the conducting research. Moreover, the overall process of analyzing and interpreting the purpose of the research is mentioned in the research. The purpose of the research is to explore a phenomenon so exploratory type is used. Moreover, the aim of the research is to give valuable information that can be best utilized for both academic and professional purposes. To increase the comprehension of the research and develop more understanding, A literature review is developed. The first phase is developed on the basis of constructed literature review”.

### **3.4 Data:**

The purpose of this study is to investigate the impact of non-pharmaceutical measures on PSX return. We will take PSX Stock Prices from 1<sup>st</sup> January 2020 to 31 August 2020 of Karachi Stock Exchange (KSE-100 index) because in this time the covid is on its peak in Pakistan & the government is taking the most measures to stop its spread. On 19 June 2020 6604 case was recorded in a single day in Pakistan which is the highest number of covid cases recorded in single day.

KSE was founded in 1947 which began with a 50 shares index and is the leading in PSXs. The KSE was announced as the world's most efficient stock market in 2002. The KSE 100 was launched in Nov 91.

### 3.5 Test and Procedures:

The study is based on the time series data, hence as a first step, the Descriptive Statistics based on the same data period from 1<sup>st</sup> January to 31<sup>st</sup> August 2020 has been shown. In this I have apply the regression test using dummy variable which further elaborate the impact of non-pharmaceutical measure impact on Pakistan stock exchange return.

“Dummy variables are useful because they allow us to represent many groups using a single regression equation. This eliminates the need to create individual equation models for each subgroup. The dummy variables operate as switches in an equation, turning certain values on and off”.

Secondly, Regression test while including dummy variables has been applied to examine either the non-pharmaceutical measures impact on Pakistan stock exchange ~~and~~ and accordingly, results have been interpreted.

$$“Y = \beta + \beta_1 X_1 D_{1i} + \beta_2 X_2 D_{2i} + u_i”$$

## Chapter-4

### Data Analysis

To arrive at the result, the acquired data was subjected to a series of statistical tests. The data was initially examined using descriptive statistics, and then regression analysis by using dummy variable. The results, as well as their interpretation, are shown below.

#### 4.1 Descriptive Statistic:

	<b>KSE</b>	<b>ACTIVECASES</b>	<b>DUMMY</b>
Mean	0.000556	33281.19	0.158730
Median	0.000000	17379.00	0.000000
Maximum	0.050000	108642.0	1.000000
Minimum	-0.070000	1.000000	0.000000
Std. Dev.	0.018817	36143.39	0.366883
Skewness	-1.273915	0.936723	1.867801
Kurtosis	7.014186	2.399395	4.488679
Jarque-Bera	118.6769	20.32028	84.89714
Probability	0.000000	0.000039	0.000000
Sum	0.070000	4193430.	20.00000
Sum Sq Dev	0.044261	1.63E+11	16.82540

**Table 4. 1**Descriptive Statistic

##### 4.1.1 Interpretation:

“According to the descriptive statistics, it can be observed that the average return of PSX 100 index has remained 0.000556% during the 1<sup>st</sup> January to 31<sup>st</sup> Aug of 2020”. The average number of active cases during the first of 2020 is 33,281 the average number of non-pharmaceutical event is 0.518. During the 1<sup>st</sup> January to 31<sup>st</sup> Aug of 2020, the maximum return on PSX 100 index was 0.050000%



and the minimum return on PSX 100 index was -0.070000%. The maximum number of active cases during the 1<sup>st</sup> January to 31st Aug are 108642 and Minimum Number of Active Cases are 1.

## 4.2 Regression Analysis using Dummy Variable:

Dependent Variable: KSE

Included observations: 126

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26135.30	300.1615	87.07081	0.0000
ACTIVECASES	4.52E-08	4.68E-08	0.965933	0.3360
FATAL	-0.816312	6.728477	-0.121322	0.9036

R-squared	0.120213	Mean dependent var	25473.61
Adjusted R-squared	0.097262	S.D. dependent var	2812.642
S.E. of regression	2672.362	Akaike info criterion	18.65235
Sum squared resid	0.043708	Schwarz criterion	18.74756
Log likelihood	-1105.815	Hannan-Quinn criter.	18.69028
F-statistic	5.237836	Durbin-Watson stat	0.049741
Prob(F-statistic)	0.002003		

**Table 4. 3 Regression Analysis by using Dummy Variable**

### 4.2.1 Interpretation:

“The regression analysis of the study has been performed in the following table which indicates that there is a negative and insignificant relationship between return on PSX 100 and the number of non-pharmaceutical measures events of COVID-19”. Here we have used dummy variable to represent non pharmaceutical measures. From the result we can see that if there is 12% change in the dependent variable s explained by the independent variables which state that the model is not a good fit. Also, the F statistic is 5.2 this show that there is no Significant relationship. The presence

of serial correlation in residuals is validated by the Durbin-Watson statistic as it is less than 2.00.

## **Chapter–5**

### **Recommendation & Conclusion**

#### **5.1 Conclusion:**

“The objective of this study was to determine the impact of non- pharmaceutical measurements of COVID-19 on the performance of Pakistani stock market and to the best of my knowledge, it is one of the few studies exploring the relationship of non-pharmaceutical measurement event and the performance of the stock market return”. The study hypothesized that the performance of Pakistani stock market is influenced but not significantly as a result of COVID-19 non-pharmaceutical measurement. The findings of the study have a non-significant relationship with the performance of the market. “Further studies can be performed by incorporating other variables such as economic growth, interest rate and inflation rate along with the COVID-19 related variables at a cross country level”. Hence, a clear description of the pandemic-related variables can be ascertained affecting the performance of a stock market in this regard.

“The present study's findings are compatible with several prior research, such as Shaharyar Ahmed's (2020), which found that COVID-19 positive cases, deaths, and recoveries had not significant impact on the performance of the Pakistani stock market return. The study's findings reveal that only COVID- 19 recoveries are a major predictor of stock market success, whereas positive cases and deaths have no statistically significant link with market performance”.

Several times over this time, the stock markets of industrialized nations have experienced circuit breakdowns. “On the other hand, developing nations' stock markets, such as Pakistan's, have shown the opposite pattern. It takes a fall during the outset of a pandemic, but the situation is improving when the government takes preventative steps.

#### **5.2 Discussion:**

##### **5.2.1 Theoretical Implications:**

The nature of the study conducted is constructive and exploratory as the purpose of the study was to provide a deeper understanding of the impact of the non-pharmaceutical measures on Pakistan stock exchange market concerning the Covid-19 outbreak (Moskowitz *et al.*, 2005). The study presented some new concepts that resulted in expanding the theoretical knowledge regarding the measures taken by the government of Pakistan-on-Pakistan stock exchange market during

pandemic outbreaks. The effects of those measures are presented and confirmed and identified through this study. The study has also proposed the conceptual model that emphasizes and lays stress on the validity of the topic. It describes all the measures that are taken during the pandemic whether pharmaceutical or non-pharmaceutical in detail during the event of Covid-19 outbreak. All the elements presented through the proposed conceptual model have been confirmed and tested via statistical regression method while conducting this study (Sheth, 2020).

### **5.2.2 Practical implication:**

As the aim of the study was to get a deeper understanding of the impact of the non-pharmaceutical measures taken by the government during the Covid-19 pandemic, the focus of the study was limited to the Pakistan and the study emphasized the impact of non-pharmaceutical measures taken by the government of Pakistan-on-Pakistan stock exchange market during the pandemic season.

The findings of the study revealed a major impact of non-pharmaceutical measures taken by the government of Pakistan-on-Pakistan stock exchange market during the pandemic. The findings will also be considered valuable in guiding the agencies, future students, government and other organizations that are related to Pakistan stock exchange market.

### **5.2.3 Limitations:**

The study is theoretical and is based on secondary data that is obtained from internet sources like websites, research articles, research papers, research publications and journals. The data is collected from authentic sources. However, the study is limited to Pakistan only. It was not possible to gain accurate data for the broad research and the time was limited too to gather such a huge data. (Vest et al., 2021). Moreover, the data which is gathered is limited from 26<sup>th</sup> February till 31<sup>st</sup> August 2020. Future researchers are required to change the dates and apply new research.

### **5.2.4 Future studies:**

The study has successfully managed to observe the impact of non- pharmaceutical measures taken by the government of Pakistan-on-Pakistan stock exchange market during the pandemic season. However, some other future studies are recommended to conduct the research again with new dates and new measures taken by that time.

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