Effects of Global Pandemic on Stock Liquidity in the Nigerian Stock Exchange

S. K. Fakunmoju[1], C. A. Jegede[2], A. Oluchi[3]

Abstract: Stock liquidity plays important role in investors' participation in any nation's stock market. The global pandemic shock created market illiquidity especially among developing stock market like Nigerian stock market. However, the emergence of global pandemic via COVID-19 pandemic triggered declined market turnover (stock liquidity) which in turn created lack of confidence among stock investors in Nigeria. This study therefore examined the effects of Global pandemic on stock liquidity in the Nigerian stock market using stock turnover and COVID-19 pandemic as measure for stock market liquidity and global pandemic. The study employed expost facto research design using weekly data of both corona-virus pandemic and stock market turnover within the period of March, 2019 to February, 2022. The study employed Exponential GARCH (EGARCH) model and found a considerable negative consequence of Global Pandemic (Covid-19) on stock liquidity, implying that corona-virus pandemic has brought bad information (bad news) which deteriorate the liquidity in the stock exchange market. The study concluded that COVID-19 pandemic shock reduces stock liquidity in Nigerian stock exchange market. The study however recommended that government should put in place more palliative policies such as tax incentive and lowest interest rate on loan to individual and institutional investors which will cushion effect of COVID-19 pandemic and increase investors' participation in the Nigerian stock market. Also, Nigeria stock market regulators should put in place sound measures that will enhance availability of stock information so as to arouse the interest more and new investors to the Nigerian Stock Market.

Keywords*:* COVID-19 pandemic; Stock Liquidity; EGARCH; Stock Turnover

JEL Classification: F01

1. Introduction

The effects of the global pandemic (COVID-19) have orchestrated serious concerns among the academic communities and the participants of the financial markets. Owing to COVID-19 pandemic-related, hesitation and economic devastation, the worldwide financial markets have become very unpredictable (Zhang, Hu & Ji, 2020). Unceasing increase of Corona-virus unnerving favorable effects on stock returns (Al-Awadhi, Alsaifi & Al-Awadhi, 2020). Panic stemmed from COVID-19 triggered uncertainty investors' negative disposition which was significantly explained by the trend of lower market liquidity and higher trading cost (Jawad, 2021). COVID-19 as a bad news was having massive impediments in

---

[1] PhD, Department of Banking & Finance, Lagos State University, Ojo, Lagos State, Nigeria, Corresponding author: segun.fakunmoju@lasu.edu.ng.
[2] Professor, Department of Banking & Finance, Lagos State University, Ojo, Lagos State, Nigeria.
[3] PhD in progress, Department of Banking & Finance, Lagos State University, Ojo, Lagos State, Nigeria.

economic and stock market activities (Goddell, 2020). In mean time, to reduce the economic insecurity caused by the deadly disease, the macroeconomic policy providers are needed to provide quality financial packages.

On December 31, 2019, many Corona-virus cases were discovered within China. As the Corona-virus issues were slowly moved from China to world at large, a worldwide warning was issued by the World Health Organization (WHO) on January 30, 2020. The Corona-virus was proclaimed as a contagion on March 11, 2020 following the massive cases and deaths around the world. More than one billion populace were forced to pursue strict societal and market activities. The mélange of restraint led to stock liquidity drop in the emerging and developing markets (Zaremba, Aharon, Demir, Kizys & Zawadka, 2021). Corona-virus was formally discovered in Nigeria, on 27th February 2020 and a lot of cases were later discovered. The effects of Corona-virus distort Nigerian economic activities via economic lockdown of main cities on 30th March 2020 which led to financial damage on day-to-day income earners and small-medium scale investment and also investors also withdrew from the market, and the price of shares in the world and frontier markets also fell thus created stock market illiquidity (Ozili, 2020).

The worldwide stock indexes are discovered to be greatly unpredictable throughout the corona-virus period (David, Inácio & Machado, 2021). According to Haroon and Rizvi (2020) and Gubareva (2020), as the Corona-Virus increases, liquidity contrasts in the emerging stock markets and bond markets and this has raised serious anxiety among investors. To evaluate the likely effect of global pandemic via COVID-19 on the Nigerian stock market and economy, it is of immense significance not to beam spotlight merely on the epidemiological report of the disease but also its effects on the stock market liquidity. Also, uncertainties of COVID-19 trend as well as stock investors may hold off on investments in the stock market thus trigger stock market illiquidity in Nigeria stock market. Therefore, this study examined the effects of the global pandemic proxied by COVID-19 pandemic on stock liquidity of Nigerian Stock markets using Exponential GARCH models. The study hypothesized that;

H_0: The Global Pandemic (Covid-19 pandemic) has no significant influence on stock liquidity (stock turnover) in the Nigerian stock market

2. Literature Review

This sub-section begins with the review of conceptual definition, theoretical framework and empirical review.

2.1. Conceptual Review

2.1.1. COVID-19 Pandemic

Considering the past, the COVID-19 pandemic has left unprecedented impact than ever. Nevertheless advancement in technical know-how has aided in reducing the increase yet, the corona-virus spread still poses a big problem (Oyeranti & Sokeye 2021). This has led to nations around the globe gathering resources, to fight a known enemy. Even with this, it continues to spread all over the world with countries recording daily deaths of about a thousand and more (World Health Organisation, 2020).

Corona-virus started in Wuhan China in December 2019 with what looked like pneumonia in that region (Shereen, Khan, Kami, Bashir & Siddique, 2020). The World Health Organisation (WHO) was notified and they found out that it was another version of the SARS-CoV virus of 2002.On 11th of February, 2020It was called the name Covid-19 by the WHO which is an acronym for Corona-Virus Disease of 2019. The disease has symptoms that looked like that of a normal cold which include: shortness of breath, loss of smell, fever, and cough. Nevertheless, the symptoms are of a higher level as it could degenerate to kidney failure, acute respiratory distress syndrome, pneumonia (Sohrabi, Alsafi, O'Neil, Khan, Kerwan, Al-Jabir, Iosifidis & Agha, 2020).

The disease is not airborne but can be spread in many ways. It is mostly spread through close contact with people (Cortegiani; Ingoglia; Ippolito; Giarratano & Einav, 2020). The most excellent means of reducing it is through regular washing of hands, staying about two meters away from someone who has the virus and cleaning-up of any infected surfaces. The impact of the deadly disease is seen in every nation of the world which made them to look for relative way of managing the pandemic before the provision of the vaccine. This study seeks to evaluate the impact of the corona-virus on the Nigeria stock market liquidity.

2.1.2. Stock Market Liquidity

Liquidity is a vital element of the stock market that guarantees the continuous functioning of the market and its deficiency brings restlessness in the market. In the words of Naik and Reddy (2021) stock market liquidity shows how the market is able to soak up large quantity of stocks at a lesser amount within a little time frame with no major effect on the price of the stock. In addition, Le and Gregorious (2020) asserted that market liquidity shows the eagerness of buyers and sellers to buy or sell certain quantities of stocks at an agreed amount within a short period of time.

The major relationship which exists between market liquidity and stock returns and the effects of changes in liquidity levels on investment decision has been emphasized by lot of research works (Naik & Reddy, 2021; Abdullahi & Fakunmoju, 2019; Nguyen, Hai & Nguyen 2021; Gherghina, Daniel & Camelia, 2020; Hung, Nguyen & Duong, 2021). This is very important to organizations because it affects the value of the firm. A lot of literary works on liquidity of the stock market has been carried out in the past but its importance to the major players of the stock market cannot be over emphasized. Increasing the investors trust and continual liquidity of the stock market in this Covid period is a major challenge of many world economies. Therefore, the period will witness a lot of dynamics in policy formulation and investment decisions.

2.2. Theoretical Framework

The study anchored on Market Microstructure Theory (MMT) (1980) propounded by Cohen, Hawawini, Maier, Schwartz, and Whitcomb in 1980. The (MMT) is a contemporary behavioural finance theory that focuses on various frictions in the stock market. These frictions could be: (i) real frictions, which are inadequacies in stock market organization that use real resources and have an equal impact on all market participants, and (ii) informational friction, which impacts wealth or returns and stock patronage among market players. In fact, frictions exist in a variety of market situations. In practice, stock market investors define market situation after taking into account market frictions such as investment barriers, stock market liquidity, regulatory friction, foreign capital control, asymmetric information, and trading costs.

According to Kahuthu (2017), market microstructure theory views market liquidity as market friction, with the depth of market liquidity component playing the key function of market-makers as liquidity providers should be compensated for owing to information, shock and price risk on stock inventories.

2.3. Empirical Review

The stock market naturally responds to some important factors in the society, such as sports events (Gopane & Mmotla, 2019), unforeseen disasters (Teitler-Regev & Tavor, 2019) and changes in politics and current affairs (Burggraf, Fendel & Huynh, 2019; Hillier & Loncan, 2019). (He, Lau, Wu, Deng &Wang 2020; Liu, Manzoor, Wang, Zhang, and Manzoor (2020). Investors responds more optimistically when the stock market is in an upwards trend than when it is in a downward trend (Liu et. al., 2020). Investors move to "safe-haven assets" at this time to cushion against risk (He *et al.,* 2020).

Amnim, Aipma, Okeke and Obiora (2021) focused on how COVID-19 Pandemic affect liquidity ratio (LR) and firms' profitability. Performance variables like: LR and Return on Equity (ROE) were used. Wilcoxon statistical test tool was used. The results of the research showed that corona-virus has great negative impact on the Liquidity and Profitability of Firms. In addition, using the Auto-regressive Distributive Lag (ARDL), Jawad (2021) and Abdullahi and Fakunmoju (2019) studied the dynamics impact between liquidity cost and stock returns as well as effect of market liquidity on stock return in Nigeria. Jawad (2021) found a significant negative relationship between liquidity cost and stock returns. While Abdullahi and Fakunmoju (2019) discovered that stock turnover, and trading volume have significant influenced on stock return in the short run while market turnover has a positive effect in the long run.

Also Hung, Nguyen & Duong (2021) and Nguyen, Hai and Nguyen (2021) investigated the effects of Corona-virus on the Vietnamese Stock Market performance of and the stock returns. The studies used a random-effect model (REM) on panel data found that there is a negative connection between daily Corona-virus confirmed cases in Vietnam and stock returns. Furthermore, Adenomon, Maijamaa, and John (2020) and Muhammad, Ghulame and Syed (2020) studied the impact of Corona-virus on the Nigeria stock exchange performance and stock market liquidity of China and four worst hit countries by the pandemic the study employed regression and GARCH results revealed that stock liquidity was negatively affected by the news of the outbreak.

Likewise Kaouther, Mohammed and Affan (2021) and Hadeel and Ghassan (2021) examined the impact of the Corona-virus pandemic on the stock liquidity of S&P 500 firms and liquidity cost of the Jordanian capital market Their study used regression method of analysis and the results showed that corona-virus and stock liquidity are negatively related. Also, Nazima, Jamshaid, Numair, Muhammad and Tanzeela (2021) and Iwedi, Kocha and Anderson (2020) studied the effects of corona-virus Outbreak on Stock Returns in Pakistan stock market and the effects of corona-virus and global trade wars on Nigeria economy. The studies employed panel regression models using Stata. Nazima, Jamshaid, Numair, Muhammad and Tanzeela (2021) found that the increase in corona-virus cases had a negative connection on daily market returns and liquidity while Iwedi, Kochaand Anderson (2020) discovered that corona virus has brought the economy of Nigerian to a standstill. Equivalently, Kocaarslan and Soytas (2021) investigated the Asymmetric Impact of Funding Liquidity Risk on Stock Portfolios volatility during the COVID-19. Their study applied the EGARCH model on the stock portfolio in order to know the level

of volatilities. The findings from the analysis indicated a strong positive relationship between portfolio volatility and funding liquidity risk.

Comparatively, Zhang, Wang, Haq and Nosheen (2021); Gherghina, Daniel and Camelia (2021) and Gylych, Paul, Ojonugwa and Yua (2020) examined the impact of Covid-19on stock volatility of China, Romania and Nigeria respectively. The studies used the GARCH model. Zhang, Wang', Haq and Nosheen (2021) asserted that no significant influenced of Corona-virus on China stock returns and volatility, Stefan, Daniel and Camelia (2021) discovered that volatility increased in the Romanian equity market during the period of the pandemic while Gylych, Paul, Ojonugwa and Yua (2020) found that Corona-virus increased stock volatility in Nigeria. Equally, Ahmed, Syed, Kamal, López-García, Ramos-Requena, and Gupta (2021) employed GMM multivariate analysis and discovered a negative relationship between COVID-19, oil charges and stock market performance. While that of gold prices was found to have a significant positive relationship.

Furthermore Hope, Saidu and Success (2020) and Mert and Omer (2020) investigated the relationship between Corona-Virus outbreak and firms' performance in Nigeria and on emerging stocks markets. The studies used regression method of analysis and the findings that Corona-Virus affected the firm performance in Nigeria and emerging stock markets negatively (Basuony; Bouaddi; Ali & EmadEldeen, 2021).

Marozva and Magwedere (2021) examined the impact of Corona-virus on Liquidity of Stock Market: An Analysis of emerging and developed economy. A panel of indices for five developed economy and five emerging economy was used. The results indicated that, stock market liquidity improved as the study found a negative significant relationship between illiquidity and corona-virus in both economies. Alade, Adeusi and Alade (2020) studied the effect of corona-virus on Nigerian stock market capitalization. Vector regression model for statistical analysis was used. The results showed that the confirmed cases of corona-virus have negative effects on the Nigerian stock market equity capitalisation,

Ayodele, Akinyede, Ojedele, and Afolabi (2021) and Peterson (2020) investigated how the Corona-Virus outbreak affect Nigerian money market, capital market, and foreign exchange market performance and effectiveness and the Nigerian economy at large. Findings from the research showed that corona-virus has a negative significant relationship with the Nigerian financial market and the economy at large. Considering past empirical reviewed, it can be seen that many studies have been conducted on the impact of corona-virus Pandemic on Liquidity and Profitability of Firms in Nigeria, performance of the Nigeria stock exchange, on Nigeria economy, on stock volatility on Nigerian stock market capitalization such as Hope, Saidu & Success (2020); Mert & Omer (2020); Ayodele, Akinyede, Ojedele, and Afolabi (2021); Peterson (2020); Adenomon, Maijamaa, and John (2020); Jawad (2021) and Amnim, Aipma,, Okeke and Obiora (2021) but none to the researchers best of knowledge has specifically look at the effects of the global pandemic on stock market liquidity proxied with stock turnover of the Nigerian stock market using (E-GARCH) as method of analysis. However, the studies, that attempted it are largely foreign (Muhammad and Syed (2020); Marozva and Magwedere (2021); Kaouther, Mohammed and Affan (2021) and Hadeel and Ghassan (2021) but they failed to employed stock turnover as proxied for stock market liquidity and that the macroeconomic situation as well as stock market distinctiveness are not like those of developing stock market like Nigeria. This study sought to fill this gap.

3. Methodology

This work employed *expost facto* research design using weekly data of both corona-virus and stock market turnover within the period of March, 2019 to February, 2022.This work used Exponential Generalised Auto-Regressive Conditional Heteroscedasticity (E-GARCH) as method of analysis to examine the effects of global pandemic proxied with COVID-19 on stock market liquidity proxied with stock turnover of the Nigerian stock exchange market. The step to follow before checking the volatility of models is to first establish if the series will show an ARCH effect. It is usually done in order to ascertain if the series are truly volatile before conducting a volatility model for them. This shows that the ARCH test is needed to test for volatility via stock turnover and COVID 19 pandemic since weekly data between (March, 2019 –February, 2022) were used for this study.

Table 1. ARCH Test Results for Stock Turnover

	Statistic	Value	p-value
Stock Turnover	F-statistic	18.112	0.0000
	Obs*R-squared	22.414	0.0000

Source: Authors' Compilation (2022)

Table 2. Covid-19 Pandemic

	Statistic	Value	p-value
COVID-19 pandemic	F-statistic	11.982	0.0000
	Obs*R-squared	22.814	0.0000

Source: Authors' Compilation (2022)

Stock turnover and COVID 19 pandemic were presented in Tables 1 and 2 ARCH test result. The test results revealed that there exist ARCH effect since the $p < 5\%$. The result implies that both stock turnover and COVID 19 pandemic have ARCH effect, therefore, exhibits volatility.

Inferential Analysis

The study employed EGARCH (Exponential Generalised Autoregressive Conditional Heteroskedasticity) to examine the effect of COVID-19 pandemic on stock turnover in the Nigerian stock exchange market.

Table 3. EGARCH Result for the Objective of the Study

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.034761	0.025439	-1.327417	0.1844
COVID- 19(-1)	-0.772321	0.032146	-10.40323	0.0001
Variance Equation				
Constant	-0.730134	0.091154	-8.009920	0.0000
ARCH	0.484771	0.052339	6.925581	0.0000
GARCH	-0.082557	0.038544	-2.141915	0.0322
EGARCH	-0.946210	0.003213	-2.282728	0.0224
Stock Turnover	-24.47853	2.563256	-3.045157	0.0023
Durbin-Watson stat	2.20946			

Source: Authors' Compilation (2022)

In Table 3, the EGARCH results shown the mean equation, lag of COVID 19 pandemic was negative coefficient approximately 0.035 with $p < 5\%$. This indicated that previous COVID-19 pandemic has a negative impression on the present COVID-19 pandemic. Table 3 further shows that information effect

is lop-sided. Bad information (or bad news) from COVID-19 pandemic on volatility of stock turnover i.e bad news from COVID-19 pandemic create negative effect on stock market liquidity via stock illiquidity during the period of COVID-19 saga. The results depicted that there exist lopsidedness of information and stock turnover are negative (-0.094 and -24.47). The results implied that a bad information from COVID-19 pandemic triggered higher volatility in stock turnover by 0.94 points than good information does, thus caused stock market illiquidity.

4. Conclusion and Recommendation

The study concluded that COVID-19 pandemic trigger high level of declined in stock turnover or stock market illiquidity via reduction in stock investors' patronage in the Nigerian stock market during COVID-19 pandemic; therefore, reduced market liquidity, and market capitalization. The research work recommended that stock market investors should be vigilant about COVID-19pandemic trend so as to determine when to patronize stock market. Also, the regulators of the Nigerian stock exchange must ensure availability of market information during COVID-19 period so as enhanced stock patronage and liquidity.

References

*** *Bulletin of Economics and statistics*, 64(4), pp. 399-412.

*** *Bulletin of Economics and statistics*, 64(4), pp. 399-412.

Abdullahi, I. B. & Fakunmoju, S. K. (2019). Market liquidity and stock return in the Nigerian stock exchange market. *Binus Business Review*, 10(2), pp. 87-94. https://doi.org/10.21512/bbr.v10i2.5588.

Adenomon, M. O.; Maijamaa, B. & John, D. O. (2020). On the effects of COVID-19 outbreak on the Nigerian stock exchange performance: Evidence from GARCH Models. *Preprints 2020,* 2020040444. doi: 10.20944/preprints202004.0444.v1.

Ahmed, F.; Syed, A.; Kamal, M.; López-García, M.; Ramos-Requena, J. & Gupta, S. (2021). Assessing the impact of COVID-19 pandemic on the stock and commodity markets performance and sustainability: A comparative analysis of South Asian countries. *Journal of Sustainability*, 13(10), pp. 1-16. https://doi.org/10.3390/su13105669.

Alade, M. E.; Adeusi, S. A. & Alade, F. O (2020). Covid-19 pandemic and nigerian stock market capitalisation. *Ilorin Journal of Economic Policy, 7*(3), pp. 12-23.

Amnim, O. E. L.; Aipma, O. P. C. & Obiora C. F. (2021). Impact of Covid-19 pandemic on liquidity and profitability of firms in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 11(3), pp. 1331-1344. http://dx.doi.org/10.6007/IJARBSS/v11-i3/9229.

Ayodele, T. D.; Akinyede O. M. & Ojedele M. I. (2021). *Corona virus (covid-19) pandemic and Nigerian financial market*. Electronic copy available at: https://ssrn.com/abstract=3656284.

Burggraf, T.; Fendel, R. & Huynh, T. (2019). Political news and stock prices: Evidence from Trump's trade war. *Applied Economics Letters,* 27(11), pp. 1-4. doi: 10.1080/13504851.2019.1690626

Cohen, K. J.; Hawawini, G. A.; Maier, S. F.; Schwartz, R. A. & Whitcomb, D. K. (1980). Implications of microstructure theory for empirical research on stock price behavior. *The Journal of Finance*, 35(2), pp. 249–257. https://doi.org/10.2307/2327381.

Cortegiani, A. I. (2020). A systematic review on the efficacy and safety of chloroquine for the treatment of COVID-19. *Journal of Critical Care, 57,* pp. 279-283. doi: 10.1016/j.jcrc.2020.03.005.

Cortegiani, A.; Ingoglia, G.; Ippolito, M.; Giarratano, A. & Einav, S. (2020). A systematic review on the efficacy and safety of chloroquine for the treatment of COVID-19. *Journal of Critical Care*, *57*, pp. 279–283. https://doi.org/10.1016/j.jcrc.2020.03.005.

David, H. & Tiago, L. (2019). Stock market integration, cost of equity capital, and corporate investment: Evidence from Brazil. *European Financial Management Association, 25*(1), pp. 181-206. DOI: 10.1111/eufm.12147.

David, S. A.; Inácio, C. M. C. & Machado, J. A. T. (2021). The recovery of global stock markets indices after impacts due to pandemics. *Research in International Business Finance, 55*, 101335. https://doi.org/10.1016/j.ribaf.2020.101335.

Gherghina, S. C.; Daniel, S. A. & Camelia, C. J. (2021). COVID-19 pandemic and Romanian stock market volatility: A GARCH approach. *Journal of Risk and Financial Management* 14, pp. 341.1-29 https:// doi.org/10.3390/jrfm14080341.

Gopane T. J. & Mmotlar. R. M. (2019). Stock market reaction to mega-sport events: Evidence from South Africa and Morocco. *International Journal of Sport Finance*, 14(4), pp. 193-210 http://hdl.handle.net/10210/403879.

Gubareva, M. (2020). The impact of Covid-19 on liquidity of emerging market bonds. *Research in Social Sciences and Management, Working Papers* ISSN 2184-3325. https://core.ac.uk/download/pdf/344682818.pdf.

Gylych, J.; Paul, T.; Ojonugwa, U. & Paul, M. (2020). Testing the nexus between stock market returns and inflation in Nigeria: Does the effect of COVID-19 pandemic matter? *Journal of Public Affairs,* pp. 1-9. DOI: 10.1002/pa.2289.

Hadeel, Y. & Ghassan, O. (2021). The Jordanian capital market: Liquidity cost during COVID19 pandemic infection *Journal of Accounting, 7*(3), pp. 1025–1032. doi: 10.5267/j.ac.2021.3.006.

Haroon, O. & Rizvi, S. A. R. (2020). Flatten the curve and stock market liquidity–an inquiry into emerging economies. *Journal of Behavioral and Experimental Finance*, *27*(5), pp. 2151-2161. doi: 10.1016/j.jbef.2020.100343.

He, X.; Lau, E.; Wu, P.; Deng, X. & Wang, J. (2020). Temporal dynamics in viral shedding and transmissibility of COVID-19. *Nature Medicine, 26*(5), pp. 672–675. doi: 10.1038/s41591-020-0869-5.

Hillier, D. & Loncan, T. (2019). Political uncertainty and stock returns: Evidence from the Brazilian political crisis *Pacific-Basin Finance Journal 54,* (C), pp. 1-12. DOI: 10.1016/j.pacfin.2019.01.004

Hope, O.; Saidu, M. & Success, A. (2020) Coronavirus pandemic Outbreak and Firms performance in Nigeria. *Management and Human Resource Research Journal*, 9(4), pp. 15-25 Electronic copy available at: https://ssrn.com/abstract=3593361.

Hung, D. V.; Nguyen T. H. & Duong V. T. (2021). The impact of COVID-19 on stock market returns in Vietnam. *Journal of Risk and Financial Management, 14* (9), pp. 1-15 https:// doi.org/10.3390/jrfm14090441.

Iwedi, M.; Kocha, C. N. & Oriakpono, A. E. (2020). Covid-19 pandemic, global trade wars and impact on the Nigeria Economy. *Academic Journal of Current Research*, *7*(5), pp. 71-82.

Jawad, S. (2020). COVID-19 and liquidity risk, exploring the relationship dynamics between liquidity cost and stock market returns. *National Accounting Review*, *3*(2), pp. 218–236. DOI: 10.3934/NAR.2021011.

Jepkemei, B. (2017). The impact of inaction on stock market liquidity: A case of Nairobi Securities Exchange, Kenya. *International Journal of Economics, Commerce and Management*, 5(1), pp. 319-350.

Jepkemei, B. (2017). The impact of inaction on stock market liquidity: A case of Nairobi Securities Exchange, Kenya. *International Journal of Economics, Commerce and Management*, 5(1), pp. 319-350.

John, E. I. (2019). Effect of macroeconomic variables on stock market performance in Nigeria. Journal of Economics, Management and Trade, 22(6), pp. 1-14.

John, E. I. (2019). Effect of macroeconomic variables on stock market performance in Nigeria. *Journal of Economics, Management and Trade*, 22(6), pp. 1-14.

Kahuthu, L. W. (2017). The effect of stock market liquidity on stock returns of companies listed on Nairobi Securities Exchange (Thesis). Strathmore University.

Kahuthu, W. (2017). *The effect of stock market liquidity on stock returns of companies listed on Nairobi securities exchange* (Thesis). Nairobi: Strathmore University. http://suplus. Strathmore.edu/handle/11071/5594.

Kaouther, C.; Mohammed, A. & Affan, H. (2021). The COVID-19 pandemic and stock liquidity: Evidence from S&P 500. *The Quarterly Review of Economics and Finance,* 81(C), pp. 134–142. https://doi.org/10.1016/j.qref.2021.05.008.

Kocaarslan, B. & Soytas, U. (2021). The asymmetric impact of funding liquidity risk on the volatility of stock portfolios during the covid-19 crisis. *Journal of Sustainability*, 13(5), pp. 1-12. https://doi.org/10.3390/su13042286.

Le, H. & Gregoriou, A. (2020). How do you capture liquidity? A review of the literature on Low-frequency stock liquidity. *Journal of Economics Surveys*, 34(5), pp. 1170–1186. DOI: 10.1111/joes.12385

Liu, H.; Manzoor, A.; Wang, C.; Zhang, L. & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. *International Journal of Environmental Research and Public Health*, 17, pp. 101-125. https://doi.org/10.3390/ijerph17082800.

Marozva, G. & Magwedere, M. R. (2021). COVID-19 and stock market liquidity: An analysis of emerging and developed markets. *Scientific Annals of Economics and Business*, 68(2), pp. 129–144. https://doi.org/10.47743/saeb-2021-0010.

Mert, T. & Omer, S. G. (2020). The impact of COVID-19 on emerging stock markets. *Finance Research Letter*, 36(C), pp. 1-6. DOI: 10.1016/j.frl.2020.101691.

Muhammad, U.; Ghulame, L. & Syed, K. (2021). COVID-19 and stock market liquidity: An international evidence *SSRN Electronic Journal* pp. 1-2.9 Electronic copy available at: https://ssrn.com/abstract=3758201 or http://dx.doi.org/10.2139/ssrn.3785590.

Naik, P. & Reddy, V. (2021). Stock market liquidity: A literature review. *SAGE Open Journal 11*(1), pp. 1–15. DOI: 10.1177/21582440209855290.

Nazima, E.; Jamshaid, R.; Numair, A.; Muhammad, A. & Tanzeela, Q. (2021). Investigating the impact of covid 19 outbreak on stock market returns: Evidence from Pakistan. *International Journal of Innovation, Creativity and Change, 15*(5), pp. 1-9. 15468_Ellahi_2021_E1_R.pdf.

Nguyen, C. T.; Hai, P. T. & Nguyen, H. K. (2021). Stock market returns and liquidity during the COVID-19 outbreak: Evidence from the financial services sector in Vietnam. *Asian journal of Economics and Banking, 5*(3), pp. 324-342. DOI: 10.1108/AJEB-06-2021-0070.

Oyeranti, O. & Sokeye, B. (2021). The evolution and spread of covid-19 in Nigeria. *Centre for Petroleum, Energy Economics and Law (CPEEL), University of Ibadan.* Volume II Discussion Papers Series pp. 1-18.

Ozili, P. K. (2020). COVID-19 in Africa: Socioeconomic impact, policy response and opportunities. Policy Response and Opportunities. Online at https://mpra.ub.uni-muenchen.de/103131/. *MPRA Paper* No. 103131.

Peterson, K. O. (2020). Covid-19 pandemic and economic crisis: The Nigerian experience and structural causes. *MPRA Paper 99424*. University Library of Munich, Germany. Online at https://mpra.ub.uni-muenchen.de/103131/ MPRA Paper No. 103131.

Shereen, M. A.; Khan, S.; Kazmi, A.; Bashir, N. & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, 24, pp. 91-98. https://doi.org/10.1016/j.jare.2020.03.005.

Sohrabi, C.; Alsafi, Z.; O'Neill, N.; Khan, M.; Kerwan, A.; Al-Jabir, A.; Iosifidis, C. & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery* (London, England), 76, pp. 71–76. https://doi.org/10.1016/j.ijsu.2020.02.034.

Tavor, T. & Teitler-Regev, S. (2019). The impact of disasters and terrorism on the stock market, Jàmbá. *Journal of Disaster Risk Studies, 11*(1), pp. 1-8. https://doi.org/10.4102/jamba.v11i1.534.

World Health Organization (2020). *Coronavirus disease (COVID-19) pandemic*. https://www.who.int.

Yaseen, H.; Omet, G.; Hadeel, Y. & Ghassan, O. (2021). The Jordanian capital market: Liquidity cost during COVID19 pandemic infection. *Journal of Accounting, 7,* pp. 1025–1032.

Zaremba, A.; Aharon, D. Y.; Demir, E.; Kizys, R., & Zawadka, D. (2021). COVID-19, government policy responses, and stock market liquidity around the world: A note. *Research in International Business and Finance, 56,* 101359. https://doi.org/10.1016/j.ribaf.2020.101359.

Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance Research Letters* 36, pp. 20-28. https://doi.org/10.1016/j.frl.2020.101528.

Zhang, N.; Wang, A.; Haq, N. & Nosheen, S. (2021). The impact of COVID-19 shocks on the volatility of stock markets in technologically advanced countries. *Economic Research-Ekonomska Istraživanja,* pp. 1-28. https://doi.org/10.1080/1331677X.2021.1936112.

Basuony, Mohamed. A. K.; Bouaddi, Mohammed; Ali, Heba & EmadEldeen, Rehab (2021). The effect of COVID-19 pandemic on global stock markets: Return, volatility, and bad state probability dynamics. Journal of Public Affairs Education.

*** (July 2019). *94 Binus Business Review*, Vol. 10 No. 2, pp. 87-94.

*** (July 2019). *94 Binus Business Review*, Vol. 10, No. 2, pp. 87-94.