

**Majors: FIN**  
**Major No. (F/25)**

**“COVID-19 AFTERMATH FACED BY PSX STOCKS: AN EFFICIENT MARKET  
HYPOTHESIS”**



**By:**

**(Arsalan Nasir)**

**(01-321211-004)**

**Supervisor:**

**(Dr. Taqadus Bashir)**

**Department of Business Studies**

**Bahria University Islamabad**

**Spring-Year-2022**

**FINAL PROJECT/THESIS APPROVAL SHEET**

**Viva-Voce Examination**

Viva Date 01/08/2022

**Topic of Research:** (COVID-19 AFTERMATH FACED BY PSX STOCKS: AN EFFICIENT MARKET HYPOTHESIS)

**Names of Student(s):**

Enroll # 01-321211-004

- Arsalan Nasir
- 
- 

**Class:** (MBA 1.5 Finance)

**Approved by:**

---

**(DR Taqadus Bashir)**

Supervisor

---

**(Dr Sajjad)**

Internal Examiner

---

**(Dr Uzma)**

External Examiner

---

**Dr. Syed Haider Ali Shah**

Research Coordinator

---

**(Dr. Khalil Ullah Muhammad)**

Head of Department

Business Studies

## **Acknowledgment**

I Arsalan Nasir S/O Nasir Iqbal Zia in the name of Allah, The Most Gracious, The Most Merciful and the Sustainer of world declare that all this research neither entire nor as a section has been duplicated out from any source. It is additionally Declared that I have arranged this report totally done on my own efforts. If any part of this thesis is found to be replicated out from any source or viewed as copied of some other, I will remain by the results. No Portion of the work introduced has been submitted of any application for some other degree or capability of this or some other university or learning institute.

## **ABSTRACT**

This Study is done to explore and analyze the impacts of covid-19 lockdown in Pakistan-on-Pakistan stock exchange sectoral performance. The data set used for this study range from 24-March-19 to 25 March-21 for 9 sectors (Automobile, Cement, Pharmaceuticals, Oil and Gas, Food, Technology and Communication, Banking, Fertilizers, and Transport), 5 companies from each sector with highest market share and there trading days stock closing price from 24-March-19 to 25 March-21. For this study event study approach is used and Abnormal returns and Cumulative abnormal returns are calculated. The findings shows that Pakistani sectors are hit in a different manner as compared to developed nations because there pharmaceutical sector remained the best performing sector while in Pakistan its not the same case. The Findings shows that sectors like Automobile, Oil and gas, cement, Pharma, Fertilizer and banking managed to recover withing there next 60 days of trading from the announcement of lock down while sector like transport remained in loss due to long term travel bans internationally.

## Contents

“ COVID-19 AFTERMATH FACED BY PSX STOCKS: AN EFFICIENT MARKET HYPOTHESIS” .....	1
1. Introduction .....	7
1.1. Introduction .....	7
1.2. Theoretical Background .....	8
1.3. Research Gap .....	9
1.4. Research Objective .....	9
1.5. Problem Statement.....	9
1.6. Research Question .....	10
1.7. Hypothesis.....	10
1.8. Significance .....	10
1.9. Research Plan.....	10
2. Literature Review.....	12
2.1. Impact on Transportation Industry.....	12
2.2. Covid -19 Impact on Pharmaceutical Industry.....	12
2.3. Covid -19 Impact on Energy Industry.....	12
2.4. Covid -19 Impact on Food Industry.....	13
2.5. Covid -19 Impact on Tech Industry .....	13
2.6. Covid -19 Impact on Cement Industry .....	14
2.7. Covid -19 Impact on Fertilizer Industry.....	14
2.8. Covid -19 Impact on Automobile Industry.....	15
2.9. Covid -19 Impact on Banking Sector .....	15
2.10. Over All View.....	15
2.11. Stock Market Impact.....	17
3. Methodology.....	18
3.1. Research methodology .....	18
3.2. Research strategy.....	18
3.3. Research Technique .....	18
3.4. Unit Of Analysis.....	18
3.5. Method of analysis.....	18
4. Results and Findings.....	21
5. Conclusion and Recommendation .....	28
5.1. Conclusion.....	28

5.2. Recommendations ..... 29

# Chapter # 1

## 1. Introduction

### 1.1.Introduction

The financial systems are the plays the major role in the overall world economy (Maiti et al 2021). Events which are progressive in nature cause the financial instability which results in the malfunctioning of the financial systems which eventually directly give shocks to the global economy (Duca and peltoneen 2013: Thanh et al 2020) like in history at the time of SARS dieses. These kinds of shocks are contagious and would lead to progressive crises, thus badly damaging and destabilizing the global economy (De bandt and Hartmann 2000), so the government and policy makers should closely work for betterment of the financial economic system. An important pivotal point in Pakistan financial system is the Pakistan stock market. Pakistan is the one of the emerging economies and it follows the open economic policy as Pakistan is one of the main receipts of foreign loans and foreign direct investments in big sectors like Energy and raw material for differ sectors such as pharmaceutical and Automobile. In last two decades, Pakistan stock exchange was on growing trend in terms of number of listed companies, investor confidence and their investments in sectors like IT, banking and market equity.

Stock Market plays a significant part for the Pakistan economy. One of the economy's speeds of improvement is the accessibility of assets to back financial improvement. Capital market become a possibility for an organization's capital assets. The capital acquired from the public contribution can be utilized for the organization's business improvement and development. Moreover, capital market likewise can be an option for public venture. In accordance with that, mentioned that the improvement of capital market help to draw foreign direct investment and encourage the local investors to contribute to boost up economy so that's why stock market performances are the very important because they reflect the investment situation in country. Financial crisis in (2008) is viewed as the great emergency that the worldwide financial matters went through since the time of the international depression (1929 - 1931) .as a matter of fact its impact isn't simply restricted to the industrial development, but additionally its negative impact is considered the economies of the non-industrial nations because of the financial openness. (McKibbin & Fernando,2020) shows that if illnesses are produced in unfortunate nations due to congestion and over population, poor health conditions and regular interactions with wild creatures, these illnesses can kill individuals of any social and economic groups in any general public. There should to be greater interest in general wellbeing and advancement in more extravagant nations yet in addition, particularly in unfortunate nations. In light of the lawmakers overlooking logical proof about the job of public wellbeing in working on the personal satisfaction and as a motor for monetary development.

The economic and financial hypothesis holds that stock costs are mostly impacted by market and firm trademark-based factors. Organizations in a similar industry face the equivalent administrative and strategy climate and comparative macroeconomic circumstances. When confronted with changes in the, the working states of organizations in the industries which are highly correlated (Moskowitz and Grinblatt 1999). Agreeing to the hypothesis of behavioral finance, in accumulations to the value of stocks crises will affect financial backers' mental and social factors, which thus will critically affect stock costs.

## 1.2.Theoretical Background

The COVID 19 disease which world have never seen before originated from Wuhan a city in China. By the march-2020 more than one million people have been affected by COVID 19 currently standing at 359 million corona effected patients, that's why WHO had declared it a global pandemic. As a result, sense of emergency and uncertainty spread at pace much faster than virus itself. Overall social system of world was damaged badly but economical system was affected much badly (Zhang et al 2020) as compared to social system. COVID-19 hit some industries very badly such as Airline, Automobile, Tourism, petroleum and educational due to strict lockdowns and social distancing policies by governments. But Industries like fertilizer and banking in Pakistan were hit in a different manner (Baker er al 2020).

Coronavirus infection has shocked the worldwide economy and monetary business sectors since the great depression. The preventive estimates like social distance and lock-downs have demonstrated their efficiently positively yet they have an expense as decreased business deals and even the long-lasting conclusion of different elements. The financial misfortunes because of COVID-19 have too impacted the worldwide securities exchanges. The disease impact of the pandemic on worldwide securities exchanges have been seen in pretty much every landmass and Pakistani financial exchange is likewise one of the trades that have been impacted because of COVID-19.

The year 2020 is bound to be kept in history due to remarkable new development. The episode and spread of novel Covid (COVID-19) illness across the world have genuinely impacted individuals' productions and life in general. Economies all over the globe are as of now confronting serious difficulties because of the COVID-19 flare-up. As indicated by continuous factual information delivered by Johns Hopkins University, as of June 5, 2020, internationally there have been 6,601,349 analyzed instances of and 389,620 causalities from COVID-19. There are currently obvious indicators of a downturn in the worldwide economy. In the "Worldwide Financial Outlook" reported in April 2020, the International Monetary Fund anticipated that worldwide GDP would fall by 3% throughout the year, while the World Trade Organization anticipated that worldwide exchange could decline by as much as 32% in 2020. The effect of COVID-19 on the economy is certainly not a repetitive change in the customary financial turn of events process. The momentary debacles produced by the pandemic additionally outperform any endogenous and outrageous occasions before. Evaluating and understanding the monetary effect of COVID-19 has turned into a significant issue. The reason of this article is to assess the effect of COVID-19 on stock costs (Pinglin He, Yulong Sun, Ying Zhang & Tao Li) (PAPER 10)

Due to this huge scale global pandemic every stock market in the world thrumbled and faced the down side trend. The overall trend in all economies in world faced the negative relationship between stock returns and number of covid cases (Al-Awadhi, 2020) but the magnitude of the effect varies from country but the investors' confidence in every country have been already reduced due to so much uncertainty and chaos in stock markets (Lui, Manzoor, Wang, Zhang & Manzoor, 2020). In such situation very few studies were done to critically learn and evaluate the effect of covid on Pakistan stock market and it was also necessary to understand the effects because Pakistan is an emerging economy (Anuaskumar, Ali & Hooy, 2017; Fan, 2003)

The reaction of Chinese government towards the new infection was the whole lockdown of the focal point of the illnesses, the Wuhan city which later demonstrated as a powerful measure of controlling the



pandemic on the loose in different nations of the world. The whole city was put under lockdown as an endeavor to stop the spread of the illness on 23rd January 2020.

South Korea was the country which after China confronted a significant flare-up of COVID-19 also, after that at this point, around 9.1 million positive instances of COVID-19 has been accounted for overall alongside 472, 539 worldwide fatalities (Hopkins, 2020). The quantity of positive cases what's more, fatalities has been ascending since the rise of sickness and in certain areas of the globe the spread has eased back like European districts however in a few locales like Americas and Asia, the sickness is as yet spreading at a quick rate. On 11 March 2020, COVID-19 was proclaimed as a worldwide pandemic by WHO and in excess of 170 nations are impacted because of the illness (WHO,2020).

To identify the short-termed effects of COVID-19 on various areas of the financial exchange, this study investigations the impact of the authority declaration of the COVID-19 flare-up on the Pakistan securities exchange. Its discoveries are supposed to help financial bodies, business administrations, capital market administrative bodies, and government to better understand the short-term fluctuations and execution of chosen industry areas and assist them with arriving at better conclusions about what's to come influences and reestablishing market feeling notwithstanding the COVID-19 flare-up (Md. Mahmudul Alam, Haitian Wei, Abu N. M. Wahid)

### **1.3.Research Gap**

Different studies have been done on different stock market responses during different events. Pakistan is one of the countries which tackled COVID-19 well but there is still research Gap in the study of Pakistan Stock Market performance during and after COVID-19. This study will find out the relationship between COVID-19 and Pakistan stock market responses during differ time period windows

The previous studies showed the impact of COVID-19 positive cases on Pakistan stock exchange index with the maximum of 10 days window after the announcement of lockdown in Pakistan (Shehryar Ahmed, LUMS), but a more detailed study is required to understand the performance of Pakistan stock exchange that which notable sectors performed good and which sectors did not performed. This research will deeply study the effect of COVID on 10 Major sectors (Automobile, Pharmaceuticals, Oil, Transport, food and personal care products, cement, Technology, Fertilizer, Banking and power generation). As the investor are still not cleared about the performance of PSX so this study will eventually help them to better understand.

### **1.4.Research Objective**

In this study we will try to explore the effect of covid-19 severity on the 9major sectors performance which significantly participate in the index. There is definingly an effect of covid-19 on stock markets around the world but our aim is to study the effect in Pakistan. To identify the 9 major sectors' as per Pakistan stock exchange listing and study their behavior based on daily averages. To find out the relation whether it is significant or insignificant between sectors performance and COVID.

### **1.5.Problem Statement**

Not much studies have investigated the aftermath of COVID-19 and lockdowns due to it. Against this background, the ongoing paper plans to expand the literature to examine the COVID19 flare-up on Pakistan's capital business sectors. There is shortage of studies that investigate the impacts of COVID-19's pre-lockdown, lockdown periods and after lockdown on stock returns in quickly developing

economies and securities exchanges, including Pakistan. No research has estimated the impact of COVID-19 pre-lockdown and lockdown on the major sectors of stock exchange that effectively controlled the pandemic by a lockdown.

### **1.6. Research Question**

This study will investigate the performance of 9 major sectors in Pakistan stock market, the overall concept is that the major stock markets have face the downturn in there index returns, as such events are very crucial to study in terms of their Financial impact. It is necessary to find out that how the stock markets have behaved.

- 1) How does the different sectors in stock market behaved in 5 days window)?
- 2) How does the different sectors in stock market behaved in 10 days window)?
- 3) How does the different sectors in stock market behaved in 30 days window)?
- 4) How does the different sectors in stock market behaved in 60 days window)?
- 5) Was the impact positive or negative?

### **1.7. Hypothesis**

H1: Different sectors stock performance during COVID-19.

H2: Sectors like pharmaceuticals and technology performed better than all other main sectors.

### **1.8. Significance**

Significance of this study is that it will help international bodies, local and international investors, shareholders and different stakeholders to learn about the economic situation of Pakistan through the projection of Pakistan stock exchange which in depth help them to learn about major sectors performances from the time period of one year before to one year after the announcement of lockdown in Pakistan. As the stock exchange represents the financial performance of a country so this study will help the society and new entrants in business to gather information and take their future descions for their investments in stock markets and gain the maximum profit. This study will also help to find out the sectors whose capital growths are good.

### **1.9. Research Plan**

There are 5 main parts of this study whose breakdown is as:

#### **Chapter 1**

- Introduction Background
- Research Gap
- Objective
- Problem Statement
- Research Question
- Hypothesis
- Significance

#### **Chapter 2**

- Literature Review

### **Chapter 3**

- Research Design
- Technique
- Unit of analysis
- Study
- Time Horizons
- Stock prices
- Index Returns

### **Chapter 4**

- Findings of the study
- Analysis of study

### **Chapter 5**

- Conclusion
- Recommendations

## **Chapter # 2**

### **2. Literature Review**

#### **2.1. Impact on Transportation Industry**

In last few decades due to globalization airline industry has increased in share in market. In the year 2003 when SARS virus news came airline listed in countries like Hong Kong, China, Singapore, Thailand and Canada seems to be more responsive towards news than non airline industries and due to such news, the stocks volatility increased instead of returns (Loh 2006). Harrbison (2003) finds out that when SARS was in peak in March-2003 the passengers was declined by around 5.5% and to cater this some airlines went towards cost cutting by downsizing of staff and minimize the service cost. Wang in 2013 study found out that links between any notable event which effects spread at least continent wise and the link between Airline stocks and result was that there is a risk in earnings per share of airline stocks.

CAPM model was used by Borensteni and Zimmermna (1998) to examine the effect of 74 airline accidents in USA form the year 1960-1985 and found out that they had negative impact on the incomes of aviation industry. Sato (2013) compared the performance of N.A airlines and European airline in time of financial crisis of 2008-2009 and found that N.A Airlines were effected more than European Airlines.

#### **2.2. Covid -19 Impact on Pharmaceutical Industry**

Whenever there is health related pandemic in world usually the stock for pharmaceutical companies tend to rise due to increased demand if medical equipment's and medicines. Cheng, Tang, and Huanag (2009) argue found out that during the SARS epidemic the stocks of Taiwan biotech companies raise due to more demand of health care equipment. Jingwen (2005) studied the connection between SARS virus information and sensitivity observed in pharmaceutical companies in China Stock exchange. The results were that if the information disclosure in significant there is significant change in stock prices and if the news in not of such attention there is no notable change in stocks. Al-Awadhi, Al-Saifi, Al-Awadhi and AL Hamadi (2020) found out that stocks of pharmaceuticals companies and Tech companies outperformed all other stocks listed in stock market. The high obstructions that block the advancement of new immunizations can possibly be monopolistic. As antibody improvement is substantially more complex and innovatively progressed than that of the development of medical items, it is beyond the possibilities to expect to create a general vaccine (Hirman 2006). This can eventually lead to vaccine shortages.

#### **2.3. Covid -19 Impact on Energy Industry**

The overall Oil industry in the world did not remain stable during this period because of mis calculated demand in oil for example different countries announced lockdowns at different times and there was overall less demand of Oil, for example West Texas Intermediate (WTI) crude oil price went down for the first time in History. Maijama, Musa, Garba and Baba (2020) found that total number of new cases depends on total population in world and the stock's price for crude

oil is negatively linked to the number of new covid cases reported. Broad Stock, cow and Zhang (2012) studies the behavior of Chinese stock investors which are related to energy stocks are more sensitive to the oil price fluctuations in international oil market because sudden decrease in price can be loss for them and sudden increase can be profit to them because energy stock market was too much volatile at that time. When there was no Covid the market performance was impacted by the shifts in international crude oil prices (Reboredo and Rivera Castro 2014). (Perry 2001) suggest about Canadian oil market that when there is increase in demand there is more return observed in Canadian energy stocks.

#### **2.4. Covid -19 Impact on Food Industry**

Food security alludes to an individual or a gathering's adequate capacity to get to food and other dietary necessities. The food business and its production network are in the front of utilizing its assets to give sufficient food to specific area or group of people Deak (2020)

The difficulties brought by the COVID-19 pandemic not exclusively to the food business yet to different sectors and areas too are the same than what some other pandemic or f had brought previously

When the COVID-19 outcomes on food supply at a worldwide level, it likewise includes its monetary worries inside the agriculture business area. A food conveyance focusses in Brazil found that the costs of food items shift from the various districts impacted by COVID-19. The outcome showed a connection between's variation in food costs and the sensitivity of the impacts of COVID-19 in the district back in March 2020, when the COVID-19 began in various regions of the globe (D. D. P. Farias and F. F. D. Araújo)

In covid period, the utilization of food items has expanded because of local area delivery, due to lockdowns and shutdown of restaurants (12). In a study directed among families in China from 15-23 February 2020, 58.6% revealed loading up and purchasing huge amounts of food and drinks WMU (2020).

#### **2.5. Covid -19 Impact on Tech Industry**

Last many years, IT assumed a significant part in society functional and competition for a long time. For this review, IT capacities are characterized as the capacity to really utilize IT instruments and data sources to think, process, and present data and model in front of management or customers, and to have control on any disasters event. (Benzi-1997). (Vaishya et al., 2020) examined the use of Artificial intelligence for COVID-19 the board. The IT impact in medical care and the high commitment of innovation organizations is referenced by (Javaid et al. (2020) and Singh, Javaid, Haleem, and Suman (2020). When the covid pandemic spread, worldwide meetings and exercises are being dropped or delayed. In the entire period, the media communications industry really does moderately well, as there is more demand for work from home and more app usage was there (Ramelli & Wagner, 2020). The tech business might deal with the issues of deferral to shipments of electronic products and in view of development control guidelines. Numerous innovation organizations need to quit carrying on with work. In

expansion to the critical loss of human life caused by the pandemic, COVID-19 is supposed to employ an immense and long influence on biometrics organizations and tech development organizations.

## **2.6.Covid -19 Impact on Cement Industry**

In the year 2020, worldwide cement is supposed to be less 3% year-on-year when including China, and 6.4 percent year-on-year while. Generally, the pandemic's effect will be unevenly dispersed, for certain nations stronger than others (Cembureau, The European Cement Association. 2020). When there was no covid, the business was not working at full pace: with the worldwide financial shutdown, plants are supposed to see further drops in use rates. The worldwide normal use rate, which refers to makers' real result over potential result base on maximum production capacity, could fall as low as 60% for 2020 as per projections, from around 70% yearly throughout the course of recent years (CEMEX. 2020). In certain nations, this cement sector could profit from government strategies, for example, those trying to stimulate request by advancing the real estate market (e.g., working with simple home funding or supporting reasonable housing society or other public works) (CW Research. 2020). Whether state run administrations present such interventions will rely upon the more extensive challenges faced by every nation and the significance of the cement industry to the economy. Different companies are adopting different strategies to protect their cash flow by: minimizing expense, cutting of the non-essential expense, and cancelled the dividend announcements (Czigler, Thomas, Sebastian Reiter, Patrick Schulze, and Ken Somers. 2020).

## **2.7.Covid -19 Impact on Fertilizer Industry**

Different studies related to different to parts of fertilizer industry have been done in past years for example analysis and research (Al rawashdeh and maxwell), development of Different minerals such as phosphate (cooper et al 2001), study on environment and social factors (Scholz). As indicated by late examination there are many investigations tending to COVID-19 and its impact on business. This topic is very critical and appropriate. Some of them concern general parts of economic challenges and transformation to the new climate in the pandemic and after pandemic (Seetharaman, 2020).

Regardless of the many logical papers dedicated to the various parts of the mineral and fertilizer industry improvement, from the one hand, and to COVID-19 from another, no papers have been found that attention specifically on the fertilizer organizations working in states of COVID-19. This shows the idealness and importance of the review. The decrease in food security during Coronavirus virus is brought about by reduced limit of special organizations that gives significant food social wellbeing nets for weak gatherings of population. Such foundations like food banks and school taking care of projects have issues during Coronavirus pandemic because of different limitations forced by the legislatures meaning to control pandemic, accordingly state support is important to lay out security nets and to safeguard food supply chains during the Coronavirus illness and subsequently (Boughton et al., 2020Boughton)

## **2.8.Covid -19 Impact on Automobile Industry**

Some examination writings have made sense of the results of the COVID-19 on the auto business.

Rajamohan et al. (2020) led a study on how the financial exchange especially the National Stock Exchange of auto area has been troubled because of COVID-19. The outcomes uncover those higher worth values have been sold at depreciated values. In addition, lower returns have been accounted for the profits of the car area record. Consequently, from the outcomes it very well may be concluded that COVID-19 pandemic affects the stock trade of the auto business. An hybrid model named as SEM-Logit model was suggested by Yan et al. (2020) to investigate the end user decision making as well as the elements influencing the acquisition of vehicle during pandemic. The proposed model was utilized to explore the impact of social-socioeconomics, epidemic related and mental related factors on the buy and purchase of the autos. The outcomes uncover that pandemic affects the acquisition of the autos. The elements, for example, family pay, travel weaknesses and plague seriousness in neighborhood locales have affected the buy dynamic course of people. Further, study is utilized to help the approach producers in carrying out critical measures to beat the current emergency in the automobile industry.

## **2.9.Covid -19 Impact on Banking Sector**

There is a little observational proof inspecting the effect of reasonable financial guidelines on bank-specific qualities. In addition, the discoveries of the examinations are conflicting and uncertain in view of this relationship in various arising and created economies (Amina and Fedhila, 2018; Ejaz, 2019). There are not many investigations that address this relationship during COVID-19 pandemic Awad et al., (2020) given some wide approach sees on the proper administrative and administrative reaction to manage the effect of COVID-19 by recommending that banks ought to work usefully with impacted borrowers and bosses and urge credit to the organizations that are the most impacted by the pandemic. To relieve monetary gamble and keep up with incomes, the bosses and controllers suggested that banks reconstruct their construction, assist the borrowers with meeting their misfortunes, make bookkeeping rule unwinding for borrowers, and contact applicable foundations and offices to modify certainty to stay away from market vulnerability. in Pakistan, Ejaz (2019) analyzed the effect of administrative capital on banking monetary strength and rivalry. Monetary strength was estimated by utilizing the statement of financial position given by State Bank of Pakistan (SBP) and utilized Lerner index ("1" and "0") to measure. The investigation discovered that there is measurably no critical connection between the factors as higher capital requirements would prompt gathering of valuing force of the banks while influencing rivalry in process that causes financial unsteadiness.

## **2.10. Over All View**

To study the impact of covid-19 is very crucial as Pakistan is very close to Chinese boarder and significant trade between Pakistan and China which increase the chances of virus spread as this virus can live on almost every subject matter. Researchers believed that SARS and COVID-19 are almost belongs to same family as both are acute respiratory syndrome but actually, they differ significantly, so any of the studies which are done on the impact on economy due to highly

infectious viruses which cause epidemic or pandemic are relatable to study the effect of COVID-19 on economy.

Existing writing focuses on sickness related expenses of clinical or financial impacts emerging from illness as well as mortality because of sickness. The SARS epidemic which was originated from Hong Kong was studied by (Siu and Wong) and found out about the economic impact which was done by the virus was on end customers or consumers, local business was affected were severely affected along with exports. Tourism industry and Airline industries are also a little bit related and got effected negatively.

The economies did not face any kind of import issues but in case of COVID-19 supplies were damaged because China is the major exporter of goods in the world with 2,498,570 million worth of exports to 215 countries in world.

(Ichev and Marin) explored whether the geographics of data dispersed by the 2014 Ebola flare-up, combined with far and wide media coverages, has impacted US resource costs. The outcomes show that the impact on stock costs is for the most part negative, while media coverages for the event going on has the significant impact on stock market local trading and effect can be clearly seen in small and more volatile stocks and the industries which are emerging or less stable.

In stock markets, any kind of news or declared emergencies can cause the chaos in investors due to their less ability to take the right economic decisions at right time which ultimately results in more effects on stock prices. In previous event studies which were done by (Fama et al) (1969) can be taken as references to find about whether such events effect the stock prices or not. In past year's Event study approach has been widely used especially in the field of Finance and accounting and this method has been widely accepted and practiced gradually and become the one of the best research methods in the field of business. This method is very efficient to study the impact or any terrorist activity, natural disaster, political situation and any kind of financial crisis on the stock market returns.

(Klara, Henderson and Raines) studied the effect of Chernobyl nuclear explosion, (Nikken et al 2008) studied the effect of 9/11 attacks and found that there was a significant negative impact on almost all economies but soon they recovered.

(Goh and Law, 2002) found that the avian Flu which was originated from Hong Kong had negative impact on tourisms. (Mctier, Tse, and Wald, 2011) studies the impact of high flu rate on US stock market as found the negative trend in market. Chen, (Jang and Kim (2000) studies the long-term effect happened due to SARS on the 4 main stock markets in Asia and China and the result was significant.

(Ayittey, 2020) predicted that if covid is not tackled in time and measures are not taken in the minimum time China can lose 62 billion dollars in the first quarter while the world can face the \$280 billion in the same period. As a general health pandemic of worldwide concern, COVID-19 has a tremendous negative effect on the global economy (Iyke 2020a. Mei pang, 2018) studies the relationship between the SARS epidemic and financial markets in Asia. Naryan and phan studies the countries responses due Covid-19 pandemic. (Sobieralski 2020) the effect on aviation industry and employment due to COVID-19



Many stock prices in countries like Pakistan have fallen to very low level but gradually covered due to smart lockdown approaches. Many stock prices in China from different sectors faced the historically low-level prices. Economies like USA also faced the negative 4 nose dives. Controlling and risk prevention measure are negatively affected due to covid 19 impact (Guidolin, Hensen and Pedion 2019). Nonetheless, there is restricted industry-level examination on the impact of COVID-19 on stock costs in the existing literature, and due to different limitations in different industries (iyke, reiley 2020). Qin et al studied the Impact of pandemic on the most valuable sector in world economy which is oil industry.

### **2.11. Stock Market Impact**

Delisle estimated that the over cost of SARS epidemic was nearly equal to financial crisis of Asia, with the estimates of 2 trillion dollars of equity and 3 trillion-dollar value in GDP. (Nippani and Washer) studied the effect of SARA virus countries near to Hong Kong such as China, Indonesia, Singapore Philippines, Vietnam and Thailand and result was that the SARS only effected the stock markets of China and Vietnam. (Del and Paltrinieri) studied the 78 mutual equity funds for African continent and closely observed the monthly returns from 2006-2015 and found out that Ebola and Arab spring and negatively affected the fund performance. (Macciocch) studied the impact of Zika virus on Brazilian economy, Argentina economy and Mexican economy and found out that the Brazilian economy faced the negative impact while the other two economies stayed relatively stable. (MingHsaiang cehn, shawan and gon) analyzed the impact of SARS outbreak on Taiwan hotel industry. The cumulative mean returns for Taiwanese hotel stock were negative on the day after the outbreak indicating negative impact of SARS on industry.

Stock markets are usually linked and interdependent. Renowned researchers have discovered the cross-market correlations in the crisis period. (Chaing, Nam and Li) studied the daily returns of nine different markets from Asia from 1996-2003 and identified that there was significant co relation between countries which were taken as a sample. Sun and ho found the South Asian countries like Thailand. Vietnam are linked with China.

## Chapter # 3

### 3. Methodology

#### 3.1. Research methodology

Research methodology is the blue print of the research which is carried out. It identifies the techniques and procedures which are carried out to obtain and analyze the results from data for the given research topic. The methodology for research therefore has to do with how a researcher plans their study in a manner that permits them to get legitimate and solid outcomes and meet their research targets.

#### 3.2. Research strategy

The main goal of the study is to identify how the covid-19 hit the stock market in Pakistan. In detail this research will help to identify that how the 9 main sectors were hit by covid and what were there stock prices from the time period of one year before covid lockdown was announced to one year after the lock down announcement. The closing price of stocks were taken sector wise to study the overall effect on single sector.

#### 3.3. Research Technique

This technique which is used in this research study is quantitative based and it involves the analysis which is done by collecting secondary data for the trusted websites like [www.psx.com](http://www.psx.com). Mathematical and numerical techniques are used to obtain the result and quantitative observations were obtained. (<https://www.psx.com.pk/>)

#### 3.4. Unit Of Analysis

Unit of analysis is the item we observe, collect and analyze while trying to learn something about unit of analysis, for this study unit of analysis is different sectors (companies in each sector) of Pakistan stock exchange.

Over all 9 sectors were selected and 5 biggest companies by their market share were selected

#### 3.5. Method of analysis

Event study method is used to analyze the data in this research. The event study method is an empirical statistical method the find out the relationship between stock prices and any event occurred (Dyckman, Philbrick and Stephan, 1984). According to the event study approach if there is efficient market hypothesis then the effect of the particular event will be shown in stock prices (Stankeviciene and Akelaitis 2014 proved through evidence that how stock markets and individual stock prices shows reaction to particular event. Campbell and Lo (1997) suggested that minimum range should be of 120 days prior to the event accrued, which is enough from base line of the normal returns

**Abnormal returns** (difference between actual return and expected return) are used to find the effect of the particular event during test period on the data which is observed. To find it out first we need to first we need to calculate daily return of stock prices which is calculated by below given formula;

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where,

R<sub>t</sub>= Daily return on stock on a single day

P<sub>t</sub>= Closing price of stock

P<sub>t-1</sub> = Previous day closing price of stock

The expected return or the predicted return is calculated by simple regression. In a statistical model, a market model is the model in which stock prices are related to index returns of the market. The simple regression is used with stock returns and market returns.

$$E(R)_t = \alpha + \beta R_{ASX}$$

E(R)<sub>t</sub> = Expected/Predicted Return

Alpha = intercept

Beta = slope

R<sub>ASX</sub>= Index return for the day

In a statistical model, the market models relate market index returns to return on shares. Abnormal returns are used in this study to find out the impact of event on stocks. Abnormal return is calculated by below given formula

$$AR_t = R_t - E(R)_t$$

AR<sub>t</sub>= Abnormal Return

R<sub>t</sub>=Actual Return on the date

E(R)<sub>t</sub> Expected Return

Usually in most studies the abnormal returns are combined/accumulated for the selected time period , by doing this the uncertainties in the event date will be catered off influence on stock price would be more accurate, CAR(cumulative abnormal returns) are calculated as shown below

$$CAR_{t;t+k}^i = \sum AR_{i,t+k}$$

The average of the CAR is calculated by below formula

$$\bar{CAR}_{t;t+k} = \frac{1}{N} \sum_{n=1}^N CAR_{t,i+k}^n$$

A test statistic is a measure of the likelihood that the actual value of the parameter is not zero. Therefore, employing statistical hypothesis for significance, this study finds that the t statistic is larger than the critical value, meaning that the results are significant. The equation is shown below:

$$t_{CAR} = \frac{\bar{CAR}_{it}}{\frac{\sigma_{CAR}}{\sqrt{n}}}$$

t car = t value for CAR

it = Each category CAR

n = number of observations

## Chapter # 4

### 4. Results and Findings

#### Abnormal Return for 5 Days Window Results

Event Day	Automobile	Oil And Gas	Cement	Pharma	Transport	Tech And Comm	Fertilizers	Food	Banking
-5	-0.08%	2.85%	2.39%	2.71%	1.00%	77.90%	0.66%	0.31%	-2.44%
-4	1.09%	0.40%	3.62%	5.08%	1.79%	36.17%	4.00%	1.30%	-2.98%
-3	1.55%	2.33%	2.65%	1.81%	1.15%	80.23%	-1.14%	-0.11%	-2.34%
-2	-11.96%*	-3.30%*	-4.51%	1.32%	-2.33%	0.77%	1.95%	-4.31%*	2.33%
-1	-0.69%	-1.21%	-5.83%	-1.31%*	-3.39%	-35.75%	0.65%	6.65%	1.45%
<b>0</b>	<b>-4.31%*</b>	<b>2.32%*</b>	<b>2.73%</b>	<b>3.13%</b>	<b>-12.36%*</b>	<b>80.94%*</b>	<b>-0.47%</b>	<b>-1.87%</b>	<b>-7.36%</b>
1	-3.17%*	-0.13%	1.35%	1.92%	-2.51%*	53.45%	4.23%*	-16.10%	-2.45%
2	-1.74%	-1.63%	-3.66%*	-0.47%	3.76%	-14.20%	2.56%*	-0.36%	-1.03%
3	2.92%*	-2.21%*	1.09%	-2.93%*	-2.85%*	-49.06%*	1.74%	-1.80%*	0.37%
4	4.50%	0.02%	6.33%*	1.77%	0.14%	-3.73%	1.61%	-1.20%	-0.56%
5	-5.71%*	-0.29%	-0.77%	-2.05%*	-0.94%	-63.71%*	0.04%	-1.22%	3.46%*

The Automobile sector showed abnormal behavior in 5 Days window, at Day 5 value is -5.71% which is highly significant while at day -1 value is -0.69%, while day of announcement value suddenly falls to -4.31% from -0.69% which is due to lock down announcement as the transport is closed and the factories also shuts down so the prices suddenly fall.

The oil and gas sector showed a highly significant downturn in its index because after one day of announcement they stock prices did not fall much due to minimal information in market but on day 3 after announcement value is -2.21% which is due to less demand in Petroleum products in short term.

As the cement industry is linked with construction industry and suddenly it was not clear that what would be the scope of construction industry after this lock down so it would be a little early to discuss the effect in 5 day window, which would be later discussed in 10 days window but in 5 days window at day 2 and 5 the returns are negative which shows that this industry is also getting effected.

The Pharmaceutical sector showed significant increase on the day of lockdown announcement from negative 1.31% to 3.13% because it is obvious that the event had positive impact due to increased demand of medical equipment and medicines. On day 3 AR value is negatively significant because of lack of information in market and the supplies were getting effected.

The transport sector exhibits significantly negative AR at the day of announcement and day 3 because when lock down was imposed the transport was also shut down completely. The negative performance was due to the companies were facing shortage in passengers. The transport sector exhibits negative significant Abnormal return on date of announcement and at day 1 and day 3 due to significant loss in passengers the value was dropped from -3.39% to -12.36% within one day.

The AR of Technology and Communication was 80.23% at day -3 and fell to -49.06% at Day 3 because tech companies were not prepared like work from home strategies.

The Fertilizer sector did not show unusual returns as the lockdown mainly effected the urban areas and the demand for fertilizers are in rural area mostly.

The food sector indices do not show significant average abnormal returns before and after event date except at day one due to lockdown announcement. The food business is too high after because of quick purchasing and accumulating of food, which might comprise the principal reason prompting positive unusual return.

Banking sector in Pakistan showed significant negative returns before the covid lockdown announcements, on the day of announcement the banking sector AR was -7.36% and then it starts to recover as Pakistani people don't have any options left for safe investments except banks.

Event Day	Automobile	Oil And Gas	Cement	Pharma	Transport	Tech And Comm	Fertilizers	Food	Banking
-10	-1.87%	-0.56%	11.47%*	4.41%*	-0.28%	33.02%	-1.05%	0.35%	-1.02%
-9	0.34%	3.08%*	1.26%	1.25%	3.39%	-33.74%	0.05%	3.37%	-2.69%*
-8	1.50%	-1.60%	1.93%	2.81%*	-4.54%*	-10.18%	-1.31%	2.11%*	0.89%
-7	5.14%	1.12%	0.56%	1.41%	0.13%	49.81%	0.57%	-11.72%	-0.95%
-6	-1.48%	-0.31%	-1.08%	3.26%*	-6.88%*	-15.62%	-2.04%*	2.29%*	0.45%
-5	-0.08%	2.85%*	2.39%*	2.71%	1.00%	77.90%	0.66%	0.31%	-2.44%*
-4	1.09%	0.40%	3.62%	5.08%*	1.79%	36.17%*	4.00%*	1.30%	-2.98%*
-3	1.55%	2.33%	2.65%	1.81%	1.15%	80.23%*	-1.14%	-0.11%	-2.34%
-2	-11.96%*	-3.30%*	-4.51%*	1.32%	-2.33%*	0.77%	1.95%	-4.31%*	2.33%
-1	-0.69%	-1.21%	-5.83%*	-1.31%	-3.39%*	-35.75%*	0.65%	6.65%*	1.45%
<b>0</b>	<b>-4.31%*</b>	<b>2.32%*</b>	<b>2.73%*</b>	<b>3.13%*</b>	<b>-12.36%*</b>	<b>80.94%*</b>	<b>-0.47%</b>	<b>-1.87%</b>	<b>-7.36%*</b>
1	-3.17%*	-0.13%	1.35%	1.92%	-2.51%*	53.45%	4.23%*	-16.1%*	-2.45%*
2	-1.74%	-1.63%	-3.66%*	-0.47%	3.76%	-14.20%	2.56%*	-0.36%	-1.03%
3	2.92%*	-2.21%*	1.09%	-2.93%*	-2.85%*	-49.06%*	1.74%	-1.80%	0.37%
4	4.50%*	0.02%	6.33%*	1.77%	0.14%	-3.73%	1.61%	-1.20%	-0.56%
5	-5.71%*	-0.29%	-0.77%	-2.05%*	-0.94%	-63.71%*	0.04%	-1.22%	3.46%*
6	-1.39%	0.79%	2.52%*	0.66%	-2.66%*	-21.18%*	0.50%	2.01%*	2.37%*
7	9.62%	1.35%	0.93%	-2.38%*	-2.62%*	-66.92%*	0.16%	0.55%	-1.02%
8	-2.60%*	2.36%*	2.52%*	-4.79%*	2.93%	-47.32%*	-1.92%*	-0.37%	0.80%
9	1.00%	-0.02%	1.54%	0.83%	0.00%	33.21%	-1.13%	0.22%	-1.69%
10	0.10%	-1.49%	1.51%	-1.04%	-0.03%	-40.30%	0.19%	1.07%	-0.10%

#### Abnormal Return For 10 Days Window Results

Over all down fall is observed in Automobile sector in Pakistan, because Pakistan imports the parts mostly from China and assemble them here in Pakistan and there was shortage of Supplies due to trade restrictions from China. On Day 1,5,6,8 the Abnormal returns were negative.

On day of the announcement the Oil and Gas sector index showed significant positive Abnormal return because people were stocking up Petroleum products and then the index starts to fall. However, the abnormal return value was significantly positive on 8<sup>th</sup> day.

After the lockdown announcement, almost all major sectors showed the significant abnormal returns before and after event same as for Cement sector as its abnormal return value on 10 days before announcement was 11.47% and 10 days after the value of abnormal return is 1.51% which shows the significant loss. Significant positive returns are also observed in cement sector because raw material which is used in manufacturing is produced locally and they have to full fill the committed orders.

Pharmaceutical industry in Pakistan fears the shortage the shortage in imported raw materials which are needed for various medicines to tackle the Covid-19 Patients, secondly fake medicines were introduced in markets which lead to significant loss as it is cleared form day 3,7 and 8.

Transport sector is one of the most effected sectors from covid, due to decline in their revenues, as all people are in their homes and there are travelling restrictions. The Abnormal Return values at day 3,6 and 7 are significantly negative ( -2.85%, -2.66%, -2.62% respectively)

For telecommunication and technology sector Human resource is there most important asset

According to the survey conducted by P@SHA during march-25-28, 2020 in which more than 200 companies participated, 68 % companies were uncertain that how to retain their skilled workforce which would increase to 89% over next three months. The Abnormal returns values at day 6,7,8(-21.18%, -66.92, -47.32%) are highly negative significant due to prevailing issues.

Fertilizer sector was not hit badly as most of the factories are in rural and the end customer also belongs to rural areas and the travel restrictions were not imposed with such severity as compared to rural areas.

Food industry belongs to FMCG's (fast moving consumer goods industry) which requires supplies to retailers, shop keepers and other stores on daily basis, food industry before the official lockdown announcement were doing positive returns on most of the days, but as soon as lock down was imposed the local supplies were disturbed which eventually effected the revenues.

The reason behind the survival of banking sectors in Pakistan due to lock down is the state bank of Pakistan rules promoting the online transactions as the waived of all the charges on online transactions, extension of deadlines on foreign loan payments, and reducing the mark-up rate to 5% for long term financing facility for all sectors. The abnormal return values at day 5 and 6 showed significantly positive returns.

### Abnormal Return For 30 Days Window Results

Event Day	Automobile	Oil And Gas	Cement	Pharma	Transport	Tech And Comm	Fertilizers	Food	Banking
-30	3.09%	-1.00%	-0.99%	-0.52%	-0.23%	18.79%	0.37%	-0.45%	0.87%
-29	0.83%	0.04%	-0.67%	0.47%	-0.88%	-25.35%	0.20%	4.91%	-0.70%
-28	-0.07%	0.77%	-0.46%	-1.35%	1.92%	-36.50%	-1.09%	1.94%	-0.20%
-27	-0.96%	-0.67%	1.11%	-0.53%	-2.57%	-9.77%	-0.30%	0.87%	-0.77%
-26	0.04%	-0.42%	-0.29%	-1.27%	-1.07%	-4.49%	0.84%	1.85%	-0.38%
-25	-0.21%	1.03%	0.34%	0.62%	2.57%	-9.53%	1.35%	1.63%	0.39%
-24	-2.10%	-0.95%	-0.62%	-0.14%	1.22%	-7.52%	-0.32%	2.18%	1.26%
-23	2.41%	-0.91%	-0.55%	-0.54%	1.31%	-20.72%	0.91%	0.39%	-0.46%
-22	-1.73%	-0.53%	0.24%	-0.37%	0.71%	-8.15%	-0.66%	1.35%	0.27%
-21	-0.03%	0.93%	0.99%	-0.13%	0.61%	-0.57%	-0.54%	0.77%	-0.89%
-20	-4.66%	0.32%	-0.58%	0.55%	-0.67%	26.78%	-0.49%	0.73%	-0.06%
-19	1.13%	1.34%	2.75%	-0.06%	1.06%	0.22%	0.43%	0.78%	0.04%
-18	-2.60%	-0.28%	1.35%	1.60%	-0.03%	7.06%	-0.82%	-0.01%	0.71%
-17	1.10%	-1.80%	-1.76%	0.97%	-1.83%	-4.25%	1.24%	-3.69%	0.08%
-16	0.91%	0.41%	4.24%	2.02%	-1.24%	-5.52%	1.04%	1.30%	0.62%
-15	1.60%	-1.15%	1.68%	0.15%	-0.07%	-56.50%	-2.13%	1.22%	0.60%
-14	-0.71%	1.16%	3.16%	1.14%	-3.20%	-5.18%	1.52%	-0.63%	-1.50%
-13	-1.11%	-1.03%	4.73%	-0.30%	2.25%	-2.76%	-0.06%	-0.78%	0.46%

-12	1.02%	-0.49%	4.14%	1.68%	-0.72%	-23.82%	-0.75%	0.28%	-0.02%
-11	-0.23%	0.92%	1.70%	-0.58%	0.48%	29.37%	-0.16%	-4.35%	-2.54%
-10	-1.87%	-0.56%	11.47%	2.00%	-0.28%	33.02%	-1.05%	0.35%	-1.02%
-9	0.34%	3.08%	1.26%	4.41%	3.39%	-33.74%	0.05%	3.37%	-2.69%
-8	1.50%	-1.60%	1.93%	1.25%	-4.54%	-10.18%	-1.31%	2.11%	0.89%
-7	5.14%	1.12%	0.56%	2.81%	0.13%	49.81%	0.57%	11.72%	-0.95%
-6	-1.48%	-0.31%	-1.08%	1.41%	-6.88%	-15.62%	-2.04%	2.29%	0.45%
-5	-0.08%	2.85%	2.39%	3.26%	1.00%	77.90%	0.66%	0.31%	-2.44%
-4	1.09%	0.40%	3.62%	2.71%	1.79%	36.17%	4.00%	1.30%	-2.98%
-3	1.55%	2.33%	2.65%	5.08%	1.15%	80.23%	-1.14%	-0.11%	-2.34%
-2	-11.96%	-3.30%	-4.51%	1.81%	-2.33%	0.77%	1.95%	-4.31%	2.33%
-1	-0.69%	-1.21%	-5.83%	1.32%	-3.39%	-35.75%	0.65%	6.65%	1.45%
0	<b>-4.31%</b>	<b>2.32%</b>	<b>2.73%</b>	<b>-1.31%</b>	<b>-12.36%</b>	<b>80.94%</b>	<b>-0.47%</b>	<b>-1.87%</b>	<b>-7.36%</b>
1	-3.17%	-0.13%	1.35%	3.13%	-2.51%	53.45%	4.23%	16.10%	-2.45%
2	-1.74%	-1.63%	-3.66%	1.92%	3.76%	-14.20%	2.56%	-0.36%	-1.03%
3	2.92%	-2.21%	1.09%	-0.47%	-2.85%	-49.06%	1.74%	-1.80%	0.37%
4	4.50%	0.02%	6.33%	-2.93%	0.14%	-3.73%	1.61%	-1.20%	-0.56%
5	-5.71%	-0.29%	-0.77%	1.77%	-0.94%	-63.71%	0.04%	-1.22%	3.46%
6	-1.39%	0.79%	2.52%	-2.05%	-2.66%	-21.18%	0.50%	2.01%	2.37%
7	9.62%	1.35%	0.93%	0.66%	-2.62%	-66.92%	0.16%	0.55%	-1.02%
8	-2.60%	2.36%	2.52%	-2.38%	2.93%	-47.32%	-1.92%	-0.37%	0.80%
9	1.00%	-0.02%	1.54%	-4.79%	0.00%	33.21%	-1.13%	0.22%	-1.69%
10	0.10%	-1.49%	1.51%	0.83%	-0.03%	-40.30%	0.19%	1.07%	-0.10%
11	-1.33%	0.12%	1.69%	-1.04%	-0.39%	2.59%	-0.22%	1.20%	1.70%
12	0.02%	-0.04%	-1.87%	-0.21%	1.89%	-46.14%	-0.95%	-1.66%	-1.07%
13	3.17%	0.09%	-0.85%	-1.02%	-2.70%	-14.13%	-0.21%	2.48%	-0.51%
14	0.01%	-0.16%	1.39%	1.49%	-0.03%	29.37%	-1.50%	0.88%	0.04%
15	3.05%	-0.60%	2.05%	1.59%	-0.05%	-18.06%	2.04%	-0.66%	-3.93%
16	3.63%	-0.59%	1.21%	2.99%	-0.38%	-6.74%	0.33%	2.48%	-1.99%
17	-0.33%	0.13%	-1.75%	1.79%	2.73%	-11.72%	-0.90%	0.89%	-0.71%
18	3.25%	-0.18%	0.23%	2.98%	-2.96%	-67.74%	0.52%	-0.18%	-1.77%
19	-0.75%	-0.89%	3.32%	0.21%	-2.26%	-20.96%	-0.14%	4.31%	-1.38%
20	-2.24%	-1.62%	7.19%	-1.03%	2.61%	32.63%	-1.04%	0.52%	-0.14%
21	-2.19%	-0.12%	1.73%	-0.18%	-2.82%	-1.42%	-0.71%	-1.40%	-1.36%
22	2.10%	2.71%	-5.30%	0.24%	-3.65%	-27.82%	0.73%	-1.38%	-1.27%
23	0.91%	-1.35%	-2.14%	0.28%	0.90%	-12.36%	0.56%	-1.01%	-0.52%
24	-1.75%	-0.06%	-1.42%	-1.40%	1.61%	8.12%	2.46%	-0.58%	0.54%
25	1.45%	-0.17%	3.54%	0.04%	-2.81%	-20.97%	-1.53%	-0.48%	-0.48%
26	2.17%	-1.41%	-0.47%	1.05%	-1.07%	-33.83%	-1.90%	-0.42%	0.52%
27	-1.30%	1.43%	-2.87%	-0.84%	-2.53%	-50.25%	-1.23%	1.22%	0.65%
28	4.04%	4.13%	-1.04%	-0.80%	-0.56%	7.88%	0.20%	-0.77%	-0.83%
29	-1.09%	2.89%	-2.01%	0.67%	-4.84%	-8.96%	1.10%	0.32%	-0.05%
30	1.97%	2.88%	-0.97%	-0.07%	-3.15%	6.65%	3.45%	-0.77%	-0.78%

### Abnormal Return For 60 Days Window Results

Event Day	Automobile	Oil And	Cement	Pharma	Transport	Tech And	Fertilizers	Food	Banking
-----------	------------	---------	--------	--------	-----------	----------	-------------	------	---------



	Gas					Comm			
-60	2.06%	-1.14%	-0.59%	0.63%	0.09%	2.09%	0.14%	-0.63%	0.04%
-59	2.98%	1.22%	-1.11%	-0.98%	6.87%	-12.39%	-1.80%	-2.20%	1.49%
-58	-0.86%	1.42%	-0.07%	-0.88%	-2.56%	-3.43%	-1.23%	-0.49%	-0.35%
-57	1.44%	-2.16%	0.34%	0.60%	-1.65%	-29.04%	0.42%	2.56%	-0.86%
-56	-2.61%	-1.43%	0.32%	0.07%	0.87%	-44.47%	-0.01%	-1.22%	-0.94%
-55	-1.57%	0.88%	-1.57%	0.30%	4.24%	-4.60%	2.31%	-2.25%	0.61%
-54	-0.66%	-0.35%	-1.70%	-1.35%	1.99%	20.79%	0.17%	0.18%	0.05%
-53	0.51%	0.24%	-0.84%	-1.15%	7.82%	-29.24%	-1.31%	-2.43%	-0.63%
-52	0.76%	-0.69%	-0.83%	-0.35%	1.89%	3.42%	-0.49%	-13.72%	-0.44%
-51	-1.57%	-0.01%	-2.20%	-0.59%	1.91%	-44.33%	-0.30%	0.23%	0.10%
-50	-1.51%	-0.42%	-1.36%	-0.92%	1.09%	-32.92%	0.31%	-1.04%	-0.10%
-49	1.23%	0.30%	0.03%	-0.69%	0.22%	-7.83%	-0.88%	-1.34%	1.70%
-48	-1.35%	-0.76%	0.62%	0.19%	2.53%	-8.95%	0.59%	-2.89%	0.21%
-47	-1.86%	-0.39%	-0.47%	-0.37%	-1.88%	-2.70%	-0.57%	0.44%	0.55%
-46	-1.59%	-0.01%	-0.55%	-0.26%	-2.55%	-12.65%	0.89%	-1.83%	-0.27%
-45	0.01%	0.09%	1.10%	0.78%	-3.67%	-12.52%	0.24%	0.50%	0.09%
-44	0.97%	0.17%	0.73%	-0.35%	-2.90%	2.50%	-0.30%	1.39%	0.75%
-43	-0.33%	-0.43%	0.23%	0.00%	0.77%	-5.17%	0.32%	0.66%	-0.36%
-42	-0.91%	-1.87%	-0.82%	0.35%	-0.93%	-9.11%	-0.61%	-0.46%	0.02%
-41	-1.85%	-0.45%	-0.05%	0.06%	-2.19%	-7.26%	1.20%	2.53%	-0.06%
-40	-0.42%	-0.34%	0.99%	1.16%	-0.20%	-15.00%	-0.53%	0.26%	-0.26%
-39	3.20%	0.02%	0.64%	-0.22%	3.26%	-6.05%	0.82%	-0.53%	0.70%
-38	-1.69%	0.25%	2.55%	-0.17%	1.83%	-1.86%	-0.14%	4.05%	0.19%
-37	-2.49%	0.91%	3.00%	0.98%	-1.54%	2.33%	-1.07%	-1.65%	-0.35%
-36	-1.38%	0.27%	1.00%	0.53%	4.28%	-9.63%	0.58%	-1.48%	0.25%
-35	-1.49%	0.20%	-0.71%	1.19%	1.20%	1.02%	-0.21%	2.56%	-0.73%
-34	-1.19%	0.22%	0.47%	1.35%	2.16%	30.04%	-0.73%	-0.55%	-0.46%
-33	-1.60%	-0.24%	0.84%	0.09%	-1.13%	-25.97%	0.13%	2.55%	0.13%
-32	0.55%	0.00%	1.68%	0.83%	-0.64%	-4.96%	-0.15%	0.12%	0.30%
-31	-1.46%	-0.77%	-1.38%	-0.52%	-1.18%	8.04%	0.00%	-0.20%	1.47%
-30	3.09%	-1.00%	-0.99%	0.47%	-0.23%	18.79%	0.37%	-0.45%	0.87%
-29	0.83%	0.04%	-0.67%	-1.35%	-0.88%	-25.35%	0.20%	4.91%	-0.70%
-28	-0.07%	0.77%	-0.46%	-0.53%	1.92%	-36.50%	-1.09%	1.94%	-0.20%
-27	-0.96%	-0.67%	1.11%	-1.27%	-2.57%	-9.77%	-0.30%	0.87%	-0.77%
-26	0.04%	-0.42%	-0.29%	0.62%	-1.07%	-4.49%	0.84%	1.85%	-0.38%
-25	-0.21%	1.03%	0.34%	-0.14%	2.57%	-9.53%	1.35%	1.63%	0.39%
-24	-2.10%	-0.95%	-0.62%	-0.54%	1.22%	-7.52%	-0.32%	2.18%	1.26%
-23	2.41%	-0.91%	-0.55%	-0.37%	1.31%	-20.72%	0.91%	0.39%	-0.46%
-22	-1.73%	-0.53%	0.24%	-0.13%	0.71%	-8.15%	-0.66%	1.35%	0.27%
-21	-0.03%	0.93%	0.99%	0.55%	0.61%	-0.57%	-0.54%	0.77%	-0.89%
-20	-4.66%	0.32%	-0.58%	-0.06%	-0.67%	26.78%	-0.49%	0.73%	-0.06%
-19	1.13%	1.34%	2.75%	1.60%	1.06%	0.22%	0.43%	0.78%	0.04%
-18	-2.60%	-0.28%	1.35%	0.97%	-0.03%	7.06%	-0.82%	-0.01%	0.71%
-17	1.10%	-1.80%	-1.76%	2.02%	-1.83%	-4.25%	1.24%	-3.69%	0.08%

-16	0.91%	0.41%	4.24%	0.15%	-1.24%	-5.52%	1.04%	1.30%	0.62%
-15	1.60%	-1.15%	1.68%	1.14%	-0.07%	-56.50%	-2.13%	1.22%	0.60%
-14	-0.71%	1.16%	3.16%	-0.30%	-3.20%	-5.18%	1.52%	-0.63%	-1.50%
-13	-1.11%	-1.03%	4.73%	1.68%	2.25%	-2.76%	-0.06%	-0.78%	0.46%
-12	1.02%	-0.49%	4.14%	-0.58%	-0.72%	-23.82%	-0.75%	0.28%	-0.02%
-11	-0.23%	0.92%	1.70%	2.00%	0.48%	29.37%	-0.16%	-4.35%	-2.54%
-10	-1.87%	-0.56%	11.47%	4.41%	-0.28%	33.02%	-1.05%	0.35%	-1.02%
-9	0.34%	3.08%	1.26%	1.25%	3.39%	-33.74%	0.05%	3.37%	-2.69%
-8	1.50%	-1.60%	1.93%	2.81%	-4.54%	-10.18%	-1.31%	2.11%	0.89%
-7	5.14%	1.12%	0.56%	1.41%	0.13%	49.81%	0.57%	-11.72%	-0.95%
-6	-1.48%	-0.31%	-1.08%	3.26%	-6.88%	-15.62%	-2.04%	2.29%	0.45%
-5	-0.08%	2.85%	2.39%	2.71%	1.00%	77.90%	0.66%	0.31%	-2.44%
-4	1.09%	0.40%	3.62%	5.08%	1.79%	36.17%	4.00%	1.30%	-2.98%
-3	1.55%	2.33%	2.65%	1.81%	1.15%	80.23%	-1.14%	-0.11%	-2.34%
-2	-11.96%	-3.30%	-4.51%	1.32%	-2.33%	0.77%	1.95%	-4.31%	2.33%
-1	-0.69%	-1.21%	-5.83%	-1.31%	-3.39%	-35.75%	0.65%	6.65%	1.45%
0	-4.31%	2.32%	2.73%	3.13%	-12.36%	80.94%	-0.47%	-1.87%	-7.36%
1	-3.17%	-0.13%	1.35%	1.92%	-2.51%	53.45%	4.23%	-16.10%	-2.45%
2	-1.74%	-1.63%	-3.66%	-0.47%	3.76%	-14.20%	2.56%	-0.36%	-1.03%
3	2.92%	-2.21%	1.09%	-2.93%	-2.85%	-49.06%	1.74%	-1.80%	0.37%
4	4.50%	0.02%	6.33%	1.77%	0.14%	-3.73%	1.61%	-1.20%	-0.56%
5	-5.71%	-0.29%	-0.77%	-2.05%	-0.94%	-63.71%	0.04%	-1.22%	3.46%
6	-1.39%	0.79%	2.52%	0.66%	-2.66%	-21.18%	0.50%	2.01%	2.37%
7	9.62%	1.35%	0.93%	-2.38%	-2.62%	-66.92%	0.16%	0.55%	-1.02%
8	-2.60%	2.36%	2.52%	-4.79%	2.93%	-47.32%	-1.92%	-0.37%	0.80%
9	1.00%	-0.02%	1.54%	0.83%	0.00%	33.21%	-1.13%	0.22%	-1.69%
10	0.10%	-1.49%	1.51%	-1.04%	-0.03%	-40.30%	0.19%	1.07%	-0.10%
11	-1.33%	0.12%	1.69%	-0.21%	-0.39%	2.59%	-0.22%	1.20%	1.70%
12	0.02%	-0.04%	-1.87%	-1.02%	1.89%	-46.14%	-0.95%	-1.66%	-1.07%
13	3.17%	0.09%	-0.85%	1.49%	-2.70%	-14.13%	-0.21%	2.48%	-0.51%
14	0.01%	-0.16%	1.39%	1.59%	-0.03%	29.37%	-1.50%	0.88%	0.04%
15	3.05%	-0.60%	2.05%	2.99%	-0.05%	-18.06%	2.04%	-0.66%	-3.93%
16	3.63%	-0.59%	1.21%	1.79%	-0.38%	-6.74%	0.33%	2.48%	-1.99%
17	-0.33%	0.13%	-1.75%	2.98%	2.73%	-11.72%	-0.90%	0.89%	-0.71%
18	3.25%	-0.18%	0.23%	0.21%	-2.96%	-67.74%	0.52%	-0.18%	-1.77%
19	-0.75%	-0.89%	3.32%	-1.03%	-2.26%	-20.96%	-0.14%	4.31%	-1.38%
20	-2.24%	-1.62%	7.19%	-0.18%	2.61%	32.63%	-1.04%	0.52%	-0.14%
21	-2.19%	-0.12%	1.73%	0.24%	-2.82%	-1.42%	-0.71%	-1.40%	-1.36%
22	2.10%	2.71%	-5.30%	0.28%	-3.65%	-27.82%	0.73%	-1.38%	-1.27%
23	0.91%	-1.35%	-2.14%	-1.40%	0.90%	-12.36%	0.56%	-1.01%	-0.52%
24	-1.75%	-0.06%	-1.42%	0.04%	1.61%	8.12%	2.46%	-0.58%	0.54%
25	1.45%	-0.17%	3.54%	1.05%	-2.81%	-20.97%	-1.53%	-0.48%	-0.48%
26	2.17%	-1.41%	-0.47%	-0.84%	-1.07%	-33.83%	-1.90%	-0.42%	0.52%
27	-1.30%	1.43%	-2.87%	-0.80%	-2.53%	-50.25%	-1.23%	1.22%	0.65%
28	4.04%	4.13%	-1.04%	0.67%	-0.56%	7.88%	0.20%	-0.77%	-0.83%
29	-1.09%	2.89%	-2.01%	-0.07%	-4.84%	-8.96%	1.10%	0.32%	-0.05%

30	1.97%	2.88%	-0.97%	-0.37%	-3.15%	2.24%	3.45%	-0.77%	-0.78%
31	3.85%	0.31%	0.99%	0.88%	3.75%	5.32%	0.76%	-1.24%	-0.16%
32	-2.58%	2.77%	-0.81%	0.82%	-1.90%	-4.56%	1.77%	-1.22%	-0.85%
33	-0.73%	0.25%	-1.26%	4.91%	1.00%	-2.19%	-0.71%	-0.30%	-1.45%
34	3.58%	-2.93%	4.86%	-0.01%	-1.10%	-24.51%	-0.57%	1.93%	0.70%
35	3.83%	-0.17%	-0.34%	2.15%	-1.80%	-10.41%	-0.25%	0.99%	-1.59%
36	1.42%	1.50%	-1.93%	1.46%	1.52%	-6.78%	2.02%	1.23%	-0.17%
37	1.45%	-1.31%	1.31%	0.55%	2.04%	-15.09%	1.69%	-0.67%	0.48%
38	2.24%	-0.08%	-0.93%	1.48%	-0.11%	2.51%	0.43%	-1.48%	-1.18%
39	0.46%	0.42%	-3.18%	2.93%	1.34%	-27.65%	-0.62%	0.99%	2.40%
40	1.72%	0.31%	0.69%	-2.27%	1.56%	-3.86%	0.49%	-1.03%	0.02%
41	2.31%	-1.96%	0.50%	-0.71%	3.33%	-3.29%	-1.35%	-0.01%	2.04%
42	3.20%	1.62%	0.84%	2.31%	-0.51%	1.09%	-0.52%	-0.07%	-0.52%
43	-0.50%	-1.21%	-0.92%	-1.27%	-3.47%	-18.69%	0.46%	-0.77%	-0.55%
44	-0.49%	-0.47%	-1.88%	-0.15%	-1.61%	-15.09%	-0.06%	1.23%	0.02%
45	-2.11%	-1.28%	-0.76%	-4.10%	2.61%	-28.02%	-0.59%	-0.51%	-1.15%
46	2.34%	1.18%	-1.33%	-0.39%	-3.23%	-11.74%	-0.21%	-0.33%	0.55%
47	0.03%	1.06%	0.26%	1.08%	-0.96%	1.40%	-0.52%	-1.40%	3.26%
48	0.20%	-0.69%	1.89%	3.97%	-4.80%	-15.89%	-0.55%	0.62%	-0.01%
49	0.14%	-0.29%	-1.15%	1.27%	-2.16%	-23.06%	0.69%	1.25%	-0.38%
50	-0.99%	-0.68%	-1.57%	1.10%	-1.47%	-10.74%	-0.34%	-0.23%	0.71%
51	-0.05%	-1.16%	-1.36%	0.44%	-1.61%	-20.14%	-1.09%	-0.49%	0.34%
52	0.74%	-0.81%	0.40%	-0.16%	4.21%	-11.58%	-0.04%	0.47%	1.07%
53	0.39%	0.92%	1.96%	0.32%	-1.28%	10.42%	0.35%	-0.95%	-0.94%
54	0.09%	0.08%	0.56%	2.98%	-2.33%	23.50%	-0.07%	-1.01%	-0.09%
55	0.48%	0.27%	-0.17%	0.03%	-1.20%	-14.11%	0.44%	-0.50%	0.52%
56	0.27%	0.18%	-0.64%	-0.28%	0.70%	-1.86%	1.03%	-0.26%	-0.04%
57	-0.12%	-0.53%	0.77%	2.63%	-0.60%	5.82%	0.62%	-1.58%	-0.42%
58	-2.65%	-1.16%	0.19%	-0.68%	-0.35%	-6.08%	0.22%	2.04%	0.15%
59	-0.99%	-2.30%	-2.82%	-2.55%	-1.72%	-24.89%	0.67%	-0.27%	-1.84%
60	1.32%	1.78%	-0.16%	-0.72%	1.57%	-21.06%	-0.36%	1.87%	0.75%

#### Average Abnormal Returns For 60 Days Windows

	Automobile	Oil And Gas	Cement	Pharma	Transport	Tech And Comm	Fertilizers	Food	Banking
0, -60	-0.45%	-0.04%	0.59%	0.53%	0.43%	-2.21%	0.01%	0.13%	-2.30%
0, 60	0.54%	0.06%	0.19%	0.33%	-0.76%	-10.96%	0.20%	-0.26%	-0.31%

The above result is calculated to find out the long-term impact of lockdown on Pakistan stock exchange sectoral performance. These averages are calculated by using 60 trading days respective to sectors.

As it is clear from results that there is not much variation in long term except Communication sector, while other sectors like Automobile, Oil and Gas, Pharma and fertilizers were able to recover due to smart lock down policies of government while Tech sector still showed negative results due to shortfall in Human resources.

### Cumulative Abnormal Returns Results

	Automobile	Oil And Gas	Cement	Pharma	Transport	Tech And Comm	Fertilizers	Food	Banking
(0, -60)	-0.2775***	-0.0243	0.3602***	0.3213***	-0.0271	-1.3468	0.0021	-0.0746	-0.1402
(0, -30)	-0.1305	0.0285	0.3571***	0.3182***	0.2271***	1.2517	0.0244	0.0866	-0.1688
(0, -20)	-0.1433	0.0454	0.3661***	0.3452***	0.2631***	2.2898***	0.0167	-0.0677	-0.1627
(0, -10)	-0.1078	0.0513	0.1520	0.2589***	0.2231***	2.6355***	0.0186	-0.0162	-0.1467
(0, -5)	-0.1009	0.0340	0.0105	0.1275	-0.1414	2.4026***	0.0565	0.0197	-0.1134
(0,5)	-0.0752	-0.0192	0.0708	0.0137	-0.1475	0.0368	0.0972	-0.2254	-0.0755
(0,10)	-0.0079	0.0107	0.1610	-0.0535	-0.1712	-1.3882	0.0752	-0.1905	-0.0720
(0,20)	0.0770	-0.0267	0.2872***	0.0326	-0.1866	-2.5971***	0.0544	-0.0879	-0.1697
(0,30)	0.1401	0.0825	0.1777	0.0206	0.3760***	-3.9708***	0.0857	-0.1404	0.2056***
(0,60)	0.3289***	0.0385	0.1176	0.2009	0.4617***	-6.6829***	0.1235	-0.1576	-0.1890

\*\*\* shows the event window is significant at 5 % confidence interval

## Chapter # 5

### 5. Conclusion and Recommendation

#### 5.1. Conclusion

Coronavirus affects worldwide stock markets, with no sector getting away from its impacts. Financial stakeholders' consideration towards COVID-19 increased as the infection spread and political measures taken every day. Our outcomes show that the elevated consideration of financial stakeholder, adversely affected Pakistan (and worldwide) stock returns also, assists with making sense of the heterogeneity of profits across stock markets. Relatively talking, a few areas seem gaining from the expanded consideration, with outperformance focused in the areas probably going to benefit from the emergency and related spending by families and government.

This research will help to study the impact of Corona virus on Pakistan stock market sectors that is represented by companies in each sector with biggest market capitalizations, in order to find out the Abnormal Returns due to this virus surge, the dates which are selected have the chronological effect from the date when 1<sup>st</sup> case was reported in Wuhan city in China till the proper announcements of lock downs. Event study method is used in this study to find the impact of covid-19 lockdown announcement on 9 selected sectors in listed in Pakistan Stock Exchange. The results and findings found in this study basically shows the investor confidence towards the official government lockdown announcement in Pakistan and the great change in Abnormal Returns are observed in almost all sectors. The date on which lockdown was announced three sectors cement, pharmaceuticals and Technology & Communication showed the positive returns at significant levels. Sectors like automobile and transports showed negative return at the day of announcements as transport sector surely have to face negative consequences after lockdown announcement.

This finding of this Study will definitely help the stock market investors, private and government organizations, stakeholders and companies' management to take better decisions in future as they already have learned that how stock market and how each sector will behave in any future pandemic which surely help them to take precautionary measures in advance. This study captured the quick responses of the market and was able to capture the fluctuations due to the official lockdown announcement on the nine major sectors indices in Pakistan Stock Exchange. This study will definitely help the government of Pakistan to build such policies to support the vulnerable sectors in any future pandemic or any event which significantly affects the financial performance of Pakistan Stock Exchange, this study will act as initial guideline for government of Pakistan. As the aftermath of lockdown due to covid is discussed in this study, so this study will help the other researchers who want to do researches on the long-term effect of covid on Stock exchange and the financial performance of different sectors which will help to build better policies for specified sectors, and researches on other markets can also be done to identify the effects of pandemic of such magnitude.

## **5.2.Recommendations**

- The government of Pakistan should offer the assistance and guidance to the industries which are getting effect from the lockdown.
- There should be policy formation for the special interest free loan and tax deductions for those sectors which are experiencing negative abnormal return rates.
- Researches should be done with the help of government to minimize the fear which investors possess.
- Government should impose smart lock downs instead of complete shut downs and industries should be working with lesser capacity.
- Proper information should be given to financial investors through the platform of government to ease down their sense of unrest.
- Relief should be given to small industries so the exports are encouraged instead of imports.

## References

- Duca, Marco Lo, and Tuomas A. Peltonen. 2013. Assessing systemic risks and predicting systemic events. *Journal of Banking & Finance* 37: 2183–95.
- De Bandt, Olivier, and Philipp Hartmann. 2000. Systemic Risk: A Survey. European Central Bank Working Paper No. 35. Available online: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp035.pdf> (accessed on 1 April 2021).
- Maiti, Moinak, Darko Vuković, Amrit Mukherjee, Pavan D. Paikarao, and Janardan Krishna Yadav. 2021. Advanced data integration in banking, financial, and insurance software in the age of COVID-19. *Software: Practice and Experience*
- Maiti, Moinak, Darko Vuković, Amrit Mukherjee, Pavan D. Paikarao, and Janardan Krishna Yadav. 2021. Advanced data integration in banking, financial, and insurance software in the age of COVID-19. *Software: Practice and Experience*
- Moskowitz, T. J., and M. Grinblatt. 1999. Do Industries Explain Momentum? *The Journal of Finance* 54 (4):1249–90. doi:10.1111/0022-1082.00146
- Lee, W. Y., C. X. Jiang, and D. C. Indro. 2002. Stock market volatility, excess returns, and the role of investor sentiment. *Journal of Banking & Finance* 26 (12):2277–99. doi:10.1016/S0378-4266(01)00202-3
- Baker, S.R., Bloom, N., Davis, S.J., Kost, K., Sammon, M. and Viratyosin, T. (2020), “The unprecedented stock market reaction to COVID-19”, *The Review of Asset Pricing Studies*, Vol. 10, pp. 742-758.
- Baker, S.R., Bloom, N., Davis, S.J., Kost, K., Sammon, M. and Viratyosin, T. (2020), “The unprecedented stock market reaction to COVID-19”, *The Review of Asset Pricing Studies*, Vol. 10, pp. 742-758.
- (Pinglin He, Yulong Sun, Ying Zhang & Tao Li)  
<https://www.tandfonline.com/doi/full/10.1080/1540496X.2020.1785865>
- Al-Awadhi, A. M., Al-Saifi, K., Al-Awadhi, A., & Alhamadi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27, 1–13.
- Liu, H. Y., Manzoor, A., Wang, C. Y., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries. Stock markets response. *International Journal of Environmental Research and Public Health*, 17 (8), 1–19
- Anusakumar, S. V., Ali, R., & Hooy, C. . W. (2017). The effect of investor sentiment on stock returns: Insight from emerging Asian markets. *Asian Academy of Management Journal of Accounting and Finance*, 13(1), 159–178
- Hopkins, J. (2020, June 23). COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Retrieved from John Hopkins University of Medicine: <https://coronavirus.jhu.edu/map.html>

WHO. (2020). Coronavirus disease 2019 (COVID-19) Situation Report – 51. World Health Organization. Retrieved from [https://www.who.int/docs/defaultsource/coronaviruse/situation-reports/20200311-sitrep-51-covid-19.pdf?sfvrsn=1ba62e57\\_10](https://www.who.int/docs/defaultsource/coronaviruse/situation-reports/20200311-sitrep-51-covid-19.pdf?sfvrsn=1ba62e57_10)

(Md. Mahmudul Alam, Haitian Wei, Abu N. M. Wahid)  
<https://onlinelibrary.wiley.com/doi/10.1111/1467-8454.12215>

"Q&A on coronaviruses (COVID-19)", World Health Organization, [online] Available: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>.  
Show in Context Google Scholar

"Impact Of Global Food Supply Chains During a Global Pandemic", AGRITECTURE, 2020, [online] Available: <https://www.agritecture.com/blog/2020/5/7/impact-of-global-food-supply-chains-during-a-global-pandemic>.  
Show in Context Google Scholar

D. Loske, "The impact of COVID-19 on transport volume and freight capacity dynamics: An empirical analysis in German food retail logistics", *Transportation Research Interdisciplinary Perspectives*, vol. 6, pp. 100165, 2020.  
Show in Context CrossRef Google Scholar

"WMU researchers study food consumption behavior during COVID-19 pandemic", Western Michigan University, Mar 2020, [online] Available: <https://wmich.edu/news/2020/03/58581>.  
Show in Context Google Scholar

D. D. P. Farias and F. F. D. Araújo, "Will COVID-19 affect food supply in distribution centers of Brazilian regions affected by the pandemic?", *Trends in Food Science & Technology*, 2020.  
Show in Context Google Scholar

Benzie, D. (1997). Information technology capability: Is our definition wide of the mark. In *Information technology* (pp. 55–61). Boston, MA: Springer. [Google Scholar]

Javaid, M. , Haleem, A. , Vaishya, R. , Bahl, S. , Suman, R. , & Vaish, A. (2020). Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, 14(4), 419–422. [PMC free article] [PubMed] [Google Scholar]

Cembureau, The European Cement Association. 2020. "Cementing the European Green Deal: Reaching Climate Neutrality Along the Cement and Concrete Value Chain by 2050." The European Cement Association, Brussels.

CEMEX. 2020. "2020 First Quarter Results." Presentation. CemNet. 2020. "Impact of COVID-19 on the Cement Industry." Live Webinar presented at the CemTech International Cement Conference, April 15. <https://www.cemnet.com/Conference/Item/185258/impact-of-covid-19-on-the-cement-industry-live-webinar.html>

CW Research. 2020. "Global Cement Volume Forecast Report: 1H2020." CW Group monitoring report, March.

Czigler, Thomas, Sebastian Reiter, Patrick Schulze, and Ken Somers. 2020. "Laying the Foundation for Zero-Carbon Cement." McKinsey & Company article, May 14.

R. Rawashdeh, P. Maxwell The evolution and prospects of the phosphate industry *Mineral Economics*, 24 (2011), pp. 15-27, 10.1007/S13563-011-0003-8

Cooper, R. Lombardi, D. Boardman, C. Carliell-Marquet The future distribution and production of global phosphate rock reserves *Resour. Conserv. Recycl.*, 57 (2011), pp. 78-86, 10.1016/J.RESCONREC.2011.09.009

P. Seetharaman Business models shifts: impact of covid-19 *Int. J. Inf. Manag.*, 54 (2020), p. 102173, 10.1016/j.ijinfomgt.2020.102173

(Boughton et al., 2020 Boughton, D., Goeb, J., Lambrecht, I., Mather, D., & Headey, D. D. (2020). Strengthening smallholder agriculture is essential to defend food and nutrition security and rural livelihoods in Myanmar against the COVID-19 threat: Elements for a proactive response. *The International Food Policy Research Institute*, 2, 1–11. <https://doi.org/10.2499/p15738coll2.133687> [Google Scholar]; Hobbs, 2020; Petetin, 2020; Timilsina. et al., 2020)

Rajamohan, S., Sathish, A., & Rahman, A. (2020). Impact of COVID-19 on stock price of NSE in automobile sector. *The International Journal of Advanced Multidisciplinary Research*, 7(7), 24– 29

Yan, Y., et al. (2020). An empirical study on consumer automobile purchase intentions influenced by COVID-19. Available at SSRN 3593963

Amina, Z., & Fedhila, H. (2018). Regulation and Bank Performance. *The Journal of American Business Review*, 6(2), 15–22. [Google Scholar]

Ejaz, M. (2019). Regulatory capital regime, competition and stability: The case study of banking sector of Pakistan. *Competition and stability: The Case Study of Banking Sector of Pakistan* (June 30, 2019). [Google Scholar]



# tHESIS

---

## ORIGINALITY REPORT

---

**11** %

SIMILARITY INDEX

**4** %

INTERNET SOURCES

**5** %

PUBLICATIONS

**7** %

STUDENT PAPERS

---

## MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

---

2%

★ Md. Mahmudul Alam, Haitian Wei, Abu N. M. Wahid. " - 19 outbreak and sectoral performance of the Australian stock market: An event study analysis ", Australian Economic Papers, 2020

Publication

---

Exclude quotes  On

Exclude bibliography  On

Exclude matches  < 6 words