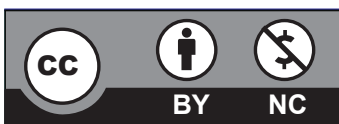


## Nepalese Stock Market Volatility During Catastrophic Events (Covid-19)

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### ABSTRACT

This study investigates the impact of the COVID-19 pandemic on the stock market in Nepal. While prior research has shown the significant impact of catastrophic events on stock market volatility, there is a lack of research specifically examining the Nepalese context. The study aims to explore the effects of the pandemic on stock market performance and volatility, with a focus on the government's response to the situation. Descriptive statistics, correlation analysis, and hypothesis testing are used to analyze the data and assess stock market volatility, return, and overall performance. The findings suggest that the short-term impact of the COVID-19 outbreak and government policy measures had a significant and adverse effect on stock market volatility, return, and overall performance. This study contributes to the understanding of the Nepalese stock market dynamics during the COVID-19 pandemic and provides insights for investors and policymakers.

**Keywords:** stock market, catastrophic event (Covid-19), Volatility, Volume of trade

## Introduction

According to the data, the outbreak of the COVID-19 pandemic in early 2020 posed a significant risk to the health as well as the economic spectrum of almost all countries around the globe. Stock markets around the world reacted to the Covid-19 pandemic with unprecedented volatility and strong negative returns. In order to control the pandemic, the government took various measures like social distancing, lockdowns, restrictions on cross-border entry, a ban on gatherings, and restrictions on mobility which caused a huge loss in the economy. The outbreak of the Covid-19 pandemic also led to a loss in the financial market (Iyke & Ho, 2021).

Fama (2020) introduced the efficient market hypothesis (EMH), which believed that the securities markets were entirely capable of reflecting stock-specific and stock market data as a whole. Hence, any new information in the market related to a pandemic, dividends, mergers, acquisitions, natural disasters, etc. is immediately responded to by the market.

In the case of Nepal, the Nepalese stock market's response to unexpected political events using the technique of event analysis showed the Nepalese stock market may be inferred to be inefficient, but there is a strong linkage between political uncertainty and the common stock returns generation (Dangol, 2008). Along with the theory, it aims to identify the degree of market efficiency measured by the speed at which stock prices are adjusted for catastrophic events showing that in the context of Nepal, the Catastrophic event (the 2015 earthquake) had no robust effect on the stock market's returns in general. The unanticipated news had a significant negative impact on stock returns only for the event window (0, +10) and it has shown that the stock market in Nepal is semi-strongly inefficient (Karki, 2020). So, in the future to neutralize the impact of the catastrophic event arising it is crucial to identify the response of the stock market to different catastrophic events.

Thus, the study aims to analyze, and research the impact on stock market volatility during catastrophic events (COVID-19) by volume traded and closing index value of NEPSE and to compare the stock market volatility of NEPSE before and after the global covid-19 pandemic.

The outbreak of the COVID-19 pandemic in early 2020 posed a significant risk to the health as well as the economic spectrum of almost all countries around the globe (Hamal & Gautam, 2021). Stock markets around the world reacted to the Covid-19 pandemic with unprecedented volatility and strong negative returns (Ashraf, 2020). However, this market reaction was not uniform across countries and varied to a large extent (World Bank, 2020).

Market volatility is the frequency and magnitude of price movements, up or down and the bigger and more frequent the price swings, the more volatile the market is said to be. Large changes tend to be followed by large changes and small changes tend to be followed by small changes, which means that volatility clustering is observed in financial returns (G.C., 2009). But, data (Karki, 2020) showed that the Catastrophic event (2015 earthquake) had no robust effect on the stock market returns in the Nepalese stock market. However, in the case of the COVID-19 pandemic, the short-term impact of the COVID-19 outbreak and government policy measures had a significant and adverse impact on stock market volatility, return, and overall performance (Hamal & Gautam, 2021).

## Problem Statement

Much research has been conducted regarding the impact of Catastrophic Events, such as the COVID-19 pandemic, on stock market volatility. Studies have shown that stock markets around the world experienced unprecedented volatility and negative returns in response to the pandemic. The government implemented various measures to control the spread of the virus, including social distancing, lockdowns, and mobility restrictions, which had a significant impact on the economy and financial markets. However, there is a lack of

research specifically examining the impact of the COVID-19 pandemic on stock market volatility in Nepal.

Many studies have examined the impact of catastrophic events on the stock market, but there is a lack of consensus on the findings. Gao et al. (2021), Bora & Basistha (2021), and Chaudhary et al. (2020) found that COVID-19 had a significant leverage on stock market volatility. However, research conducted in Nepal by Karki (2020), Dangol (2008), and Hamal & Gautam (2021) has found that catastrophic events only have a short-term effect on the volatility of NEPSE. Moreover, the only study on the impact of COVID-19 on stock volatility conducted by Hamal & Gautam (2021) used the Systematic Literature Review method without the use of the NEPSE data. Therefore, there is a need for further research in the case of stock market volatility during catastrophic events in Nepal.

Previous studies have explored the relationship between stock market volatility and catastrophic events in different contexts. For example, research conducted in Nepal analyzed the stock market's response to political events and found a strong link between political uncertainty and stock returns. Another study examined the effects of catastrophic events, such as the 2015 earthquake, on the Nepalese stock market and found no significant impact on stock returns. These findings suggest that the Nepalese stock market may exhibit inefficiencies in response to catastrophic events.

In light of these findings, it is important to further investigate the impact of the COVID-19 pandemic on stock market volatility in Nepal. This study aims to analyze and research the effects of the pandemic on stock market volatility by examining the volume traded and closing index value of the Nepal Stock Exchange (NEPSE). Additionally, the study will compare the stock market volatility of NEPSE before and after the global COVID-19 pandemic.

By conducting this research, we hope to contribute to the understanding of the relationship between

catastrophic events and stock market volatility in Nepal. The findings of this study will provide valuable insights for investors, practitioners, and policymakers in navigating the challenges posed by the COVID-19 pandemic and future catastrophic events.

## Objectives

1. To compare the stock market volatility of NEPSE before and after the global covid-19 pandemic
2. To analyze whether volume traded and the closing index value of NEPSE is linked with COVID-19 Cases

## Literature Review

Hamal, J. B., and Gautam, R. R. (2021) investigated the impact of the COVID-19 pandemic on stock market volatility and performance, as well as the impact of government policy response toward COVID-19 on the stock market. Findings show that the short-term impact of the COVID-19 outbreak and government policy measures had a significant and adverse impact on stock market volatility, return, and overall performance.

Bora, D., and Basistha, D. (2021) analyzed the impact of COVID-19 on the two important stock markets of India and made a comparison of stock price return in the pre-COVID-19 and during the COVID-19 situation. Findings reveal that the stock market in India has experienced higher volatility during the pandemic period and found that the return on the indices is higher in the pre-COVID-19 period than during COVID-19.

Dangol, J. (2008) analyzed the Nepalese stock market's response to unexpected political events using the technique of event analysis. Findings show that the Nepalese stock market may be inferred to be inefficient, but there is a strong linkage between political uncertainty and common stock returns generation.

Karki, D. (2020) aims to identify the degree of market efficiency measured by the speed at which stock prices are adjusted for catastrophic events.

Findings showed that in the context of Nepal, the catastrophic event (2015 earthquake) had no robust effect on the stock market's returns in general. The unanticipated news had a significant negative impact on stock returns only for the event window (0, +10), and it has shown that the stock market in Nepal is semi-strongly inefficient.

Chaudhary, R., Bakhshi, P., and Gupta, H. (2020) studied the impact of COVID-19 on the performance of the Indian stock market concerning two composite indices and eight sectoral indices of the Bombay Stock Exchange. The results disclose that all indices show lower mean daily return and negative returns in the crisis period as compared to the pre-crisis five-month period and have higher negative skewness and higher positive kurtosis of returns, which make the market seem more volatile.

Gao, X., Ren, Y., and Umar, M. (2021) investigated the extent to which COVID-19 drives the stock market volatility and compared it in the case of China and the USA. The findings show that COVID-19 had a significant leverage on the volatility of both China and the USA, and when the stock market volatility was high, COVID-19 imposed a stronger effect on the stock market volatility.

### **Nepalese Stock Market Volatility During COVID-19**

Dangol, J. (2008) analyzed the Nepalese stock market's response to unexpected political events using the technique of event analysis. Findings show that the Nepalese stock market may be inferred to be inefficient, but there is a strong linkage between political uncertainty and common stock returns generation.

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(0, +10), and it has shown that the stock market in Nepal is semi-strongly inefficient.

### **Hypotheses**

- H1: NEPSE Volatility before and after the COVID-19 Pandemic are different
- H2: Volume traded is linked with Cumulative infected cases during the COVID-19 pandemic
- H3: Closing Index value is linked with Cumulative infected cases during the COVID-19 pandemic

### **Methodology**

The analysis of this research is mainly quantitative in nature, and a secondary data collection method is used for data collection and analysis. The unit of analysis is the Nepalese capital market, and the study focuses on the relationship between COVID-19 cases and NEPSE. The independent variable is the weekly cumulative reported COVID-19 cases in Nepal, and the dependent variables are the weekly volatility, closing value of the index, and volume traded. The data for both variables are taken from 23rd January 2020 (the first case announcement in Nepal) to 23rd January 2022, for a total period of two years consisting of 83 weekly trading periods before and after COVID-19.

To analyze the relationship between COVID-19 cases and Nepalese stock market volatility, the weekly cumulative measure of COVID-19 cases is derived from the official website of the Ministry of Health and Population of Nepal, and the index values are taken from the Sharesansar website. The variables mentioned above are used to calculate the volatility, volume of trade, and closing index value.

### **Variable Proposition**

**COVID-19 cases:** The study uses the cumulative total weekly (Friday to Thursday) COVID-19 cases in Nepal from the Ministry of Health and Population.

**Volatility:** The study uses the high and low values of the weekly NEPSE index to calculate the volatility.

**Volume of trade:** The study uses the weekly total trading volume of market open days.

**Closing index value:** The study takes the NEPSE

index value on the last trading day of the week.

Mishra, A.K., & Aithal, P. S., (2021 a&b), Mishra.A.K., (2019), Mishra, A.K., & Aithal, P. S. (2021) and Sah,S., Mishra,A.K.,(2020) have been adopting similar research methods in case of Nepal. The similar approach of methods applied in research gives validity for the methodology.

**Table 1: Descriptive Statistics of Pre & Post Covid-19 Volatility**

Statistics	Volatility_BC	Volatility_AC
Mean	12.7102	120.5547
Std. Error of Mean	0.84635	6.96429
Median	11.14	113.3
Std. Deviation	7.89426	63.44767
Variance	62.319	4025.607
Skewness	1.495	0.593
Kurtosis	2.298	-0.343
Range	34.98	249.49
Minimum	3.46	19.77
Maximum	38.44	269.26

Table 1 depicts a descriptive analysis of NEPSE volatility for a period of four years with a total of 83-trading weeks after Covid-19 and 83 trading weeks before Covid-19. The average volatility has increased from 12.7 before the pandemic to 120.55 after, which indicates that the index was more spread out after the pandemic started. Moreover, the range of volatility has increased drastically from 34.98 to 249.49 which indicates higher risk in the market.

**Table 2: Paired Sample T-test**

Volatility_BC & AC	
t	-15.259
df	82
Sig.(2-tailed) <.001	<.001
Mean Difference	-107.57036
Std. Error Difference	7.049

Since, P-value is  $0.001 < 0.05$ , we reject the null hypothesis ( $H_0$ ). This indicates that volatility and risk in the Nepalese stock market has changed substantially before and after the COVID-19 pandemic. This supports our hypothesis  $H_1$ .

**Table 3: Descriptive Statistics of The First Six Months**

Statistics	CC_S1	CLOSING_S1	VOL_S1
Mean	930.17	1346.60	7.56
Median	0.00	1329.54	7.05
Std. Deviation	3190.51	114.99	5.76
Skewness	3.46	1.40	0.57
Kurtosis	12	2.64	0.00
Minimum	0	1201.57	0.11
Maximum	11061	1632.17	18.63
Sum	11162		90.75

Table 3 shows the descriptive analysis of the first half of first year of Covid-19 where the average weekly traded volume was Rs.7.56 billion, and the average weekly Covid-19 cases amounted to 930.17 which ensued the total cumulative cases over 6 months to 11,162 and the total volume of transactions to Rs. 90.75 billion. Furthermore, it can be observed that skewness is 3.46 indicating the presence of clear outliers in cumulative weekly Covid-19 cases and the distribution is right skewed, meaning that the majority of high no. of cases occurred in the final weeks of the period.

**Table 4: Descriptive Statistics of Second Six Months**

Statistics	CC_S2	CLOSING_S2	VOL_S2
Mean	8582.80	1728.96	16.88
Median	6695	1597.94	12.02
Std. Deviation	7125.72	322.74	11.67
Skewness	1.09	0.78	0.92
Kurtosis	0.34	-0.59	-0.30
Minimum	813	1331.27	4.94
Maximum	26764	2425.29	44.46
Sum	257484		506.50

Table 4 shows the descriptive analysis of the second half of first year of Covid-19 where the average weekly traded volume has increased to Rs. 16.88 billion along with the average weekly recorded cases increasing to 8582.80. During this period, it can be observed that the total cases has increased significantly to 257484 and the total volume surmounted to Rs. 506.5 billion. Moreover, the standard deviation of weekly closing index value is 322.74 indicating that the risk has increased significantly in this period.

**Table 5: Descriptive Statistics of Third six Months**

Statistics	CC_S3	CLOSING_S3	VOL_S3
Mean	16399.32	2672.11	40.57
Median	2448	2636.91	35.89
Std. Deviation	21549.41	155.18	18.13
Skewness	1.18	0.43	1.10
Kurtosis	-0.09	-0.92	0.93
Minimum	555	2458.49	13.86
Maximum	62611	2968.42	83.14
Sum	360785		892.45

Table 5 shows the descriptive analysis of the first half of second year of Covid-19 where the average weekly trading volume has further increased significantly to Rs. 40.57 billion and the average weekly covid-19 cases have also increased to 16,399.32. With this, the total volume traded has increased further to Rs. 892.45 billion with the total cumulative cases has risen to 360785. However, the standard deviation of closing index value has decreased to 155.18, which indicates that risk has decreased significantly in the market.

**Table 6: Descriptive Statistics of Fourth six Months**

Statistics	CC_S4	CLOSING_S4	VOL_S4
Mean	8611.27	2794.65	33.09
Median	6536	2797.28	28.12
Std. Deviation	8927.67	211.78	20.77
Skewness	2.77	0.09	1.57
Kurtosis	10.67	-0.52	2.46
Minimum	1488	2376.74	8.14
Maximum	46472	3180.86	97.60
Sum	258338		992.66

Table 6 shows the descriptive statistics of the second half of the second year of Covid-19 where the average weekly trading volume has decreased compared to the previous six months to Rs. 33.09 billion followed by a decrease in the average weekly cumulative cases to 8611.27. Moreover, the total recorded covid-19 cases have also decreased to 258,338. In addition to this, the average closing index value has continued to increase to 2794.65 over the past periods.

**Table 7: Correlation Table for Cumulative Cases, Volume and Closing Index**

		Cumul		CLOSIN		CLOSIN		CLOSI		CLOSIN
		ative	VOL	G	VOL	G	VOL	NG	VOL G	
		Cases	S1	S1	S2	S2	S3	S3	S4	S4
	Pearson	1	-0.337	-0.252	-0.097	-0.036	.523**	.584**	.465	.508**
Cumula								**		
Correlation										
tive	Sig.		0.283	0.43	0.609	0.849	0.013	0.004	0.01	0.004
Cases	(2-tailed)									
	N	30	30	30	30	30	30	30	30	30

Table 7 shows the correlation analysis between cumulative cases, volume, and index closing value where the P-value is greater than 0.05 in the first year (first and second six months) of COVID-19, indicating that they have a strong negative association. However, the P-value for the second year (third and fourth six months) of COVID-19 is less than 0.05, indicating that they have a significant positive correlation. Hence, it can signify that people's fear of COVID-19 has changed considerably over time as they became more accustomed to the pandemic and its lifestyle. Furthermore, the interest rates and the country's

economic situation also had a major role in this outcome.

### Conclusion

In conclusion, this study aimed to compare the Nepalese stock market's volatility before and after the COVID-19 pandemic. The findings of this study show that there was a significant change in volatility in the Nepal Stock Exchange before and after COVID-19. The results support the findings of Bora & Basistha (2021), which found that the stock market in India experienced higher volatility during the pandemic period, and the return on the indices

was higher in the pre-COVID-19 period than in the COVID-19 period. Furthermore, the study found a strong negative correlation between the cumulative cases, volume, and index closing value in COVID-19's first year, which supports the findings of Hamal & Gautam (2021) and shows that the COVID-19 outbreak and government policy measures had a significant and negative impact on stock market volatility, return, and overall performance in the short term. However, there was a significant positive correlation for the second year of COVID-19, which partially aligns with the findings of Karki (2020) and Dangol (2008), which found that the Nepalese Stock Market was inefficient.

Therefore, it is suggested that risk-averse investors should not opt to invest during catastrophic events because of the high risk (volatility) in the market present during this time. Furthermore, if the holding period is short-term (less than one year), then the chances of loss are significantly higher, so investing in a longer horizon might be beneficial. However, other economic policies introduced during this period might also have played a significant role in the acquired outcomes, which need to be further analyzed.

### Authors Note

We are International BBA Program students at Kathmandu College of Management (KCM) Gwarko-16, Lalitpur Nepal. This article is based on our academic research report that we submitted to the institution to meet the requirement in marketing research for the sixth semester. We'd like to express our gratitude to Mr. Ritesh Thakur for reviewing and mentoring us through the development of this report.

### References

Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*, 54, 101249.  
<https://doi.org/10.1016/j.ribaf.2020.101249>

- Bora, D., & Basistha, D. (2021). The outbreak of COVID-19 pandemic and its impact on stock market volatility: Evidence from a worst-affected economy. *Journal of Public Affairs*, 21(4). <https://doi.org/10.1002/pa.2623>
- Chaudhary, R., Bakhshi, P., & Gupta, H. (2020). Volatility in International Stock Markets: An Empirical Study during COVID-19. *Journal of Risk and Financial Management*, 13(9), 208. <https://doi.org/10.3390/jrfm13090208>
- Dangol, J. (2008). Unanticipated political events and stock returns An event study. *Economic Review*, 20, 86–110.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383-417
- G.C., S. B. (2009). Volatility Analysis of Nepalese Stock Market. *Journal of Nepalese Business Studies*, 5(1), 76–84. <https://doi.org/10.3126/jnbs.v5i1.2085>
- Gao, X., Ren, Y., & Umar, M. (2021). To what extent does COVID-19 drive stock market
- Hamal, J. B., & Gautam, R. R. (2021). Capital Market Response to COVID-19 Pandemic – A Systematic Review on Stock Volatility and Performance. *Marsyangdi Journal*, 27–49. <https://doi.org/10.3126/mj.v2i1.39963>
- Iyke, B. N., & Ho, S.-Y. (2021). Exchange rate exposure in the South African stock market before and during the COVID-19 pandemic. *Finance Research Letters*, 43, 102000. <https://doi.org/10.1016/j.frl.2021.102000>
- Karki, D. (2020). The Stock Market's Reaction to Unanticipated Catastrophic Event. *Journal of Business and Social Sciences Research*, 5(2), 77–90. <https://doi.org/10.3126/jbssr.v5i2.35236>
- Mishra, A.K., & Aithal, P. S. (2021). Factors and Features Influencing Laptop Users of Kathmandu, Nepal. *International Journal of Case Studies in Business, IT, and Education(IJCSBE)*, 5(1), 132-142. <http://doi.org/10.5281/zenodo.4940049>.

- Mishra, A.K., & Aithal, P. S., (2021). Analysis of Laptop Users Purchase Behaviour: A Case of Kathmandu, Nepal. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 6(1), 226-240.  
<https://doi.org/10.5281/zenodo.4966112>.
- Mishra.A.K., (2019). Influential Marketings Strategies by the Cement Industries. *International Journal of Research - Granthaalayah*, 7(10), 155-173.  
<https://zenodo.org/record/3522195>
- Nepalese stock market volatility during catastrophic event (Covid-19) volatility? A comparison between the U.S. and China. *Economic Research-Ekonomska Istraživanja*, 1–21.  
<https://doi.org/10.1080/1331677X.2021.1906730>
- Sah, Shayam and Mishra, A.K., Consumers' Brand Preference of Laptop in Kathmandu, Nepal (2020). *Nolegein Journal of Consumer Behavior & Market Research* ISSN: 2581-4400 Vol. 3: Issue 2.  
<https://ssrn.com/abstract=3858284>
- World Bank. (2020). *Global Economic Prospects*, June 2020. Washington, DC: World Bank.  
<https://doi.org/10.1596/978-1-4648-1553-9>

