

TESTING THE RESILIENCE OF NIGERIAN BUSINESSES DURING CRISES

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ABSTRACT

Occurrences such as the global financial crisis and the COVID-19 pandemic affect the performance of economies, and there is evidence that their impacts vary across businesses. During the recent COVID-19 pandemic, Nigerian businesses and the economy were negatively affected; similarly, previous crises have had varying impacts on domestic businesses. While some of the businesses have collapsed, others have struggled to keep their operations going. Thus, this study examined the extent to which businesses have been resilient during major crises in Nigeria and established sectoral variations in business resilience. Specifically, the study analysed the impact of three major crises on Nigerian businesses, namely the global financial crisis of 2007-2009, global oil price shocks (2016-2017), and the COVID-19 pandemic (2020). The study documented the weak resilience of Nigerian businesses to each of these crises by using panel regression methods on a sample of over 150 companies listed on the Nigerian Exchange (NGX) between 2000 and 2021. Specifically, it demonstrated that Nigerian businesses showed very little resilience to the global oil price crisis. It also found that the sectors in which businesses operated affected their resilience capacity, as those in the agriculture sector were relatively more resilient than those in other sectors, followed by those in trade and other services. Conversely, businesses in the banking and insurance sectors, as well as those in the industrial sector, were the least resilient to crises. Based on these findings, the study offered some policy recommendations to improve business resilience in Nigeria, and these can also be applied in similar jurisdictions.

JEL classification: G01, H12

1. Introduction

Natural or man-made disasters can have serious and long-term consequences for businesses. Such crises, among other things, can disrupt supply networks, diminish consumer demand, and induce financial instability. For instance, the COVID-19 pandemic, which affected all economies of the world, has underlined the significance of company resilience in the face of unexpected catastrophes. The pandemic had a global impact on businesses of all sizes and sectors, resulting in closures, bankruptcies, and job losses. Thus, business resilience often attracts attention (Porter & Kramer, 2006) as such events develop, and as a result of the unpredictability of globalization and economic instability (Taleb, 2008), as well as increasing social limitations and expectations on businesses.

Empirical evidence demonstrates that some corporations are more successful than others at responding to (or even surviving) unexpected and/or abrupt occurrences under similar conditions (Fiksel et al., 2015; Gittell et al., 2006), defining some organizations as more resilient than others. Resilience is frequently viewed as a desirable trait for an organization (and its members) to possess to cope with different types of adversity, even though different organizations may have varying capacities for sustainability or resilience, and their capacity for both may shift over time (Winnard et al., 2014).

During the recent COVID-19 pandemic, Nigerian businesses and the economy were affected, just as many of their counterparts in other parts of the world. During the crisis, the Nigerian economy entered a recession, recording negative GDP growth of -1.92%; the unemployment rate reached the high level of 33.3%; and there were several other constraints such as lower government revenue and foreign exchange shortage, among others. All these affected, and in some cases are still affecting Nigerian businesses. While just beginning to recover from the COVID-19 impact, the Russian-Ukrainian war broke out which further constrained the economy and businesses.

Before this time, there had been many other crises that the Nigerian economy had faced with varying impacts on domestic businesses. For instance, in 1986, the implementation of the Structural Adjustment Programme (SAP) in Nigeria, which aimed to restructure the economy by reducing government spending, removing price controls, and promoting exports, led to a significant increase in poverty, unemployment, and social

unrest. Also, the banking crisis of the 1990s led to the collapse of several banks, loss of savings, and a decline in investor confidence. More recently are the global financial crisis of 2008, the economic recession of 2016 and the COVID-19 pandemic in 2020, which caused a global economic recession. The effects of and response to all these shocks have influenced Nigerian businesses over the years.

Specifically, while some of the businesses have collapsed as a result of these challenges, many others have been struggling to keep their operations ongoing. In all these, some have been able to weather the storm and operate profitably despite all crises. Since crises, especially the recent pandemic, continue to have an impact on businesses, it is critical to analyse the crisis resilience of Nigerian businesses given their important role in the economy creating jobs, contributing to economic growth, and attracting international investments. Thus, understanding the elements that lead to a business' resilience is critical to properly prepare for and respond to crises in the future.

It is against this backdrop that this study examines the extent to which businesses have been resilient during major crises in Nigeria and seeks to establish sectoral variations in business resilience in Nigeria. It investigates how the performance of businesses is impacted during crises and identifies the sectors that are least affected or that are even able to relatively improve their performance during such crises. The findings of this paper contribute to the literature in this area and they have far-reaching policy implications for government, investors, and business leaders with interests in Nigeria and similar developing economies.

The remainder of the paper is organized as follows: section 2 provides background data on the Nigerian economy, company performance, particularly during times of crisis, and the relevant crises investigated. Section 3 is the literature review and section 4 presents the data and methodology. The outcomes of the analysis are presented in section 5. The paper is summarized in section 6 and provides some conclusions and policy implications.

2. Background

Nigeria, as a major player in the African economy, has experienced significant macroeconomic and financial fluctuations over the years. These fluctuations have been driven by both internal and external factors,

including political instability, economic policies, falls in global commodity prices, recessions, and the recent COVID-19 pandemic. Amongst these crises experienced by the country, this study seeks to examine the resilience of businesses over the three most recent crises in the country — the global financial crisis, the recession in 2016-2017 and the COVID-19 pandemic.

The global financial crisis (GFC) occurred between mid-2007 and early 2009 and imposed extreme stress on global financial markets and banking systems. Through linkages in the global financial system, a decline in the housing market in the United States (US) acted as a spark for a financial crisis that stretched from the US to the rest of the world. Several financial institutions experienced losses and needed assistance from the government to stay afloat. As the major industrialized economies went through their biggest recession since the Great Depression in the 1930s, millions of people lost their employment. Additionally, compared to other recessions that were not accompanied by a financial crisis, the recovery from the crisis was much slower. The crisis' effects on the Nigerian economy had varying effects on the stock market, the banking industry, the foreign currency and balance of payments markets, as well as the real estate market.

A few years after the global financial crisis, the economy went through another crisis, brought on by a decline in the demand for and price of crude oil (the remote cause), a balance of payments deficit, the adoption of a floating exchange rate regime, an increase in the pump price of PMS, pipeline vandalism, irregular power supply, the delay in enacting the 2016 budget, and the removal of black money from circulation, which led to a significant increase in cost of production, leading to cost-push inflation and eventual recession in 2016. According to Anake et al., (2020), before the recession, the National Bureau of Statistics (NBS) reported that Nigeria experienced a growth rate of 2.84% and 2.11% in the third and fourth quarters of 2015 respectively. However, the NBS reported a negative growth of -0.36 percent in the first quarter of 2016, which signalled the beginning of a recession in the Nigerian economy. A further negative increase of -2.06 percent in GDP in the second quarter of the same year caused the nation to enter a full-fledged recession.

The rapid spread of the COVID-19 virus in 2020 led countries around the world into a health crisis and Nigeria was not exempted. The virus, which is caused by SARS-CoV-2, was first discovered in Nigeria on

February 27, 2020, when a visitor from Italy tested positive. A second case of the virus was discovered in a Nigerian individual who had contact with the Italian index case on March 9, 2020, in Ewekoro, Ogun State.

The COVID-19 virus outbreak-induced economic catastrophe was fundamentally different from previous economic crises. Regarding how the shock spread across the economy, this distinction is crucial. The COVID-19 crisis, in contrast to previous crises, had its roots outside the financial industry. Unlike previous global crises, COVID-19 saw economies experience a combination of a supply shock (most immediately, employees were unable to go to work, which hindered production, disrupted supply chains, and froze investments) and a demand shock (notably, households and businesses were unable to purchase certain goods and services), which reinforced one another. The shock spread throughout the economy, impacting businesses and sectors, particularly the unorganized sector. The ability of a company to continue operating during the pandemic shocks thus hinged on its ability to secure extra funding. The extent to which stakeholders who engage with enterprises bear a portion of the economic losses and the size and duration of the pandemic shock are also important factors in this sector's resilience (Nkechi, Akonu & Ezemba, 2022).

Understanding the behaviour of key macroeconomic and financial indicators during major crisis periods is essential for policymakers, investors, and business owners to make informed decisions. Hence, this section provides a comprehensive overview of key macroeconomic and financial indicators in Nigeria, with a particular focus on their trends during major crisis periods. Specifically, it examines the behaviour of GDP growth, crude oil prices, exports, and the capital market All Share Index during crisis periods. By analysing the trends of these indicators, we aim to provide a contextual understanding of the economic landscape in Nigeria and the impact of major crises on the country's economy.

As shown in Figure 1, the GDP growth of the economy has experienced several fluctuations since 1999. The data shows an uptrend in GDP growth up to 15.33% in 2002, which makes it the highest GDP growth so far, falling abruptly to 7.35% the following year. While there were other increases in the GDP growth of the economy, it can be observed that major declines occurred during crisis periods. For instance,

the GDP growth fell sharply to -1.62% and -1.79% in 2016 and 2020 respectively when the economy plummeted into recession.

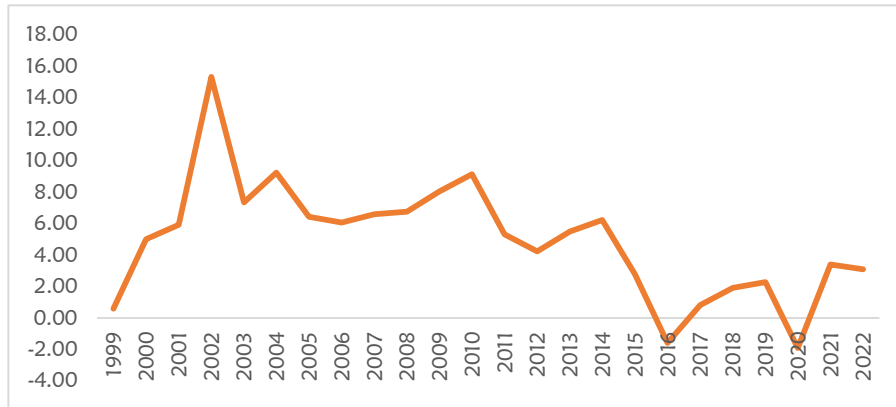


Figure 1: Trend in GDP Growth (%)
Source: CBN Statistical Bulletin

In the same manner, the trend of crude oil prices as shown in Figure 2 presents evidence that the economy is highly dependent on this resource as it is observed that a decline in the price of crude oil affects the performance of the economy negatively. The figure shows that the price fell sharply to \$43.10/barrel in 2008 during the global financial crisis. The crude oil price (Bonny light) declined precipitously to \$47 per barrel in January 2009, prompting the government to seek other sources of financing for the 2009 fiscal year, as it could not rely on earnings from crude oil exports (Luqman, 2015). A similar trend was observed during the recession and COVID-19 pandemic of 2016 and 2020 respectively.

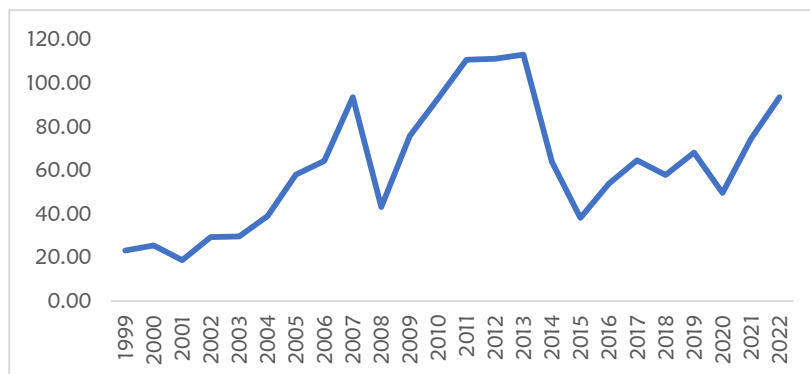


Figure 2: Trend in Crude Oil Price (\$/barrel)
Source: CBN Statistical Bulletin.

The total exports of the country as presented in Figure 3 also show the effect of the crisis periods on the Nigerian economy. Total exports showed an uptrend up to 2008, the year of the financial crisis, but fell sharply from \$86.32 billion in 2008 to \$56.79 billion in the following year. This same trend was also observed in 2016 and 2020 when total exports fell to \$34.70 billion and \$35.94 billion respectively.

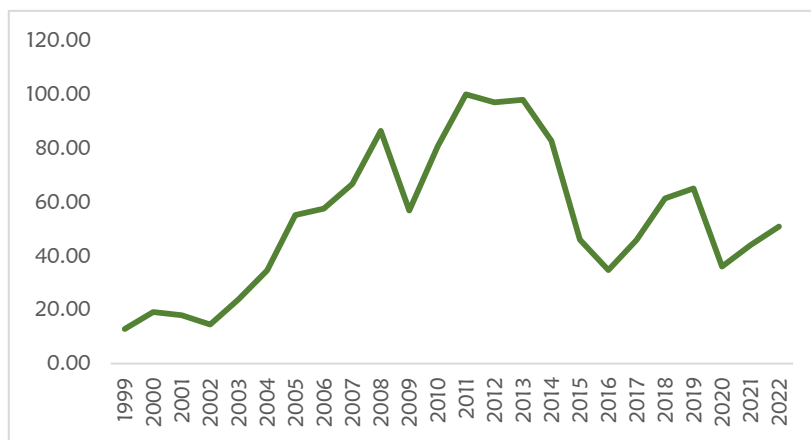


Figure 3: Total Exports (US\$'bn)

Source: CBN Statistical Bulletin.

The All-Share Index (ASI) of the Nigerian Exchange (NGX), which is one of the most widely used aggregate indicators for measuring the performance of the Nigerian capital market also revealed the effect of the crisis on market performance. The ASI trended upward from 1999 to 2007 when it peaked at 57,990.22. However, the market crashed in the advent of the financial crisis reaching as low as 20,827.17 in 2009. The All Share Index lost a total share of 67%, while market capitalization lost 62% of its value between March 2008 and March 2009 (Okonjo-Iweala, 2009) and also fell by 45.8% in 2008, a sharp reversal of growth from 2007, when the market grew by 74.4%.

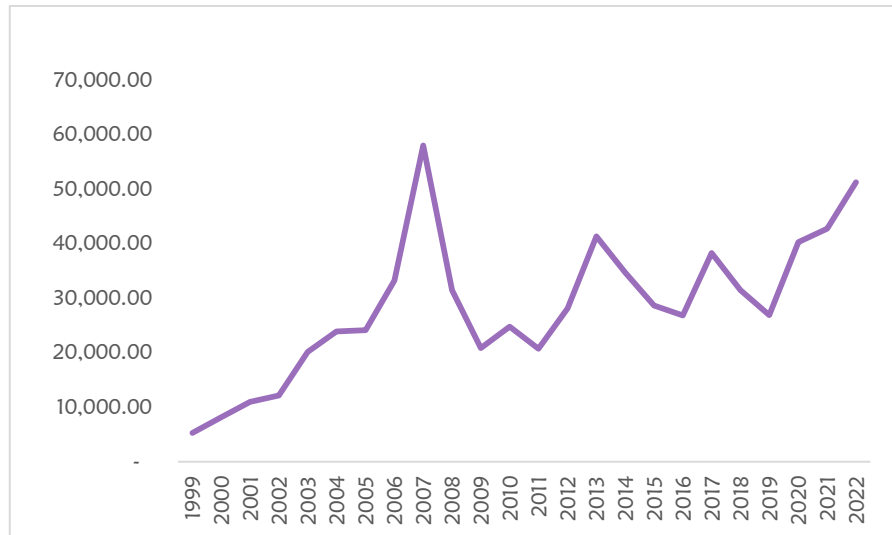


Figure 4: Trend of the All Share Index

Source: CBN Statistical Bulletin

3. Literature

3.1 Concept of business resilience

Resilience is the capacity of an ecosystem to adapt to unanticipated environmental changes and quickly regain its pre-changed state (Holling, 1973). It is a concept with several facets and applications across many disciplines (Kantur & Say, 2015). With a rich historical background, different definitions of resilience have been developed, including engineering resilience, ecological/ecosystem resilience, and social-ecological resilience. These definitions can be loosely divided into equilibrium and evolutionary approaches (Martin, 2012). According to Kitsos and Bishop (2018), the equilibrium method sees resilience as either a move to a new state, such as ecological resilience, or a return to an earlier equilibrium point, such as engineering resilience. The evolutionary perspective defines resilience as continuing adaptation to constantly changing circumstances (Kitsos & Bishop, 2018; Martin, 2012).

Business and management studies in particular show a substantial surge in resilience research, notably in the field of small and medium-scale enterprises (SME). The ability of a company to respond effectively to natural disasters (such as floods or earthquakes), as well as man-made ones (such as financial crises or wars), has been largely equated with resilience in the business literature (Dahles & Susilowati, 2015). A

resilient company should proactively manage its adaptive capacity and use strategies that are proactive, resource-efficient, create diversity, and are based on realistic and accurate assessments of itself and its context (Burnard and Bhamra, 2011; Hamel and Välikangas, 2003a; Bhamra, Dani & Burnard, 2011; Hufschmidt, 2011).

According to Sajko, Boone and Buyl (2020), resilience is the ability to anticipate, avoid, and react to shocks caused by a crisis or disturbance. In the face of adversity, a company's ability to endure, adapt, and innovate is what matters (Dahles & Susilowati, 2015). Three different perspectives on company resilience are shown in this description. First, resilience is described as a company's capacity to resume operations at pre-crisis levels. However, it is also acknowledged that the new "normal" will almost certainly appear after environmental shocks (Prideaux, Laws & Faulkner, 2003). As a result, the second definition of resilience is the ability of a business to make gradual adjustments and apply novel business ideas that come about spontaneously as a result of enhancing current goods, practices, and processes. The third perspective on resilience focuses on how a tragedy or disaster changes people. Companies are forced to undertake abrupt, unexpected, and drastically different adjustments from their old business models, which leads to the emergence of completely new markets, goods, services, operations, networks of collaboration, or leadership (Dahles & Susilowati, 2015).

It is also crucial to note that resilience in business is found in both human and organizational reactions to turbulence and discontinuities. This includes the ability to tolerate systematic discontinuities as well as adapt to changing risk settings (Starr, Newfrock & Delurey, 2003; Crichton, Ramsay & Kelly, 2009). Organizational resilience is defined as the ability of an organization to plan for, respond to, and learn from bad occurrences (including a crisis as an unanticipated but extremely unfavourable event) to bounce back for survival in the near run and also to bounce forward for thriving over time.

The concept of business resilience as explained above is represented in Figure 5. In summary, it shows that business resilience in the event of a crisis and uncertainty is better mitigated with some organizational characteristics such as efficiency, diversity and proactiveness. These characteristics can either allow a business to maintain the trend of its

performance even in adversities or bounce back after being affected by the crisis in the short term.

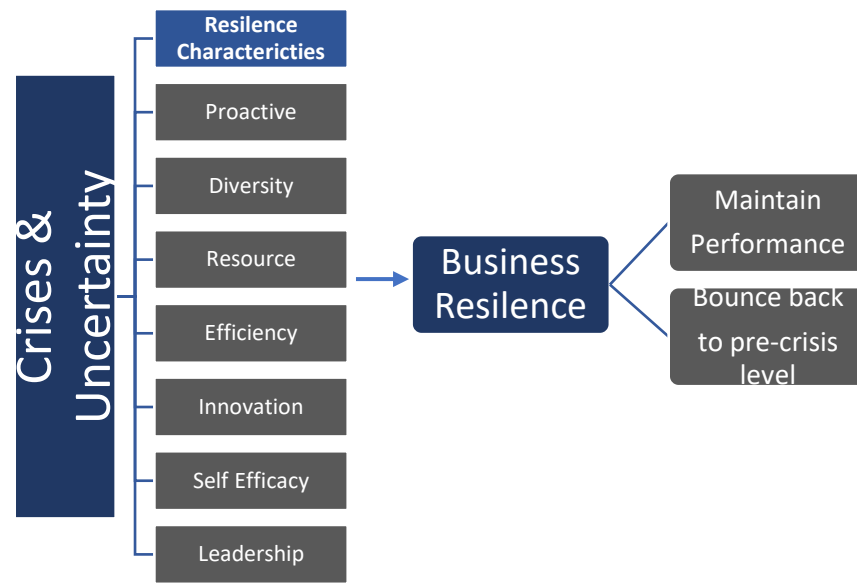


Figure 5: Conceptual Framework for Business Resilience

Source: Authors' drawn.

3.2 Empirical literature

Disruptions or shocks are at the foundation of resilience research, and there is a virtually infinite variety of shocks that resilience research has dealt with, including natural disasters, the global economic crisis, policy upheaval, and more (Tan, 2021). Short-term shock and slow-burning challenges are the two main categories used to categorize disruptions. While long-term challenges like industrial, technical, and institutional frameworks typically evolve gradually, short-term shocks, like a global economic crisis or trade war, are sudden, distinct events (Boschma, 2015). Economic geographers generally focus more on short-term shocks, especially economic crises, as a result of the current global economic crisis. As a result, research on corporate resilience has grown in importance in recent years, especially in the context of crisis periods such as economic downturns, natural disasters, and pandemics.

Businesses may use a variety of tactics to increase their resilience and there are several factors affecting business resilience during crisis periods. Diversifying their business, implementing contingency plans, investing in

technology and innovation, and forming strong partnerships with stakeholders are some of these measures. Similarly, Ozdemir et al. (2022) argued that organizations that concentrated on developing good ties with suppliers and consumers fared better during the COVID-19 epidemic. In addition, while trying to conceptualize small business resilience throughout the COVID-19 pandemic, Hadjielias, Christofi and Tarba (2022) designed longitudinal qualitative research in which they collected data from 35 small business owner-managers between April and December 2020. The study revealed that owner-managers reactions and resilient abilities at both the personal and leadership levels support resilient behaviours at the company level. The study proposes a fresh understanding of business resilience at the person-role-organization nexus level by drawing on a psychological approach.

In the same vein, Purwanti and Hapsari (2021) used partial least squares analysis to investigate the role of business resilience as an SME's core competency in improving business performance during a pandemic crisis. The study discovered that resilience may be assessed in two dimensions: adaptive and planned resilience, since they have differing effects on company performance. Adaptive resilience is found to have a positive and significant effect on business performance, in contrast to planned resilience which is not. The finding suggests that to overcome threats and challenges, entrepreneurs should not only rely on their capabilities to predict threats and challenges and prepare a plan to overcome them. Therefore, businesses must always look for ways to enhance their capabilities and competencies so that they are ready to anticipate dangers and overcome unforeseen obstacles. The corporate organization's leader, its social capital, its internal collaboration, its organizational experience, and the backing of its employees could all contribute to determining its adaptive resilience.

Furthermore, Wamba (2022) showed that the nature of business and the type of leadership they adopt also have a bearing on their ability to be resilient during periods of crisis. This was proved by examining data on 280 companies in Cameroon as a case study to analyse the impact of the COVID-19 crisis on company performance. Although the businesses under investigation seemed to be resilient during the pandemic, the study discovered that family firms were more resilient in terms of financial and social performance than non-family enterprises. Additionally, it was

stated that firms with a family member serving as the CEO or whose management was dominated by the family that owns the company showed more resilience. The significance of shareholder identification in enhancing company performance amid shock occurrences was investigated by Perwitasari et al. (2022). The results of the fixed effects model regression demonstrated that, during the pandemic, family and institutional ownership had a beneficial impact on company performance whereas government ownership had a negative one. This suggests that family members' direct supervision and control of their firms may boost their economic gains. Additionally, given the size of the institutional ownership, investors play a significant role in reducing business risk and improving firm performance.

From the description of resilience provided above, it can be concluded that a firm's performance during a crisis is a good indicator of how resilient the firm is because a firm's performance may be impacted by its external environment, such as an economic crisis (Alves et al., 2020; Torres, Marshall & Sydnor, 2019). Since they have an impact on social activity, factors like pandemic breakouts or natural disasters are known to contribute to economic crises.

On measuring the impact of crises on business performance, many recent papers are available that have studied firms' performance during a crisis, especially in the advent of the 2008–09 crisis and how various factors propagated the shocks (Bonciu, 2010). Similarly, several articles have examined the resilience of businesses during the COVID-19 pandemic by measuring their performance before and during the crisis. For instance, Claessens, Djankov and Xu (2011) evaluated the performance of manufacturing companies in 42 countries and discovered that the crisis had a higher detrimental effect on companies that were more sensitive to global trade and aggregate demand. Using a sample of French companies, Bricongne et al. (2012) demonstrated that the impact of the crisis on major corporations was primarily at the intensive margin and had less of an impact on the products being provided to export destinations.

Stewart and Chowdhury (2021) used the GMM estimator to examine the asymmetric impacts of the banking sector crisis on growth resilience in a panel of 140 countries. According to the study, a more stable banking sector decreases the negative impact of a financial crisis on GDP growth, offering economic resilience during crisis periods. According to

Kontogeorgos, Pendaraki and Chatzitheodoridis (2017), although cooperative business models seemed to be more resilient during crisis periods than other business models, the profitability of cheese businesses was negatively impacted during the economic crisis period, with smaller businesses showing the most significant efficiency and profitability losses. Similarly, results from the study conducted by Setiawan (2018) on listed companies on the India Stock Exchange during the crisis period of 2009-2011, show that the financial crisis did not harm the financial performance of the companies.

Golubeva (2021) extended the discussion of firm resilience to international evidence using data from 13 countries. The result of the performance model deployed shows that both performance accountability and corporate governance were severely tested by the crisis. Additionally, Madaleno and Barbuta-Misu (2019) looked at the financial performance of European enterprises in the context of the economic crisis using annual financial statement data from a sample of non-financial firms from European countries for the years 2006 to 2015. According to the results of the fixed and random effects panel estimators, the crisis under consideration had a significant positive impact on financial performance as well as liquidity, asset turnover, and labour productivity, which means that businesses tend to exert more effort to maintain financial performance in the face of a crisis. Utilizing a Geographic Information System (GIS), Jarmin and Miranda (2009) projected that Hurricane Katrina had a significant influence on business growth and payrolls when compared to historical business performance and businesses situated in locations that were not affected by Katrina. According to their research, the firms that had the biggest economic damage shortly after Katrina shut down.

Summarily, although several studies have attempted to analyse the impact of a crisis on business resilience, the majority have focused largely on regional analysis or specific subsets of the business community, such as SMEs. Moreover, much of the existing literature lacks a comprehensive and empirical analysis of the impact of multiple crises on businesses, especially those focusing on Nigeria. While some studies have attempted to measure the productivity of businesses during past economic crises, they have typically only examined the effects of a single crisis at a time. Therefore, this study seeks to fill this gap by providing a detailed and empirical analysis of the impact of the three most recent economic crises

in Nigeria: the global financial crisis of 2008-2009, the economic recession of 2016-2017, and the COVID-19 pandemic of 2020-2021. Furthermore, this study will employ a qualitative approach to provide a more robust and nuanced understanding of the impact of these crises on Nigerian businesses. By doing so, this study aims to provide a more comprehensive understanding of how businesses in Nigeria have been affected by these economic shocks and will contribute to the broader literature on economic crises and their impact on businesses. The outcome of this study will also provide policymakers and businesses with insights and recommendations for how to mitigate the negative effects of future crises.

4 Data and Methodology

4.1 Data

The study sample comprised an unbalanced panel of 151 companies listed on the Nigerian Exchange (NGX) from 2000 to 2021. The sample companies were taken from different sectors of the economy and categorized into agriculture (5), finance and insurance (50), industrial (49), trade (11) and other services (36). The final sample consisted of 2794 firm-year observations.

Data was sourced from the financial reports of companies as contained in the Anostat Database of Analysts Data Services and Resources Limited (ADSR). The dependent variable returns on assets (ROA), which was used as a measure of companies' performance was regressed against the following independent variables: financial leverage, liquidity ratio, solvency ratio, assets turnover ratio, labour productivity, and the exogenous dummy crisis. The description of the variables used in this study is given in Table 1.

Table 1: Description of Variables

Variable	Calculation
Returns on Assets (%)	Profit after tax/Total assets
Financial Leverage (%)	Total liabilities/Total equity
Firm Size	Log. of Total assets
Solvency Ratio	Total assets/Total liabilities
Assets Turnover Ratio	Turnover/Total assets
Labour Productivity	(Turnover/1000)/Number of employees
Crisis Dummy	2008, 2009, 2016, 2017, 2020, 2021 = 1; Others = 0.

Source: Author.

4.2 Model specification

The model used for estimation followed a panel data approach (an unbalanced panel), combining time series with cross-section data, analysed through time (years) and for several companies. The standard static model with $i = 1, \dots, N$, and $t = 1, \dots, T$ is presented as:

$$y_{it} = \beta_0 + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where: i refers to the company and t to the year, y_{it} represents the dependent variables, ROA and ROE in the respective models, X_{it} is a K-dimensional vector of the explanatory variables, β_0 is the intercept, independent of i and t , β is a vector of the slopes, and ε_{it} is the error that varies over i and t .

The study estimated fixed and random effects to examine the general and individual effects of the crises on the financial performance of companies in the country and different sectors of the economy. Thus, the study empirically examined the interaction between company performance measure (ROA) and both the financial and non-financial measures accounting for crisis effects. The models estimated to capture the mediating effect of the crises on companies' performance are stated as follows:

$$ROA_{it} = \beta_0 + \beta_1 asset_turnover_{it} + \beta_2 financial_leverage_{it} + \beta_3 labour_productivity_{it} + \beta_4 size_{it} + \beta_5 solvency_ratio_{it} + \beta_6 crisis_{it} + \varepsilon_{it} \quad (2)$$

To examine the impact of each crisis on business performance, the following models were also estimated:

$$ROA_{it} = \gamma_0 + \gamma_1 asset_turnover_{it} + \gamma_2 financial_leverage_{it} + \gamma_3 labour_productivity_{it} + \gamma_4 size_{it} + \gamma_5 solvency_ratio_{it} + \gamma_6 crisis1_{it} + \gamma_7 crisis2_{it} + \gamma_8 crisis3_{it} + \varepsilon'_{it} \quad (3)$$

where: *crisis1*, *crisis2* and *crisis3* are dummies for crisis in 2008-2009, 2016-2017 and 2020-2021 respectively. The apriori expectation is that the financial and non-financial measures should positively impact business performance.

5. Results and Discussion

5.1 Descriptive statistics

Table 2 demonstrates that average performance as measured by ROA and ROE was 1.33% and 1.79% respectively, implying that most companies had positive profitability during the periods under consideration. On average, the size, labour productivity, asset turnover ratio, and financial leverage of the sample companies were 7.02, 53.56, 0.71, and 2.55 respectively.

Table 2: Descriptive Statistics

	Obs.	Mean	Max.	Min.	Std. Dev.	Skewness	Kurtosis
ROA	2735	1.33	65.48	-99.32	14.98	-2.69	18.52
Size	2735	7.02	10.07	3.67	1.01	0.39	3.19
Solvency Ratio	2728	2.62	88.02	-6.61	4.59	10.32	155.74
Labour Productivity	2380	53.56	997.57	0.00	130.24	4.97	30.05
Financial Leverage	2794	2.55	100.73	-86.74	9.40	2.88	64.21
Crisis	2794	0.29	1.00	0.00	0.45	0.95	1.90
Asset Turnover Ratio	2735	0.71	10.41	-1.46	0.76	2.99	22.37

Source: Author's computation.

5.2 Correlation

Table 3 presents the correlation between the variables and shows a weak pairwise correlation among all independent variables. Also, the correlation coefficient between all independent variables on the dependent variables is weak.

Table 3: Correlation matrix of the variables

	1	2	3	4	5	6	7
1. ROA	1.000						
2. Size	0.140	1.000					
3. Solvency ratio	0.122	-0.134	1.000				
4. Labour productivity	0.062	0.287	-0.067	1.000			
5. Financial leverage	0.019	0.118	-0.112	0.021	1.000		
6. Crisis	-0.044	0.160	0.009	0.094	0.008	1.000	
7. Asset turnover ratio	0.166	-0.233	-0.111	0.377	0.007	-0.083	1.000

Source: Author's computation.

5.3 Impact of crises on business performance (with sectoral variation)

Using both random and fixed effects, the results obtained by panel estimations for business performance measure (ROA) are presented in Table 4. The table shows the results of the fixed and random effects estimation while the Hausman's test was also presented to determine the best estimation method in each case.

The results show that asset turnover, size and solvency ratio exerted a significant positive effect on the performance of businesses during the period under investigation. Also, it can be seen that companies were less resilient in the presence of a crisis as the coefficient is negative and also statistically significant. This implies that firms were not able to maintain financial performance during the crises examined (the global financial crisis, Nigeria's recession in 2016 and the COVID-19 pandemic). Similarly, using the ROA, the results presented in Table 5 show that businesses tended to be less resilient during a crisis as the coefficient appeared to be statistically insignificant.

These results align with that of Golubeva (2021) who extended the discussion of firm resilience to international evidence using data from 13 countries. The results of the performance model deployed showed that both performance accountability and corporate governance were severely tested by the crisis. However, the result differs from those of Madaleno and Barbuta-Misu (2019), and Setiwan (2018) which found that a crisis exerts a significant positive effect on financial performance, meaning that businesses are resilient to crises and still maintain profitability amidst a crisis.

Generally, the results show that businesses in Nigeria were less resilient to these crises as they negatively impacted their performance measures. However, this study also examined the sectoral variation in the resilience of these businesses by analysing businesses in various sectors in separate models. The results show that businesses in the agricultural sector were the most resilient to these crises followed by those in trade and other services sectors. However, businesses in the finance and insurance sector as well as the industrial sector were the most impacted by these shocks as they appeared to be less resilient to the crisis. The results suggest that the sector in which a business operates influences its ability to weather the storm of a crisis. Kontogeorgos et al., (2017) revealed that cooperative businesses appeared to be more resilient than their manufacturing counterparts during the crisis periods examined.

Table 4: Impact of Crisis on Business Performance – General crisis effect

Variable	Full Sample		Agriculture		Finance and Insurance		Industrial		Other Services		Trade	
	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect
Asset Turnover	5.895***	5.4506***	25.1371***	-	13.5466***	11.1991***	10.2479***	10.4017***	-3.8708*	-1.3309	2.3565**	2.6945***
Financial Leverage	0.0226	0.0214	0.0725	-	0.0214	0.0572	0.0126	0.0136	-0.0132	-0.0008	0.0511	0.0419
Labour Productivity	0.0029	-0.0024	0.0710	-	0.0414**	0.0379**	-0.0558***	-0.0465***	0.0357*	0.0277**	0.0106*	0.0042
Size	1.9786***	3.0624***	10.0303	-	-0.5743	0.7351	8.7105***	8.1407***	-7.4565***	-3.5445**	-4.5907	0.5554
Solvency Ratio	1.1805***	1.1909***	2.9832**	-	0.9194***	0.8496***	2.2133***	2.3593***	1.2437**	1.2173*	0.6833	0.2429
Crisis	-1.6585***	-1.8401***	-0.2473	-	-1.8488**	-2.2690***	-2.2864**	-2.1977**	-0.4332	-0.8067	-1.3967	-2.6710
Adjusted R²	0.3349	0.0666	0.4484	-	0.3285	0.0822	0.5038	0.1835	0.1601	0.0259	0.1303	0.0431
Prob. Hausman Test		0.0161		-		0.0005		0.3164		0.4708		0.2968
N	2368	2368	77	-	783	783	881	881	424	424	203	203

Source: Author's computation.

Note: ***, **, and * represent 1%, 5% and 10% levels of significance respectively.

Table 5: Impact of Crisis on Business Performance - Individual crisis effect

Variable	Full Sample		Agric		Finance and Insurance		Industrial		Other Services		Trade		
	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	
Asset Turnover	5.8113***	5.3713***	25.4774***	-	13.7413***	10.6463***	10.1642***	10.3502***	-4.6984**	-1.7663	2.1177**	2.4855***	
Financial Leverage	0.0208	0.0194	0.0683	-	0.0178	0.0627	0.0118	0.0129	-0.0186	-0.0055	0.0396	0.0296	
Labour Productivity	0.0032	-0.0021	0.0741	-	0.0348	0.0349**	-0.0547***	-0.04561***	0.0391**	0.0292**	0.0118**	0.0065	
Size	2.1137***	3.1468***	9.5693	-	-0.5000	0.9968	8.8358***	8.2103***	-6.8450**	-3.3777**	-4.7279	-0.3008	
Solvency Ratio	1.1494***	1.1658***	2.9809**	-	0.9233***	0.8436***	2.2047***	2.3499***	0.9217***	1.0238**	0.6799	0.3035	
Crisis1	-0.7327	-0.859	-1.1930	-	-2.0214**	-2.3675**	-1.6763	-1.6926	5.1366**	4.5246*	1.0982	0.0957	
Crisis2	-	-2.7607***	1.5063	-	-2.3551**	-3.0778***	-2.7837**	-2.5202*	-3.1058	-3.3060	-3.3807	-4.5513	
Crisis3	2.5328***	-1.8156	-1.9309***	-0.8806	-	-0.7449	-1.2889	-2.6056*	-2.5375*	-2.5313	-2.4152	-2.7781	-3.7706
Adjusted R ²	0.3351	0.0672	0.4325	-	0.3278	0.0804	0.5028	0.1813	0.1741	0.0396	0.1271	0.0381	
Prob. Hausman Test		0.0046		-		0.0000		0.5091		0.4862		0.6288	
N	2368	2368	77	-	783	783	881	881	424	424	203	203	

Source: Author's computation.

Note: ***, **, and * represent 1%, 5% and 10% levels of significance respectively. Crisis1, Crisis2 and Crisis3 represent dummy for crises in 2008-2009, 2016-2017 and 2020-2021 respectively.

The results presented in Table 5 show the outcome of the analysis conducted, taking into account individual crisis effects as well as sectoral variations, to examine the resilience of various businesses according to the sectors in which they operate. The results also show that the second crisis (the recession experienced in 2016-2017) appeared to affect business performance more than the remaining two, the global financial crisis and the COVID-19 pandemic. Generally, it was observed that the crises exerted more impact on businesses operating in the finance and insurance sector as they appeared to be more vulnerable. Businesses operating in the industrial sector were less resilient during the recession experienced in 2016 and COVID-19, while those categorized as other sectors were more impacted by the financial crisis and thus less resilient to the crisis. Similar to the results under the general crisis effects, businesses operating in the agricultural and trade sectors appeared to be more resilient to crisis.

6. Conclusion

This study investigated the resilience of Nigerian firms over three distinct crisis periods: the global financial crisis of 2007-2009, the 2016 recession, and the COVID-19 pandemic in 2020. The study's findings indicate that asset turnover, size, and solvency ratio had a favourable impact on business performance over the period under consideration. It can also be stated that during these periods, Nigerian firms were often less resilient to crisis. This means that businesses were unable to maintain financial performance during the crises under consideration. Furthermore, the recession that the economy experienced in 2016 appeared to have a stronger impact on businesses. In general, the crises had a greater impact on enterprises in the banking and insurance sectors as they were more vulnerable to these crises. Companies in the industrial sector were less resilient during the recession of 2016 and COVID-19, but those in other services sectors were more affected by the financial crisis and hence less resilient to the crisis.

The study also revealed that the sector in which these firms operate affected their resilience capacity since the results show that enterprises in the agriculture sector were the most robust to these crises, followed by those in trade and other services. Nonetheless, enterprises in the banking and insurance sectors, as well as those in the industrial sector, were the most vulnerable to the crises.

The findings of this study contribute to our understanding of the factors that enable businesses to weather crises and provide insights into strategies that can help businesses build resilience and survive future crises. Given the outcome of this study, it is clear that more needs to be done to support Nigerian businesses and enhance their resilience in the face of ongoing challenges. Hence, it is recommended that companies take proactive measures to manage their finances, operations, and workforce efficiency by streamlining processes, reducing costs, and increasing productivity.

By taking these steps, businesses in Nigeria can build the resilience necessary to weather economic crises and emerge stronger in the long run. Additionally, policymakers can play a role in supporting businesses by implementing policies that encourage entrepreneurship, incentivize innovation, and facilitate access to financing and other resources.

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