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Coronavirus Disease -19 (Covid-19)100th Day Effect on Health Firms' Stock Returns in Nigeria: An Event Study Approach

Ikwuagwu, Henry Chinedu[1], Efanga, Udeme Okon[2] and Ihemeje, James Chinedu[1]

[1]Department of Banking and Finance, College of Management Sciences, Michael Okpara University of Agriculture, Umudike, Nigeria
[2]Department of Banking and Finance, Faculty of Management Sciences, University of Calabar, Nigeria
E-mail: udemeefanga@gmail.com

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Abstract: Information whether political, social or economic creates reactions in the stock market leading to fluctuations. Such information could be internal emanating within the country, or external caused by events outside the country. Our study assessed Covid-19 100thday information effect on health firms' stock returns in Nigeria. We adopts event study approach and utilize stock prices of the firms covering 131 days to estimate abnormal returns within the event day. The study result shows a positive abnormal return for health firms in Covid-19 100th day. Considering the significance of the return, the t-test shows a value of 1.58 which is less than 1.96. This means that investors reacted positively to the information of Covid-19 100th day, but this positive reaction was insignificant. We therefore conclude that Covid-19 information into the Nigerian Health industry is a boost to activities in the sector with positive return. This calls for adequate attention to be given to the sector by relevant authorities to utilize the best possible opportunity presented by the health challenge.

1. INTRODUCTION

1.1 Background to the study

The World Health Organization (WHO) declared Coronavirus-19 (COVID-19) a world pandemic in March 2020. Since then, cases of the virus have continued to increase in different parts of the globe as nations endeavor to put in places measures to contain it. The pandemic has generated unwanted instance impacting various spheres of life – political, social, economic and technological, among others (Oita, 2020). The global situation has largely

challenged business investments given a short notice. For instance, the International Monetary Fund (IMF) reported that more than US$ 83 billion had been withdrawn by investors from developing stock markets since the outburst of the disease. This is to the extent that the Organization for Economic Cooperation and Development (OECD) has had to downgrade its forecast for the world economy growth to 1.5 % in 2020, half the rate projected prior to the virus outbreak (African Union, 2020).

The health sector which is the epicentre of dealing with the diseases has taken its cut on the matter. The healthcare systems, in many countries are overstretched as cases continue to rise. Even developed nations with higher income have not been spared by the impact of COVID-19 especially in the healthcare provision within the first 100 days. The impact of COVID-19within the first 100 days on the high income nations reflected by the large numbers of infections and deaths establishes the fact that despite the perceived resilience of the healthcare schemes existing in these nations, they are still susceptible to the spread and impact of COVID-19.

As for the developing nations with relatively weak healthcare arrangements characterized by inadequate health workers, inadequate technological equipment, inadequate funding and high rate of infectious diseases, it was expected that the continued spread of the virus would overstrain the healthcare arrangements in the nations. On worst case situation, it was anticipated that most of the healthcare arrangement would be overstretched and eventually collapse due to the spread of the virus (UNDP, 2020). Despite these challenges and the predictions, it is observed based on country specific interventions that many developing countries have appeared quite resilient to infections within the first 100 days. However, further observations are been made. Many countries in Africa especially Nigeria as a developing country has put in place stringent measures that include, inter-state lockdown, mandatory quarantine, maintaining of social distance, curfews, closure of schools and other public gathering, encouragement of basic hygiene measures among other interventions.

Nigerian government and various stakeholders in the health sector have stepped up in heroic and unprecedented ways to meet the challengesof the sudden arrival of the Covid-19. As outbreaks have occurred across the country infecting more than 40 thousand people, hospitals have increased testing efforts and are treating thousands of Nigerian in an effort to save lives and minimize the spread (Ozili, 2020). This includes establishing testing tents, creating general and intensive care units, mobilizing Nigerian Centre for Disease Control, mounting COVID-19 taskforce to encourage isolation and treatment of patients with the disease while safeguarding thehealth of workers and other Covid-19 patients.These challenges have

created historic financial pressures for investors in the health sector in the Nigerian's economy.

Many Health care units have cancelled non-emergency procedures, and many Nigerians are suspendingunnecessary Medicareas they shelter in place tostop the spread of the virus. Management for COVID-19 has created incredible demand for certain medical equipmentand supplies as the virus has disrupted supply chains, increasing the costs that healthcare units face to treat COVID-19patients. At the same time, COVID-19 has led to unprecedented job losses, giving way to a rise in the numberof uninsured. And while doctors, nurses, and other health care workers have met the COVID-19 challenge withheroic efforts, many hospitals and health systems, especially those located in hotspot areas of the pandemic, aresupporting them by providing essentials like child care, transportation, and in some cases, housing (African Union, 2020).

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1. Impact of Covid-19 Pandemic on the Stock Market

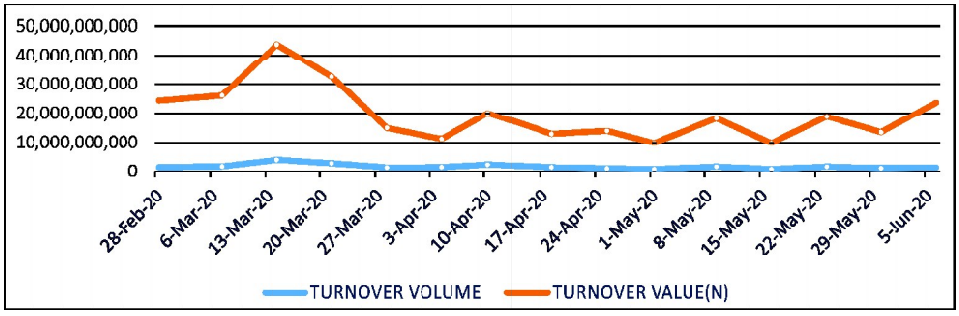
The Covid-19 pandemic affected the global economy in two ways. One, the spread of the virus encouraged social distancing which led to the shutdown of financial markets, corporate bodies, businesses and events. Two, the rate at which the virus was spreading, and the heightened uncertainty about how bad the situation could get, led to flight to safety in consumption and investment among consumers and investors (HaiYue, Aqsa, CangYu, Lei and Zaira, 2020). There was a general consensus among many finance experts that the Covid-19 pandemic could lead the world into another global recession(Ozili, 2020).

In financial markets, from 24th to 28th of February global stock markets erased about US$6 trillion in wealth. In United States over $5 trillion in value was also lost in S&P 500 index in the same week, while the S&P 500's largest 10 companies experienced a combined loss of over $1.4 trillion due to the anxiety among investors about how the pandemic would affect businesses. The border closure and restriction imposed on the movement of people in many countries led to considerable losses for businesses in the entertainment industry, aviation industry, hospitality industry and the sports industry. The combined global loss was estimated to be over $4 trillion (African Union, 2020).

Several governments in developed countries, such as the U.S. and U.K., responded by offering palliatives and fiscal stimulus package to citizens

while the monetary authorities reconsidered interest on loan to help businesses during the pandemic. There were also spillovers to poor and developing countries that had a weak public health infrastructure and non-existing social welfare programs (Ozili, 2020).Nigerian Stock Market weekly report show equity turnover of N24.263 billion as at 28th February, 2020 weekly report with 1.547 billion shares in 21,646 deals. When compared with the 100th day weekly report of 5th June, 2020, the equity turnover was N23.553 billion of 1.469 billion shares in 22,911 deals by investors on the floor of the exchange.

Figure 1: Nigerian Stock Market Turnover



Source: Researchers' E Views 9.0 computation

2.1.2. Global Response Strategy to Covid-19

The overarching goal is for all countries to control the pandemic by slowing down the transmission and reducing mortality associated with COVID-19. The global strategic objectives according to World Health Organization are as follows:

- Mobilize all sectors and communities to ensure that every sector of government and society takes ownership of and participates in the response and in preventing cases through hand hygiene, respiratory etiquette and individual-level physical distancing.
- Control sporadic cases and clusters and prevent community transmission by rapidly finding and isolating all cases, providing them with appropriate care, and tracing, quarantining, and supporting all contacts.
- Suppress community transmission through context appropriate infection prevention and control measures, population level physical distancing measures, and appropriate and proportionate restrictions on non-essential domestic and international travel.

- Reduce mortality by providing appropriate clinical care for those affected by COVID-19, ensuring the continuity of essential health and social services, and protecting frontline workers and vulnerable populations.
- Develop safe and effective vaccines and therapeutics that can be delivered at scale and that are accessible based on need.

2.2 Empirical Review

Various organizations and scholars have assessed the impact of Covid-19across the globe. A study by UNDP (2020) assessed the impact of the Covid-19 pandemic in Nigeria. The study posits that Nigeria as many other countries across the globe is facing unprecedented challenges as a result of the Covid-19 pandemic. It is yet unclear what the true magnitude of the spread and impact of the virus will look like in Nigeria including how it will react with factors such as population and economic activities. Any post-COVID-19 recovery strategy will need to re-establish the conditions for a quick return to a path of economic growth, improved social contract, and overall human development that can foster more inclusive societies in the future. It concluded that the survivors and others directly affected by the disease must be assisted to regain their dignity and the affected communities supported to recover their livelihoods. This will require investment in innovative approaches for restoration of healthcare systems; co-creation of culturally sensitive protection and community, peace and cohesion building.

In a similar study, Ozili (2020) examined Covid-19 pandemic and economic crisis, the study identified structural causes leading to the current economic situation in the nation. The current economic downturn in Nigeria as identified was triggered by a combination of declining oil price and spillovers from the Covid-19 outbreak, which not only led to a fall in the demand for oil products but also stopped economic activities from taking place when social distancing policies were enforced. It showed that the spillover of Covid-19 pandemic into Nigeria coupled with declining oil price, which were external shocks, caused the economic crisis in Nigeria in 2020. The structural problems in Nigeria at the time prolonged the economic crisis. The scope and severity of the economic crisis is a clear signal that growth and development reforms are needed in Nigeria. In retrospect, the Nigerian government was wise to use fiscal and monetary stimulus package as a partial solution to revive falling aggregate demand during the outbreak. It used public money to slow the rate of business closures and the spread of coronavirus, though some of the policy response has been inefficient.

In another recent study Scott, Nicholas, Steven, Kyle, Marco, and Tasaneeya (2020) investigated the unprecedented stock market reaction to

COVID-19. The study noted that no previous infectious disease outbreak, including the Spanish Flu, has impacted the stock market as forcefully as the COVID-19 pandemic. In fact, previous pandemics left only mild traces on the U.S. stock market. We use text-based methods to develop these points with respect to large daily stock market moves back to 1900 and with respect to overall stock market volatility back to 1985. It evaluates potential explanations for the unprecedented stock market reaction to the COVID-19 pandemic. The evidence suggests that government restrictions on commercial activity and voluntary social distancing, operating with powerful effects in a service-oriented economy, are the main reasons the U.S. stock market reacted so much more forcefully to COVID-19 than to previous pandemics in 1918-19, 1957-58 and 1968.

A group of finance scholars from Kuwait Abdullah, Khaled, Ahmad, and Salah (2020) on a study death and contagious infectious diseases impact of the COVID-19 virus on stock market returns. This study investigates whether contagious infectious diseases affect stock market outcomes. As a natural experiment, panel data analysis was adopted to test the effect of the COVID-19 virus, which is a contagious infectious disease, on the Chinese stock market. The findings indicate that both the daily growth in total confirmed cases and in total cases of death caused by COVID-19 have significant negative effects on stock returns across all companies.

Using 21 leading stock market indises, HaiYue, Manzoor, Wang, Zhang, and Zaira (2020) evaluates the short-term impact of the coronavirus outbreak in major affected countries including Japan, Korea, Singapore, the USA, Germany, Italy, and the UK etc. The consequences of infectious disease are considerable and have been directly affecting stock markets worldwide. Using an event study method, our results indicate that the stock markets in major affected countries and areas fell quickly after the virus outbreak. Countries in Asia experienced more negative abnormal returns as compared to other countries. Further panel fixed effect regressions also support the adverse effect of COVID-19 confirmed cases on stock indices abnormal returns through an effective channel by adding up investors' pessimistic sentiment on future returns and fears of uncertainties.

Oita (2020) in a brief seeks to analyses the possible impact of COVID-19 on the health sector in the COMESA region. The brief utilizes the four WHO pillars of health delivery which include, service delivery, health workforce, access to essential equipment and medication and adequate resources. The WHO framework seeks to build the resilience of health systems in countries as a way of achieving the Sustainable Development Goals (SDGs). This framework is in tandem with the COMESA Early Warning System's (COMWARN's) Structural Vulnerability Assessment

(SVA) model that seeks to support long term vulnerability of Member States towards sustained peace and prosperity by identifying projected vulnerabilities in respective countries.

From an earlier study Mosadeghrad (2014) investigated factors influencing healthcare service quality. The main purpose of this study was to identify factors that influence healthcare quality in the Iranian context. Exploratory in-depth individual and focus group interviews were conducted with 222 healthcare stakeholders including healthcare providers, managers, policy-makers, and payers to identify factors affecting the quality of healthcare services provided in Iranian healthcare organizations. The study reveals that quality in healthcare is a production of cooperation between the patient and the healthcare provider in a supportive environment. Personal factors of the provider and the patient, and factors pertaining to the healthcare organization, healthcare system, and the broader environment affect healthcare service quality. Healthcare quality can be improved by supportive visionary leadership, proper planning, education and training, availability of resources, effective management of resources, employees and processes, and collaboration and cooperation among providers.

In another related study, Yi-Hsien, Wang., Fu-Ju, Yang and , Li-Je Chen (2013) assessed investor's perspective on infectious diseases and their influence on market behavior. The study noted that recently there is an increasing number of infectious diseases which has swept the world. The outbreak of a contagious disease not only affects the health and lives of people but also causes economic growth to stagnate. This study investigates how such outbreaks can affect the performance of biotechnology stocks. The empirical results indicate that there is a significant abnormal return on company shares in Taiwan's biotechnology industry because of statutory infectious epidemics. The results show that the influence on R&D ratios, current ratios and assets are significant. Empirical findings reveal that the investors rationally measure operating conditions of the biotechnology companies during outbreaks of major infectious disease and adjust portfolio allocation accordingly.

3. METHODOLOGY

The analysis has been emphasizing to measure the impact of the 100thday of Covid-19 on the health firms stock returns. The daily closing share prices of the firms in the health sector listed in Nigerian Stock Exchange (NSE) have been collected from NSE website for a period of 131 days.

Appraisal of the event's impact requires a measure of the abnormal return. The abnormal return in the health sector is the actual aggregate ex post return of the securities during event window minus the aggregate

expected return of the firms over the event window. The abnormal return is stated thus:

$$AR_{it} = R_{it} - E(R_{it} | C19_t) \quad (1)$$

where AR_{it}, R_{it}, *and* $E(R_{it} | C19_t)$ are the abnormal, actual, and expected returns respectively for time period t. $C19_t$ is Covid-19 at 100thday conditioning information.

For calculating R_{it}, the following model was adopted;

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

$$E(\varepsilon_{it} = 0)\ \text{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon i}$$

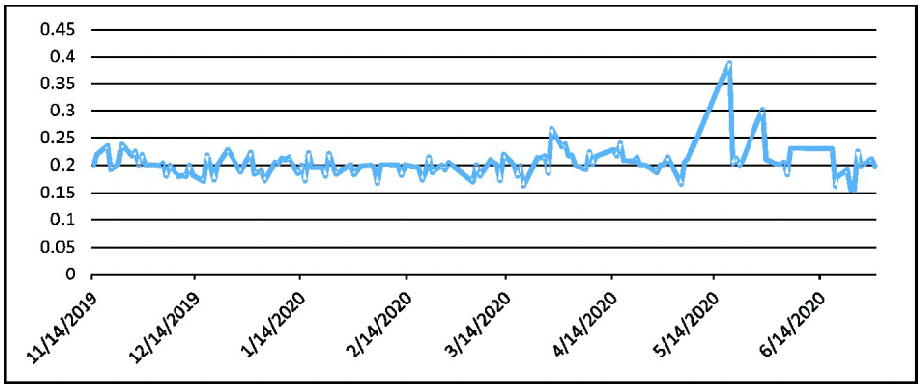
where R_{it} and R_{mt} are the period-t returnson security *i* and the market portfolio,respectively, and ε_{it} is the zeromean disturbance term. α_i, β_i, and $\sigma^2_{\varepsilon i}$ are the parameters of the market model.

The data have been analysed using the following statistical steps:

- First, the natural logarithmic daily returns have been found over the previous day's closing value during the entire period.
- Second, the cumulative average daily returns for stocks included in the study were calculated.
- Third, the intercept, slope and R-squared were calculated to estimate the expected cumulative average daily returns for stocks.
- After this, the Abnormal Returns (AR) and Cumulative Abnormal Returns (CAR) were estimated.
- T-test was also calculated to determine the significance of the returns.

4. DATA ANALYSIS

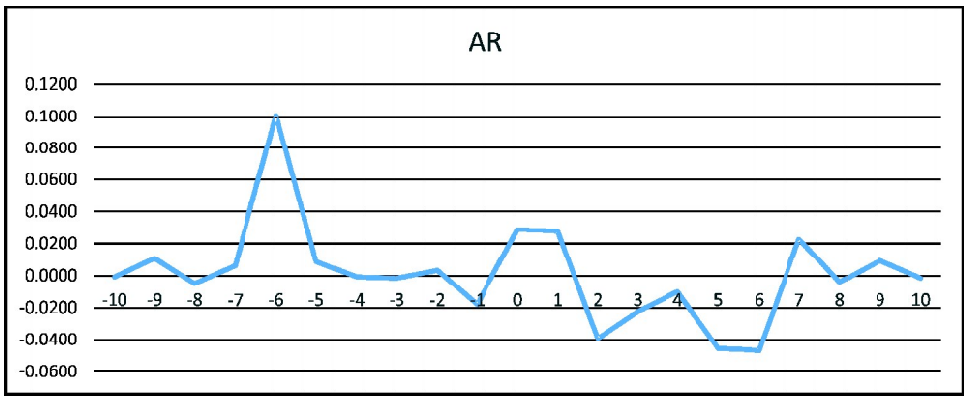
Figure 2: Cumulative Average Daily Returns



Source: Researchers' E Views 9.0 computation

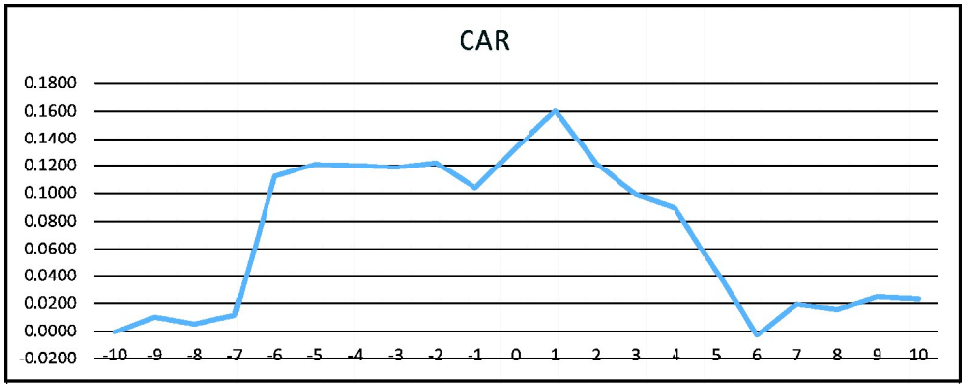
The Figure 2 above shows the cumulative average daily return for the stock included in our study. The figure suggests that cumulative return maintain positive trend over the period of study.

Figure 3: Average Daily Abnormal Returns within Covid-19 100th Day



Source: Researchers' E Views 9.0 computation

Figure 4: Average Daily Cumulative Abnormal Returns within Covid-19 100th Day



Source: Researchers' E Views 9.0 computation

Figure 3 shows the average daily Abnormal Return (AR) for the stocks within the Covid-19 100th day, while Figure 4 shows the Cumulative Abnormal Return (CAR) for the stocks within Covid-19 100th day. The Figure 3 reveals that the abnormal return within Covid-19 100th day shows heterogeneous return of both positive and negative. However, Figure 4 reveals that cumulative abnormal return for the stocks within Covid-19 100th day maintain positive returns with slight negative return.

Table 1: Results of the Market Model

Intercept	*Slope*	*R-Square*	*St. Error*
0.201675458	0.001557877	0.012283535	0.01815635

Source: Researchers' E Views 9.0 computation

Table 2: Impact of Covid-19 100th Day on Health Firms Stock Returns

Event Window	*Cumulative Average Return (R_i)*	*Market Return (R_m)*	*Expected Return E(r)*	*Abnormal Return (AR)*	*Cumulative Abnormal Return (CAR)*	*t-test*
-10	0.2027	1.0900	0.2034	-0.0007	-0.0007	-0.0392
-9	0.2124	-0.0100	0.2017	0.0107	0.0100	0.5899
-8	0.1987	1.2500	0.2036	-0.0049	0.0051	-0.2687
-7	0.2098	1.2500	0.2036	0.0062	0.0113	0.3396
-6	0.3021	-0.2200	0.2013	0.1008	0.1120	5.5497
-5	0.2101	-0.2200	0.2013	0.0087	0.1208	0.4813
-4	0.2012	0.2100	0.2020	-0.0008	0.1200	-0.0435
-3	0.2005	0.2500	0.2021	-0.0015	0.1185	-0.0850
-2	0.2052	0.1000	0.2018	0.0034	0.1218	0.1868
-1	0.1831	-0.3800	0.2011	-0.0180	0.1038	-0.9918
0	0.2304	-0.0900	0.2015	0.0288	0.1327	1.5878
1	0.2297	0.1700	0.2019	0.0278	0.1604	1.5288
2	0.1622	-0.1600	0.2014	-0.0392	0.1212	-2.1578
3	0.1791	-0.2900	0.2012	-0.0222	0.0991	-1.2208
4	0.1911	-0.2900	0.2012	-0.0101	0.0890	-0.5567
5	0.1564	0.1200	0.2019	-0.0454	0.0435	-2.5022
6	0.1550	0.1200	0.2019	-0.0468	-0.0033	-2.5793
7	0.2245	0.1200	0.2019	0.0227	0.0194	1.2476
8	0.1979	0.1200	0.2019	-0.0039	0.0154	-0.2164
9	0.2112	0.1200	0.2019	0.0093	0.0248	0.5131
10	0.1977	-1.5300	0.1993	-0.0016	0.0231	-0.0891

Source: Researchers' E Views 9.0 computation

Table 1 presents the intercept, slope, R-squared, and Standard Error with values of 0.2016, 0.0015, 0.0122, and 0.01815 respectively. The values were computed using cumulative average returns of the stocks and market return from the estimation window of 120 days prior to the event window of Covid-19 100th day. Table 2 reports the result of our event within the Covid-19th 100th day.

4.1. Discussion of Results

From the Result in Table 2 it could be observed that cumulative average return at event day (Covid-19 100th day) was positive. However, the market

return showed a negative figure. Expected return, abnormal return and cumulative average return were positive on Covid-19 100th day. Within the event window average return of health firms' stock was positive. Abnormal return for the period as shown in Table 2 was mixed with both positive and negative values.Furthermore, considering the cumulative abnormal return; Covid-19 100th day brought positive abnormal returns for the health firms with negative few negative abnormal returns. The study result shows a positive abnormal return for health firms in Covid-19 100th day. Considering the significance of the return, Table 2 t-test shows a value of 1.58 which is less than 1.96. This means that investors reacted positively to the information of Covid-19 100th day, but this positive reaction was insignificant.

During such pandemic diseases we would naturally expect diverse effect on stock return across different sectors. For the study we considered health firm listed on the Nigeria Stock Exchange (NSE). Our result suggests a positive but insignificant abnormal return from the firms stock due to Covid-19. However, previous studies suggest that a minor specific sector such as, hotel, pharmaceutical and biotechnology firms may be affected in a different way in such pandemic disease (Ichev and Marinc, 2018).

5. CONCLUSION

This research has aimed to analyze the immediate effect of Covid-19 100th day information on stock returns of health firms listed in NSE. This research adds to the literature as it explores the unexpected outbreak effect on stock returns of a pandemic disease. From the investor's viewpoint, the study findings illustrate the importance of not only the firms' business factor but also the investment risks associated with such event. As Covid-19 is now a pandemic, nations need not plan of ways to avoid future public health problems but also the associated financial issue as well. The virus spreads faster with new infection every day in many countries including Nigeria. Worries of such pandemic and policy measure to contain and manage the disease spread has contributed to stock market shock globally especially in the health industry which include efforts to safeguard the staff, hospital building, and provide adequate work equipment and materials.

Analyzing the stock of health firms listed in the Nigerian stock exchange during the first 100 days of Covid-19 contagious infectious disease outbreak in Nigeria, we find that this pandemic disease interacts positively with stock returns. Specifically, health firms' cumulative abnormal returns are positive but insignificantly related to Covid-19. We therefore conclude that Covid-19 information into the Nigerian Health industry is a boost to activities in the sector with positive return. This calls for adequate attention

to be given to the sector by relevant authorities to utilize the best possible opportunity presented by the health challenge.

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