

Macroeconomic factors, firm characteristics and financial performance

A study of selected quoted manufacturing firms in Nigeria

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Abstract

Purpose – The purpose of this paper is to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of quoted manufacturing firms in Nigeria. Specifically, the study investigates the effect of interest rate, inflation rate, exchange rate and the gross domestic product (GDP) growth rate, while the firm characteristics were size, leverage and liquidity. The dependent variable financial performance is measured as return on assets (ROA).

Design/methodology/approach – The study used the *ex post facto* research design. The population comprised all quoted manufacturing firms on the Nigerian Stock Exchange. The sample was restricted to companies in the consumer goods sector, selected using non-probability sampling method. The study used multiple linear regression as the method of validating the hypotheses.

Findings – The study finds no significant effect for interest rate and exchange rate, but a significant effect for inflation rate and GDP growth rate on ROA. Second, the firm characteristics showed that firm size, leverage and liquidity were significant.

Practical implications – The study has implications for regulators and policy makers in formulating policy decisions. In addition, managers may better understand the interplay between macroeconomic factors, firm characteristics and profitability of firms.

Originality/value – Few studies have addressed the interplay of macroeconomic factors and firm characteristics in determining the profitability of manufacturing firms in the country and developing countries in general.

Keywords Nigeria, Financial performance, Manufacturing firms, Firm characteristics, Macroeconomic

Paper type Research paper

1. Background of the study

Micro and macroeconomic factors affect the performance of a firm. Microeconomic factors exist within the company and under the control of management; they include product, organizational culture, leadership, manufacturing (quality), demand and factors of production (Broadstock *et al.*, 2011; Adidu and Olanye, 2006). Macroeconomic factors exist outside the company and not under the control of management; they include social, environmental, political conditions, suppliers, competitors, government regulations and policies (Adidu and Olanye, 2006). Key economic factors include the Consumer Price Index (CPI), unemployment, gross domestic product (GDP), stock market index, corporate tax rate and interest rates (World Bank Group, 2015; Broadstock *et al.*, 2011). These factors



(i.e. macro) can pose a positive or negative threat to the performance of a firm. While micro factors are within the control of management, the macro factors are beyond the control of management (Dioha *et al.*, 2018).

This was evidenced from the crises in Latin America, East Asia, Russia and the global financial crisis in 2007 (Issah and Antwi, 2017). And presently, the recession witnessed in Nigeria, which business analysts opined that led to the delisting of some companies, has brought to limelight the implications of macroeconomic factors on corporate performance (Zeitun *et al.*, 2007).

For instance, the monetary policy of a country affects all sectors through the cost of debt and the availability of money/credit, which could affect a firm's ability to access external sources of fund. Fiscal policies affect a firm's after tax net cash flow, its cost of capital, and potentially the demand for its products, and survival (Zeitun *et al.*, 2007). Also, increases in the nominal interest rate and inflation rate intensify the aggregate rates of failure or default (Robson, 1996; Davis, 1995; Wadhvani, 1986). In most developing countries, for instance Nigeria, macroeconomic factors, such as hyperinflation and increasing exchange rates, are some of the factors affecting the performance of manufacturing firms (Owolabi, 2017).

However, the performance of a firm is not affected by macroeconomic factors. According to the resource-based view (RBV), the internal attributes of an organization determine its position in the competitive environment (Denizel and Özdemir, 2006). The attributes of a firm's physical, human and organizational capital enable the firm conceive of and implement strategies that improve its efficiency and effectiveness (Barney, 1991). Industry and corporate specific factors have been shown to be significant determinants of corporate performance (Oyebanji, 2015; Rajkumar, 2014; Akinyomi, 2013; Akintoye, 2008).

The subject of financial performance has received significant attention from scholars (Kaguri, 2013). It has been of primary concern to various stakeholders in all forms of businesses because of its implications on organizational health and ultimate survival. Therefore, its measurement and determining factors have gained increased attention, more especially in developing countries in the area of business and corporate finance literature (Dioha *et al.*, 2018). High performance reflects management effectiveness and efficiency in making use of company's resources and this, in turn, contributes to the country's economy at large (Naser and Mokhtar, 2004).

2. Statement of the problem

Firms make several operational and strategic decisions which are usually moderated by the macroeconomic environment; these include financing decision, investing decision and operational decision (Owolabi, 2017). Thus, performance is often gauged from stability in the macro economy, such as exchange rate and inflation rate fluctuations, the CPI, level of government expenditure, interest rates, among others. However, macroeconomic volatility is much higher in developing countries than developed ones (Owolabi, 2017). For instance, the Nigerian economy has shown volatility in exchange rate, inflation, interest rate, among several others (Agu *et al.*, 2014; Ogbale *et al.*, 2011). Analysts opine that growth in the manufacturing sector is hindered negatively from high lending rates, which invariably is responsible for high cost of production (Rasheed, 2010).

Studies have extensively examined the effect of macroeconomic factors on firm performance in developed countries (Barakat *et al.*, 2016; Broadstock *et al.*, 2011; Kandir, 2008; Stock and Watson, 2008; Ibrahim and Aziz, 2003). However, there is little empirical evidence how macroeconomic variables impact on the performance of manufacturing firms in Nigeria (Owolabi, 2017).

In Nigeria, major macroeconomic indicators have shown significant fluctuations over time, more especially as the country emerges from recession. For instance, inflation rate as measured by the CPI is presently at double-digit level 14.33 as at February 2018.

Exchange rate increased tremendously from to over 300 as at April 2018. In a communiqué issued in April 2018, the Central Bank of Nigeria (CBN) Governor Mr Godwin Emefiele raised its money supply growth forecast for 2018 to 10.98 percent. The CBN had earlier projected a money supply growth of 10.29 percent for 2018 (Vanguard, 2018). The GDP at current basic prices has also steadily increased. Studies have extensively focused on the banking sector (Ogunbiyi and Ihejirika, 2014; Osamwonyi and Michael, 2014).

However, survival and growth of firms also depend on interaction of macroeconomic factors and firm characteristics. Using data from nine African countries, Lemma and Negash (2013) found evidence that income level, growth rate and inflation influence the capital structure of firms. However, this is further affected by industry- and firm-specific characteristics. Ghareli and Mohammadi (2016) reported mixed findings for the effect of firm-specific characteristics on financial reporting quality. Studies have also substantiated the effect of firm characteristics on financial performance (Dioha *et al.*, 2018). For instance, firm characteristics such as firm age (Swiss, 2008), firm size (Malik, 2011), liquidity (Dogan, 2013) and leverage (Mule and Mukras, 2015) have been associated with profitability.

The recent study by Foyeke *et al.* (2015) on a sample of firms from both financial and non-financial sectors in Nigeria revealed a significant positive relationship between financial performance and firm size with the level of corporate governance disclosure. Thus, given the interaction of the two factors in determining performance, there is a need for additional evidence on the joint association between macroeconomic factors, firm characteristics and financial performance in developing countries (Adeoye and Elegunde, 2012). More so, Izedonmi and Abdullahi (2011) have shown that the influence of macroeconomic factors varied from sector to sector. Therefore, there is a need to examine using such firms from the consumer goods sector.

Therefore, the thrust of this study is to examine macroeconomic factors, firm characteristics and financial performance of selected manufacturing companies in Nigeria.

3. Objective of the study

The main objective of the study is to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of quoted manufacturing firms in Nigeria. The study intends to achieve the following specific objectives:

- (1) to examine the effect of interest rate on return on assets (ROA) of consumer goods manufacturing firms;
- (2) to ascertain the effect of inflation rate on ROA of consumer goods firms;
- (3) to examine the effect of exchange rate on ROA of consumer goods manufacturing firms;
- (4) to determine the effect of GDP growth rate on ROA of consumer goods manufacturing firms;
- (5) to examine the effect of firm size on ROA of consumer goods manufacturing firms;
- (6) to analyze the effect of leverage on ROA of consumer goods manufacturing firms; and
- (7) to analyze the effect of liquidity on ROA of consumer goods manufacturing firms.

4. Review of related literature

4.1 Conceptual framework

4.1.1 *Macroeconomic factor(s)*. The word “macroeconomics” is derived from the Greek prefix *makro* meaning “large” and economics, and is a branch of economics which deals with the performance, structure, behavior and decision making of the economy as a whole (Sullivan and Sheffrin, 2003). The macro environment looks at forces surrounding a firm

that have the potential to affect the way it operates (Davis and Powell, 2012). The Institute of Chartered Accountants (ICAN) opined that it can be viewed as a set of factors or conditions that are external to the firm but which can influence the operations of the firm.

The macro environment refers to those conditions and forces which are external to the firm and are beyond the individual business unit, but they all operate within it (Taher *et al.*, 2010). Duncan (1972) opined that the external business environment refers to the totality of factors outside an organization that are taken into consideration by an organization in its decision making. These factors depend largely on the complexity and dynamism of the environment (Duncan, 1972; Dess and Beard, 1984). The external business environment is classified as being stable when it does not show any changes, unstable when it shows relative changes and dynamic when it shows changes continuously (Aguilar, 1967).

Studies have indicated changes in the value of financial assets to be responsive to macroeconomic factors such as inflation rate, exchange rate, interest rates, GDP, money supply, unemployment rate, dividends yields and so forth (Fosu *et al.*, 2014). The study focused on the following selected macroeconomic variables: interest rate, inflation, exchange rate, money supply and GDP (Table I).

4.1.1.1 Interest rate. Crowley defined interest rate as the price a borrower pays for the use of money they borrow from a lender or fee paid on borrowed assets. Ngugi (2001) described interest rate as a price of money that reflects market information regarding expected change in the purchasing power of money or future inflation. Economists argue that interest rate is the price of capital allocation over time; monetarist use the interest rate as an important tool to attract more saving, as increases in the interest rates attract more savings and the decrease in interest rate will encourage investors to look for another investment that will generate more return accordingly (Murungi, 2014). That interest rates are important because they control the flow of money in the economy. High interest rates curb inflation but also slow down the economy. Low interest rates stimulate the economy, but could lead to inflation.

The lending interest rate (percent) in Nigeria was reported at 17.58 percent in 2017, according to the World Bank collection of development indicators, compiled from officially recognized sources. The rate was marginally higher than periods prior. In Nigeria, Acha and Acha (2011) examined the implication of interest rates on savings and investment and reported that interest rate was a poor determinant of savings and investment. While Obamuyi and Olorunfemi (2011) proved that financial reform and interest rates had significant impact on economic growth in Nigeria. At the firm level, Khan and Mahmood (2013) showed that the financial structure of some industry makes firms in that industry more susceptible to interest rates volatilities than others. Mwang'at *et al.* (2016) found a significant relationship between interest rate and financial performance of micro enterprises in Kenya. Barnor (2014) found a significant negative effect of interest rate on stock market returns of listed firms in Ghana.

Year	GDP per capita (USD)	GDP (USD billion)	Money (annual variation in %)	Inflation rate (CPI, annual variation in %)	Exchange rate (vs USD)	Policy interest rate (%)
2013	3,082	522	1.3	8.5	155.2	12.00
2014	3,312	576	20.6	8.1	167.5	13.00
2015	2,766	494	5.8	9	196.5	11.00
2016	2,206	405	17.8	15.7	304.5	14.00
2017	1,995	376	1.7	16.5	305.5	14.00

Source: www.focus-economics.com/countries/nigeria

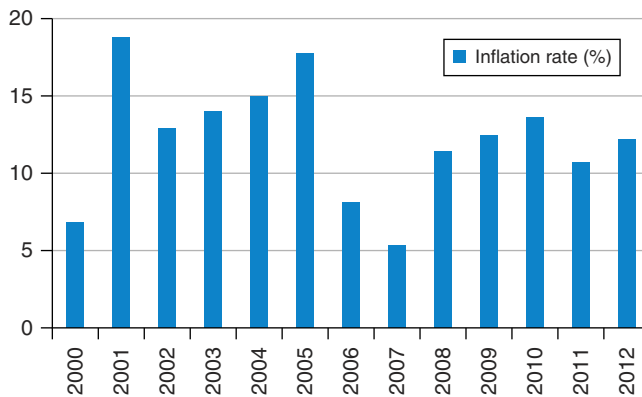
Table I.
Selected macroeconomic variables

4.1.1.2 Inflation rate. Jhingan (2002) defined inflation as a persistent rise in the general level of prices. Akers (2014) stated that inflation rate measures changes in the average price level based on a price index. Inflation can be measured in several ways; however, two commonly used measures are the GDP Deflator or a CPI indicator. The GDP Deflator is a broad index of inflation in the economy; the CPI measures changes in the price level of a broad basket of consumer products. The CPI measures average retail prices that consumers pay. A high or increasing CPI indicates existence of inflation. Higher prices tend to reduce overall consumer spending which, in turn, leads to a decrease in GDP while inflation itself is not negative, rapidly increasing rates of inflation signal the possibility of poor macroeconomic health. Economists distinguish between two types of inflation: demand-pull inflation and cost-push inflation. Demand-pull inflation occurs when aggregate demand for goods and services in an economy rises more rapidly than an economy's productive capacity. Cost-push inflation, on the other hand, occurs when prices of production process inputs increase. Rapid wage increases or rising raw material prices are common causes of this type of inflation.

Inflation rate is primarily measured in Nigeria as the percentage change in the CPI which has the food and core index, to give the headline inflation. The CPI measures the price of the representative food and services components such as food, alcoholic beverages, energy, housing, clothing, transport, health, communication, transport, etc. (Figure 1).

Several studies have shown a negative effect of inflation on economic growth. For instance, the study by Usman and Adejare (2013) in Nigeria reported a negative relationship between market all share index, market volume and GDP with inflation. Similarly, Alimi (2014) reported a deleterious effect of inflation on financial development; proxied as broad definition of money as ratio of GDP; quasi money as share of GDP; and credit to private sector as share of GDP. The study by Djalilov and Piesse (2016) found a negative relationship with profitability of early transition countries and positive relationship in late transition countries.

4.1.1.3 Exchange rate. According to Business Dictionary, exchange rate is the price for which the currency of a country can be exchanged for another country's currency. Harvey (2012) described exchange rate as the value of two currencies relative to each other. It is the price of one currency expressed in terms of another currency. It is the price at which the currency of one country can be converted to the currency of another. Exchange rates are either fixed or floating. Fixed exchange rates are decided by central banks of a country,



Source: www.proshareng.com

Figure 1.
Nigeria's inflation rate
from 2000 to 2012

whereas floating exchange rates are decided by the mechanism of market demand and supply (*The Economic Times*, 2017). Factors that influence exchange rate include: interest rates; inflation rate; trade balance; political stability; internal harmony; general state of economy; and quality of governance.

Martin and Mauer (2003) showed that understanding the impact of foreign exchange risk is a critical element for purposes of firm valuation and risk management. The study by Barnor (2014) found a significant positive effect of exchange rate on stock market returns of listed firms in Ghana.

4.1.1.4 Gross domestic product (GDP). GDP is the total market value of goods and services produced by a country's economy during a specified period of time. It includes all final goods and services, that is, those that are produced by the economic agents located in that country regardless of their ownership and that are not resold in any form. According to Mwangi (2013), GDP is a most commonly used macroeconomic indicator to measure total economic activity within an economy; its growth rate reflects the state of the economic cycle. It is used throughout the world as the main measure of output and economic activity.

In economics, the final users of goods and services are divided into three main groups: households, businesses and the government. One-way GDP is calculated – known as the expenditure approach – by adding the expenditures made by those three groups of users. Accordingly, GDP is defined by the following formula:

$$\text{GDP} = \text{Consumption} + \text{Investment} + \text{Government spending} + \text{Net exports} [\text{GDP} = C + I + G + NX],$$

where Consumption (*C*) represents private-consumption expenditures by households and non-profit organizations; Investment (*I*) refers to business expenditures by businesses and home purchases by households; Government spending (*G*) denotes expenditures on goods and services by the government; and Net exports (*NX*) represents a nation's exports minus its imports. The idea behind the expenditure approach is that the output that is produced in an economy has to be consumed by final users, which are either households, businesses or the government.

Tan and Floros (2012) on a sample of banks in China reported a negative relationship between GDP growth and bank profitability. Sinha and Sharma (2016) also documented a positive relationship between profitability and GDP in India, while Trujillo-Ponce (2013) on a sample of banks in Spain reported a positive impact of GDP growth on ROA and return on equity (ROE).

4.2 Firm characteristics

Zou and Stan (1998) described firm characteristics as a firm's demographic and managerial variables which, in turn, comprise part of the firm's internal environment. According to Kogan and Tian (2012), firm characteristics include firm size, leverage, liquidity, sales growth, asset growth and turnover. Others include ownership structure, board characteristics, age of the firm, dividend pay-out, profitability, access to capital markets and growth opportunities (McKnight and Weir, 2008; Subrahmanyam and Titman, 2001):

- (1) Firm Size has become dominant in empirical corporate finance studies and has been widely established among the most significant variables (Kioko, 2013). Studies, however, document mixed results on the effect of size, while some confirm (Tarawneh, 2006; Sarkaria and Shergill, 2000); others find mixed or no effect at all (Goddard *et al.*, 2006; Mariuzzo *et al.*, 2003). There is a positive significant relationship between size and profitability (Liargovas and Skandalis, 2008; Akhavein *et al.*, 1997; Smirlock, 1985). More recently, Lopez-Valeiras *et al.* (2016) revealed that the relationship between size and financial performance is negatively mediated by indebtedness.

- (2) Leverage refers to the proportion of debt to equity in the capital structure of a firm (Omondi and Muturi, 2013). It strives to measure what portion of the total assets is financed by debt funds. Leverage ratios are used to measure business and financial risks of a firm (Okwoli and Kpelai, 2006). Studies have shown a positive significant relationship between leverage and firm size (Booth *et al.*, 2001; Wald, 1999; Rajan and Zingales, 1995; Marsh, 1982). Leverage is the amount of debt used to finance other capital expenditure that can improve firm financial performance (Lin *et al.*, 2006; Pandey, 2005).
- (3) Liquidity refers to the firm's ability to convert its short-term assets into cash in order to meet its day-to-day operation (Douglas, 2014). Liquidity is used to measure firm's ability to meet its current maturing liabilities (Okwoli and Kpelai, 2006). Liargovas and Skandalis (2008) opined that firms can use liquid asset to finance its activities and investment when external finance is not available. According to Katchova and Enlow (2013), liquidity ratios measure the firm's ability to pay off its short-term debt obligations. Examples are the current ratio and quick ratio, which measure the health of a firm in the short run.
- (4) Sales growth refers to increase in sales over a specific period of time. Sustainable growth is defined as the annual percentage growth in sales that is consistent with the firm's financial policies (Pandey, 2005). The amount a company derives from sales compared to a previous, corresponding period of time in which the latter sales exceed the former. Several studies such as Omondi and Muturi (2013) and Rehana *et al.* (2012) measure sales growth as the current year sales minus prior year sales and dividing by prior year sales.

4.3 Financial performance

Performance is multi-faceted, and the appropriate measure selected to assess corporate performance depends on the type of organization evaluated, and the objectives to be achieved through that evaluation (Kaguri, 2013). Firm performance encompasses three specific areas: financial performance (profits, ROA, return on investment, etc.); product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added) (Richard *et al.*, 2009).

Lebans and Euske (2006) provided a set of definitions to illustrate the concept of performance:

- performance is a set of financial and non-financial indicators which offer information on the degree of achieving of objectives and results; and
- performance is dynamic, requiring judgment and by using a causal model that describes how current actions may affect future results.

There are two kinds of performance: financial performance and non-financial performance. Company's performance is evaluated in three dimensions. The first dimension is company's productivity, or processing inputs into outputs efficiently. The second is profitability dimension, or the level of which company's earnings are bigger than its costs. The third dimension is market premium, or the level of which company's market value is exceeding its book value (Walker, 2001).

According to Mutende *et al.* (2017), financial performance refers to a firm's ability to achieve planned financial results as measured against its intended outputs. Financial performance is usually measured using financial ratios, such as ROE, ROA, return on capital, return on sales (ROS) and operating margin (Gilchris, 2013). Ratios provide a broader understanding of a company's performance, since they are calculated from

information obtained from financial statements of a company. Thus, the emphasis of financial performance is mostly on variables related directly to financial report. The categories of ratios include: liquidity, activity, profitability, debt or solvency:

- (1) Liquidity ratios: measure the availability of cash to pay debt.
- (2) Activity ratios: measure how quickly a firm converts non-cash assets to cash.
- (3) Debt ratios: measure the firm's ability to pay long-term debt.
- (4) Profitability ratios: measure the firm use of its assets to generate the acceptable rate of return.
- (5) Market ratios: measure investors' response to owning a firm's stock and the cost of stock. They are concerned with the return on investment for shareholders.

4.4 Theoretical framework

The study is anchored on systems theory to explain the interaction of the external environment with the performance of the firm; and the RBV to explain how internal factors (firm characteristics) determine the outcome of the firm.

4.4.1 Systems theory. Nwachukwu (2006) defined a system as "a set of interrelated and interdependent parts arranged in a manner that produces a united whole." Kühn (1974) considered a system as "any pattern whose elements are related in sufficiently regular way to justify attention." Kühn (1974) extended the theory to include the fact that the knowledge of a part of a system facilitates the knowledge of another part. A system can either be controlled (cybernetic) or uncontrolled. A controlled system sensed information (detector), applies rules to take decision on what is sensed (selector) and makes some transaction or communication between the system (effector). According to Kühn (1974), the aim of decision (communication and transaction) between systems is to achieve equilibrium. A system can either be a closed system in which case interactions occur only between elements within the system and not with any system outside it, or an open system where interactions occur both within the system and outside it. Closed systems tend toward negative entropy with the likelihood of decaying due to the absence of exchanges with outside systems.

According to Laszlo and Krippner (1998), "Systems theory promises to offer a powerful conceptual approach for grasping the interrelation of human beings and the associated cognitive structures and processes specific to them in both society and nature." It is "concerned with the holistic and integrative exploration of phenomena and events." The term conveys "a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process." The general systems theory aims at looking at the entire world as a composite of co-existing, interacting and interrelating elements. This is not to undermine or downplay the value of studying units, subsystems or even systems within a larger context (a reductionist approach) as is done in specialization, but to place all disciplines within proper perspective of the whole.

4.4.2 Resource-based view (RBV). The RBV posits a link between firms' internal resources and performance (Denizel and Özdemir, 2006). According to RBV, the competitive advantage of a firm can be built on a firm's resources (Bharadwaj *et al.*, 1993; Hunt, 1999) that meet some important conditions such as value, heterogeneity, rareness, durability, imperfect mobility, unsubstitutability, imperfect imitability and *ex ante* limits to competition (Čater, 2001). Barney (1991) further observed that a little amount of heterogeneity should certainly exist within different firms in order to be able to explain the observed performance differences between firms. Otherwise, all firms possessing identical resources would

conceive of and implement the same strategies and could only improve their effectiveness and efficiency to the same extent, ending up with no sustained competitive advantage or performance superiority (Denizel and Özdemir, 2006).

Lately, the RBV has focused on the relationship with environmental threats and opportunities (Barney, 1986, 1996; Mahoney and Pandian, 1992).

RBV lists four necessary attributes of firm resources that can generate sustained competitive advantages as follows:

- (1) Being valuable (enabling a firm to conceive of and implement strategies that will improve its effectiveness and efficiency).
- (2) Being rare (By this assertion RBV does not dismiss the importance of valuable but common resources. However, it claims that such resources can help to ensure a firm's survival but cannot lead to competitive superiority for the firm).
- (3) Being imperfectly imitable (due to unique historical conditions; causal ambiguity between the competitive advantage and the resource giving rise to it; and social complexity of the resource generating competitive advantage).
- (4) Absence of strategically equivalent substitutes.

4.5 Review of empirical studies

4.5.1 Macroeconomic factors and firm performance. Issah and Antwi (2017) investigated the role of macroeconomic variables on firm's performance in the UK. Multiple regression was used to analyze the data. They studied a total of 59 macroeconomic variables, subjected to principal component analysis for variable reduction. The full sample model showed adjusted R^2 value of 0.91, and the following variables were significant: lagged ROA; adjusted unemployment rate; benchmarked unit labor costs; real GDP and exchange rate. And five out of the six studied industries had significant F -values.

Owolabi (2017) examined the relationship between economic characteristics and financial performance in Nigeria. The economic characteristics were: government expenditure, inflation, interest rate and exchange rate. The sample comprised 31 manufacturing firms listed on the Nigeria Stock Exchange. The duration of the study was from 2010 to 2014. The effect of government expenditure, inflation, interest rate and exchange rate on EPS and ROA was not significant. Interest rate was significant for only ROE, while all the variables (government expenditure, inflation, interest rate and exchange rate) were significant for Tobin's Q .

Mwangi and Wekesa (2017) examined the influence of economic factors on firm performance in Kenya. They study used a descriptive research design, and the sample comprised 74 staff working in Kenya Airways Finance Department. The economic factors were interest rate and taxation; the dependent variables of the study were efficiency and growth. The study used primary data. They used multiple regression technique in testing the hypotheses. They found that economic factors had significant effect on performance.

Rao (2016) examined the relationship between macroeconomic factors and financial performance in Nairobi. The sample comprised five firms listed under the energy and petroleum sector of the Nairobi Stock Exchange. The study was from 2004 to 2015. The study found a significant negative effect of interest rate and oil price on financial performance. However, GDP growth, exchange rate and inflation rate were not significant.

Otambo (2016) examined the effect of macroeconomic variables on financial performance of banks in Kenya. The duration of the study was from 2006 to 2015. ROA was used to measure financial performance while quarterly interest rates, quarterly exchange rates (USD/KSH), quarterly GDP and quarterly inflation rates were used to measure interest rates,

exchange rates, GDP and inflation rates. The study found that interest rates and exchange rates affect financial performance negatively while GDP affects financial performance positively. Inflation rates were not significant.

Udu (2015) examined the influence of environmental factors on business operations in Nigeria. The duration of the study was from 1981 to 2013. The variables studied were inflation rate, interest rate, unemployment rate, and exchange rate, and business operations proxied as real GDP was the dependent variable. Ordinary least squares method of analysis was employed to test the hypothesis. The study found that interest rate and unemployment rate were positive and significant.

Gado (2015) examined the impact of macro environment on performance in Nigeria. The sample comprised 20 most capitalized companies. The study used ordinary least squares and correlation. The results showed that collectively the macro-environmental variables have significant and positive impact on performance. Specifically, government expenditure and inflation have a positive impact while exchange and interest rate have a negative impact.

Murungi (2014) examined the relationship between macroeconomic variables and financial performance in Kenya. The sample comprised 46 Insurance firms listed on Kenya Stock Exchange. The study duration was from 2009 to 2013. The data were analyzed using multiple regression. The study found that interest rate and GDP were statistically significant. Others such as inflation rate, exchange rate, money supply and size of assets were not statistically significant.

Kiganda (2014) examined the effect of macroeconomic factors on profitability of banks in Kenya. The study focused on Equity Bank. The studied macroeconomic factors were: real GDP, inflation and exchange rate. The study used the Cobb–Douglas production function transformed into natural logarithm and used annual data from 2008 to 2012. The results showed that the macroeconomic factors (real GDP, inflation and exchange rate) have insignificant effect on profitability of Equity Bank at 5 percent level of significance. The study focused on a single bank which limits the generalizability of the findings.

Ogunbiyi and Ihejirika (2014) examined the effect of interest rates on profitability of Deposit Money Banks in Nigeria. They used country-level aggregate annual data over a period of 13 years from 1999 to 2012. They employed multivariate regression analysis. The results showed that maximum lending rate, real interest rate and savings deposit rate have negative and significant effect on profitability of banks as measured by ROA at 5 percent level of significance. However, no significant relationship was found between interest rate and net interest margin of banks.

Osamwonyi and Michael (2014) investigated the impact of macroeconomic variables on profitability of banks in Nigeria from 1990 to 2013. They used pooled ordinary least squares (POLS) regression. The macroeconomic variables were: GDP, interest and inflation rate; profitability was proxied using ROE. The study reported a positive effect of GDP on ROE. Interest rate had a significant negative effect on ROE, while inflation was not significant at all levels of significance.

Enyioko (2012) examined the effect of interest rate policies on performance of banks in Nigeria. The sample comprised 20 banks that emerged from the consolidation exercise of 2004. They applied regression and error correction models to analyze the relationship. The study reported that interest rate policies have not affected the performance of banks significantly.

Izedonmi and Abdullahi (2011) studied the effect of three macroeconomic variables, i.e. inflation, exchange rate and market capitalization on the performance of 20 sectors of the Nigerian Stock Exchange (NSE) for the period 2000–2004. The study reported that the extent to which a factor affected the various sectors varied from one sector to another. Jointly the study found no significant influence of macroeconomic factors on the NSE.

Kandir (2008) investigated the effect of macroeconomic factors on stock returns in Turkey. The sample comprised all non-financial firms listed on the Istanbul Stock Exchange for the period 1997–2005. Macroeconomic variables in the study were: growth rate of industrial production index, change in CPI, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and return on the MSCI World Equity Index. Multiple regression was employed in data analysis. The study finds that exchange rate, interest rate and world market return affect all of the portfolio returns, while inflation rate is significant for only 3 of the 12 portfolios. On the other hand, industrial production, money supply and oil prices do not have any significant effect on stock returns.

4.5.2 Firm characteristics and firm performance. Dioha *et al.* (2018) examined the effect of firm characteristics on profitability in Nigeria. The sample consisted of 18 listed consumer goods companies for the period 2011–2016. Profitability was proxied by ROS, while firm characteristics were proxied by firm age, firm size, sales growth, liquidity and leverage. Multiple regression was used to analyze the data. The study found that size, sales growth and leverage have significant effect on profitability. However, age and liquidity were not significant.

Bist *et al.* (2017) examined the impact of firm characteristics on financial performance in Nepal. They studied 18 Nepalese insurance companies from 2008 to 2016. Multiple regression was used to analyze the data. The regression analysis showed that the coefficients of leverage and premium growth were positive and significant at 1 percent level. However, the coefficients of diversification, size, liquidity and claim payments were negative and insignificant.

Lasisi *et al.* (2017) examined the determinants of profitability of listed agricultural companies in Nigeria. The sample comprised four agricultural firms listed on the Nigeria Stock Exchange for the period 2008–2016. The independent variables were leverage, liquidity, sales growth and operating expenses efficiency. They analyzed the panel data using multiple regression technique. The study findings revealed that liquidity and sales growth have a positive and significant effect on profitability (ROE), leverage had a negative and significant effect on profitability, and operating expenses efficiency revealed an insignificant negative effect on the profitability. The study was, however, delimited to firms in the agricultural sector.

Mohammed and Usman (2016) examined the impact of corporate attributes on share price in Nigeria. The sample comprised five listed pharmaceutical firms for a period of 10 years (2004–2013). Multiple regression was used to analyze the data. They found that size, leverage and growth have a positive and significant impact on profitability.

Bhutta and Hasan (2013) examined the impact of firm-specific and macroeconomic factors on profitability of firms in Pakistan. The sample comprised firms listed on the food sector of Karachi Stock Market for the period 2002–2006. The firm-specific factors include debt to equity, tangibility, growth and size, and the macroeconomic factor was food inflation. They found a significant negative relationship between size and profitability, and an insignificant positive relationship between tangibility, growth, food inflation and profitability. Similarly, an insignificant negative relationship is observed between debt to equity ratio and firm profitability.

Chandrapala and Knápková (2013) studied the effect of firm-specific factors on financial performance in Czech Republic. The sample comprised 974 firms over the period 2005–2008, using data from Albertina database. They used pooled and panel designs for the analysis. They found that the firm size and sales growth had significant positive impact on ROA. However, debt ratio and inventory had significant negative impact on ROA.

Kaguri (2013) examined the relationship between firm characteristics and financial performance in Kenya. The sample comprised 17 life insurance companies over the period of

2008–2012. The studied firm characteristics were: size, diversification, leverage, liquidity, age, premium growth and claim experience of life insurance companies in Kenya. Regression analysis was used to analyze the data. All variables were found to be statistically significant.

Mehari and Aemiro (2013) examined firm-specific factors that determine performance in Ethiopia. The sample comprised nine insurance companies for the period 2005–2010. The firm characteristics were: size, leverage, tangibility, loss ratio (risk), premium growth, liquidity and age. Performance was proxied as return on total assets (ROA). The results of regression analysis revealed that size, tangibility and leverage were positive and statistically significant; however, loss ratio (risk) was negative and statistically significant. Premium growth, age and liquidity were statistically non-significant.

Similarly, Sumaira and Amjad (2013) examined determinants of profitability in Pakistan. The sample comprised 31 insurance firms (life and non-life insurance) from 2006 to 2011. The study found that leverage, size and age of the firm were significant determinants of profitability, while sales growth and liquidity were not significant.

Sambasivam and Ayele (2013) studied the performance of insurance companies in Ethiopia. The sample comprised nine listed insurance companies from 2003 to 2011. The firm-specific factors were: age, size, volume of capital, leverage, liquidity, growth and tangibility of assets, while profitability was proxied by ROA. They found that growth, leverage, volume of capital, size and liquidity were significant determinants of performance. While liquidity and leverage are negative, age and tangibility were not significant.

4.5.3 Macroeconomic factors, firm characteristics and firm performance Rani and Zergaw (2017) examined bank-specific, industry-specific and macroeconomic factors on profitability of Ethiopian commercial banks. Profitability was proxied by ROE and net interest margin. They used secondary data from 2005 to 2015. Multiple regression was used to analyze the data. The study results showed that capital adequacy, management efficiency, earnings and liquidity ratios significantly affected ROE, while net interest margin significantly affected capital adequacy and earnings. The industry-specific variable proxied by industry growth rate had significant impact on net interest margin. All the macroeconomic factors (inflation, GDP, tax rate and exchange rate) had positive but insignificant impact both on ROE and net interest margin.

Ghareli and Mohammadi (2016) studied the effect of macroeconomic factors and firm characteristics on quality of financial reporting in Iran. The macroeconomic factors in the study were exchange rates, inflation rates, interest rates and GDP. The firm characteristics included working capital, size of firm and financial leverage. The sample comprised 91 firms listed on the Tehran Stock Exchange. The duration of the study was from 2005 to 2013. Multiple linear regression and Spearman correlation test were used to test the hypotheses. The results showed that exchange rate, interest rate and leverage were positive and significant, while GDP was negative and significant. Inflation rate was negative but not significant, while firm size was not significant.

Owoputi *et al.* (2014) examined the impact of bank-specific, industry-specific and macroeconomic factors on profitability of banks in Nigeria. They found that inflation rate was significant for both ROA and ROE. Interest rate was significant for ROA and NIM. The real growth rate of GDP was not significant. Among the bank-specific variables, size was found significant for the profitability measures: ROA, ROE and NIM.

Mirza and Javed (2013) examined macro and micro determinants of financial performance in Pakistan. The sample comprised 60 Pakistani firms listed on Karachi Stock Exchange for the period 2007–2011. The results showed that income per capita was significant and positive, inflation was significant but negative. Firm characteristics showed that debt to equity ratio was significant and positive, both short-term and long-term debt to

total assets was significant and negative. Firm size was significant and positive, while liquidity (current ratio) was significant but negative.

Riaz and Mehar (2013) investigated the impact of bank-specific variables and macroeconomic indicators on profitability of commercial banks in Pakistan from 2006 to 2010. The variables studied were: asset size, credit risk, total deposits to total assets ratio, interest rate (discount rate) and the profitability measures were: ROA and ROE. The sample included all 32 commercial banks. They employed regression for data analysis. They reported a significant impact of the bank-specific variables (asset size, total deposits to total assets and credit risk) and interest rate on ROE, while credit risk and interest rate had a significant impact on ROA.

Kanwal and Nadeem (2013) investigated the impact of macroeconomic variables on profitability of public limited commercial banks in Pakistan for years 2001–2011. They used POLS to examine the effect of three major external factors: inflation rate, real GDP and real interest rate on profitability indicators: ROA, ROE and equity multiplier (EM) ratios in three separate models. The study finds that there is a strong positive relationship of real interest rate with ROA, ROE and EM. Second, real GDP is found to have an insignificant positive effect on ROA, but an insignificant negative impact on ROE and EM. Inflation rate, on the other hand, has a negative link with all three profitability measures.

Charles (2012) investigated the performance of monetary policy on manufacturing sector in Nigeria, using econometrics test procedures. The result indicates that money supply positively affects manufacturing index performance while company lending rate, income tax rate, inflation rate and exchange rate negatively affect the performance of manufacturing sector.

Zeitun *et al.* (2007) examined macro and microeconomic determinants of corporate performance and failure in Jordan. The sample comprised 167 Jordanian companies from 1989 to 2003. The key macroeconomic indicators studied were nominal interest rate, changes in money supply, production manufacturing index, inflation, exports and availability of credit, including Islamic credit. They found that interest rate negatively and significantly affects firm performance measured by ROA. Both production manufacturing index and growth of Islamic credit facilities positively and significantly affected firm's performance. The significant microeconomic variables were size, age and total debt to total assets.

5. Methodology

5.1 Research design

Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Claire *et al.*, 1962). The study made use of *ex post facto* research design. Kerlinger and Rint (1986) observed that an *ex post facto* investigation seeks to reveal possible relationships by observing an existing condition or state of affairs and searching back in time for plausible contributing factors. *Ex post facto* design is deemed appropriate for the study because the study is non-experimental, and seeks to investigate causal relationship between the dependent and independent variables of the study (Owolabi, 2017).

5.2 Population of the study

Population is defined as all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to generalize the results of the study (Borg and Gall, 1989). The population of the study is made up of firms quoted on the floor of the NSE as at end of 2017. The number of firms included in the various sectors on the NSE is shown in Table II.

S no.	Sector	Number of firms	Macroeconomic factors
1	Agriculture	5	
2	Consumer goods	21	
3	Conglomerates	6	
4	Financial services	57	
5	Health care	11	
6	ICT	7	
7	Industrial goods	15	
8	Natural resources	4	
9	Oil and gas	12	
10	Services	25	
	Total	163	

Source: The Nigerian Stock Exchange Website (2017)

Table II.
Population of
companies by sector

5.3 Sample size of the study

The study focused on firms in the consumer goods sector of the NSE. The study employed a variant of non-probability sampling, namely, the purposive sampling technique and included all the firms in the consumer goods sector into the sample.

List of consumer goods manufacturing companies (Nigerian Stock Exchange Website, 2017):

- (1) DN Tyre & Rubber Plc.
- (2) Champion Breweries Plc.
- (3) Golden Guinea Breweries Plc.
- (4) International Breweries Plc.
- (5) Nigerian Breweries Plc.
- (6) 7-Up Bottling Company Plc.
- (7) Dangote Flour Mills Plc.
- (8) Dangote Sugar Refinery Plc.
- (9) Flour Mills Nigeria Plc.
- (10) Honeywell Flour Mill Plc.
- (11) Multi-Trex Integrated Plc.
- (12) N. Nigeria flour mills plc.
- (13) Union Dicon Salt Plc.
- (14) Cadbury Nigeria Plc.
- (15) Nestle Nigeria Plc.
- (16) Nigerian Enamelware Plc.
- (17) Vitafoam Nigeria Plc.
- (18) P.Z. Cussons Nigeria Plc.
- (19) Unilever Nigeria Plc.
- (20) McNichols Plc.
- (21) Nascon Allied Industries Plc.

5.4 Sources of data

The study employed secondary data. These are described as data previously obtained for purposes other than the present study. The sources utilized include annual financial reports, such as Statement of Comprehensive Income and the Statement of Financial Position, of the selected companies for the period 2011–2017. Secondary data for economic factors were obtained from the Statistical Bulletin of the CBN.

5.5 Technique of data analysis

The study employed multiple linear regression technique. This is a “statistical technique which analyses the relationship between a dependent variable and multiple independent variables by estimating coefficients for the equation on a straight line” (Hair *et al.*, 2006). A multiple linear regression model was used to understand the relationships between the dependent variable and the independent variables (Malhotra and Birks, 2000).

5.5.1 *Model specification.* The model is stated in its implicit form below as follows:

$$\text{ROA} = F(\text{Macro-economic factors, Firm characteristics}).$$

The estimation approach leads to the following estimation equations:

$$\text{ROA}_{it} = \alpha + \text{IntR}_t + \text{InfR}_t + \text{ExcR}_t + \text{GDPR}_t + \text{Firm Size}_{it} + \text{Leverage}_{it} + \text{Liquidity}_{it} + \mu. \quad (1)$$

5.5.2 Robustness test

$$\text{ROE}_{it} = \alpha + \text{IntR}_t + \text{InfR}_t + \text{ExcR}_t + \text{GDPR}_t + \text{Firm Size}_{it} + \text{Leverage}_{it} + \text{Liquidity}_{it} + \mu. \quad (2)$$

5.5.3 *Description of variables.* The list below presents the description of variables included in the model:

(1) Dependent variable:

- ROA_{it} : measured as the proportion of net income to total assets in the period (t);
- ROE_{it} : measured as the proportion of net income to total equity in the period (t); and
- NPM_{it} : measured as the proportion of net profit to revenue in the period (t).

(2) Independent variables:

- IntR_t : measured as the official lending rate during a year;
- InfR_t : measured as the annual change in the CPI;
- ExcR_t : measured as the official exchange rate during a year;
- GDPR_t : the variable is an indication of economic growth. Measured as the annual change in GDP;
- Firm Size_{it} : measured as the natural logarithm of total assets in the period (t);
- Leverage_{it} : measured as the proportion of debt to equity in the period (t); and
- Liquidity_{it} : measured as the proportion of debt to equity in the period (t).

6. Data analysis

6.1 Descriptive statistics and model results

The descriptive statistics are shown in Table III. The number of observations was 146; while the p -value of the Jarque–Bera statistics showed that all variables were not normally distributed. The model’s degree of goodness of fit was estimated and evaluated using

multiple coefficients denoted by R^2 and the adjusted R^2 . R^2 is the square of this measure of correlation and indicates the proportion of the variance in the dependent variable that is explained by the independent variables in the model. However, the disadvantage of R^2 is that it tends to over-estimate the success of the model in some cases when applied to the real world, so an adjusted R^2 value takes into account the number of variables in the model and the number of observations is used (Ahmed, 2006). The R^2 value is 0.28; and the adjusted R^2 is 0.24; therefore the independent variables explain approximately 24 percent of the variation in the dependent variable (Table IV).

The F -statistic measures the statistical significance of the model; the F -value is 7.60 ($p < 0.05$); therefore, the model is statistically significant. The properties of both the standardized and unstandardized regression coefficients were used in assessing each independent variable (Issah and Antwi, 2017). The unstandardized coefficient measures the average change in the dependent variable associated with one unit change of the independent variable, holding other independent variables constant. Standardized

	IntR _t	InfR _t	ExcR _t	GDPR _t	Firm Size _{it}	Leverage _{it}	Liquidity _{it}
Mean	12.56164	11.50645	211.9160	3.273973	24.18891	0.536857	2.405487
Median	12.00000	10.80000	188.4524	4.300000	24.77322	0.293164	0.495891
Maximum	14.00000	16.50000	305.5000	6.300000	27.01342	5.950043	161.7999
Minimum	11.00000	8.047411	159.2632	-1.600000	18.04201	-1.020951	-87.86760
SD	1.050272	3.175347	58.61567	2.616975	2.038982	0.858093	21.45939
Skewness	0.194952	0.490764	0.822211	-0.711094	-1.218807	3.351398	5.349119
Kurtosis	1.754506	1.672726	1.873250	2.215223	4.337613	18.97932	45.02500
Jarque-Bera	10.36163	16.57741	24.17328	16.05085	47.03127	1,826.619	11,440.03
Probability	0.005623	0.000251	0.000006	0.000327	0.000000	0.000000	0.000000
Sum	1,834.000	1,679.942	30,939.74	478.0000	3,531.581	78.38117	351.2011
Sum sq. dev.	159.9452	1,462.010	498,190.6	993.0411	602.8298	106.7668	66,773.30
Observations	146	146	146	146	146	146	146

Source: EViews 9

Table III.
Descriptive statistics of variables

Variable	Coefficient	SE	t-Statistic	Prob.
<i>C</i>	-0.259721	0.204524	-1.269880	0.2063
IntR _t	-0.006350	0.016894	-0.375893	0.7076
InfR _t	0.009470	0.005263	1.799492	0.0741
ExcR _t	-0.000413	0.000457	-0.902177	0.3685
GDPR _t	0.015564	0.009098	1.710709	0.0894
Firm Size _{it}	0.013125	0.006829	1.922123	0.0567
Leverage _{it}	0.059902	0.017021	3.519396	0.0006
Liquidity _{it}	0.000678	0.000200	3.390252	0.0009
<i>Weighted statistics</i>				
R^2	0.278248	Mean dependent variable		0.366369
Adjusted R^2	0.241638	SD dependent variable		0.555485
SE of regression	0.423122	Sum squared resid.		24.70646
F -statistic	7.600210	Durbin-Watson stat.		1.214496
Prob. (F -statistic)	0.000000			

Unweighted statistics

R -squared	0.052610	Mean dependent variable		0.101658
Sum squared resid	34.68503	Durbin-Watson stat.		1.233974

Source: EViews 9

Table IV.
Panel EGLS
(cross-section weights)

coefficient (also known as beta) measures the contribution of each independent variable on the dependent variable.

6.1.1 Analysis of H1

H1. There is no significant effect of interest rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that interest rate had a negative but non-significant effect on ROA ($t: -0.375893; p > 0.05$). The study therefore rejects the alternate hypothesis and accepts the null of “no significant effect of interest rate on ROA of consumer goods manufacturing firms.”

6.1.2 Analysis of H2

H2. There is no significant effect of inflation rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that inflation rate had a negative but significant effect on ROA ($t: 1.799492; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of inflation rate on ROA of consumer goods manufacturing firms.”

6.1.3 Analysis of H3

H3. There is no significant effect of exchange rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that exchange rate had a negative but non-significant effect on ROA ($t: -0.902177; p > 0.05$). The study therefore rejects the alternate hypothesis and accepts the null of “no significant effect of exchange rate on ROA of consumer goods manufacturing firms.”

6.1.4 Analysis of H4

H4. There is no significant effect of GDP growth rate on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that GDP growth rate is positive and had a significant effect on ROA ($t: 1.710709; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of GDP growth rate on ROA of consumer goods manufacturing firms.”

6.1.5 Analysis of H5

H5. There is no significant effect of firm size on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that firm size is positive and had a significant effect on ROA ($t: 1.922123; p < 0.10$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of firm size on ROA of consumer goods manufacturing firms.”

6.1.6 Analysis of H6

H6. There is no significant effect of leverage on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that leverage is positive and had a significant effect on ROA ($t: 3.519396; p < 0.05$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of leverage on ROA of consumer goods manufacturing firms.”

6.1.7 Analysis of H7

H7. There is no significant effect of liquidity on ROA of consumer goods manufacturing firms.

“List of consumer goods manufacturing companies” showed that liquidity is positive and had a significant effect on ROA ($t: 3.390252; p < 0.05$). The study therefore rejects the null hypothesis and accepts the alternate of “a significant effect of liquidity on ROA of consumer goods manufacturing firms.”

6.2 Discussion of findings

The study explored the interrelatedness of macroeconomic factors, firm characteristics and financial performance. The macroeconomic factors showed inconsistent results; interest rate had negative but non-significant effect, while inflation rate had a negative and significant effect. Exchange rate was negative but non-significant, while GDP growth rate was positive and significant. The mixed results may partially be attributed to the proxy for financial performance used in a study. The study by Issah and Antwi (2017) in the UK found that real GDP and exchange rate were significant. Otambo (2016) in Kenya also reported that GDP positively affected ROA. Inflation rates were not significant. Owolabi (2017) in Nigeria showed that inflation, interest rate and exchange rate had no significant effect on ROA. The interest rate and exchange rate behavior were in line with the present study of non-significant effect. Similarly, Rao (2016) in Nairobi reported a non-significant effect of exchange rate on financial performance. Gado (2015) in Nigeria found a positive effect for inflation while exchange and interest rate had negative effects.

This is contrary to Mwangi and Wekesa's (2017) study conducted in Kenya, which showed that interest rate had a significant effect on performance. And Rao (2016) in Nairobi reported a significant negative effect of interest rate on financial performance. But the GDP growth and inflation rate were not significant. Otambo (2016) in Kenya also reported a negative effect of interest rates and exchange rates on ROA; inflation rates were not significant.

The study by Udu (2015) in Nigeria which proxied business operations as real GDP found that interest rate had a positive and significant effect on real GDP. On a sample of Deposit Money Banks in Nigeria, Ogunbiyi and Ihejirika (2014) found that real interest rate has negative and significant effect on ROA. Also, Osamwonyi and Michael (2014) who measured profitability using ROE reported a positive effect for GDP and a significant negative effect for interest rate, while inflation was not significant. Contrary to this, Enyioko (2012) found that interest rate has not affected performance of banks significantly. In conclusion, the effect of macroeconomic factors on performance may be sector based. This supports the study by Izedonmi and Abdullahi (2011) that the extent to which a factor affected a particular sector varies from one sector to another.

In other African countries such as Kenya, the study by Murungi (2014) on a sample of insurance firms found that interest rate and GDP had significant effects on performance, while inflation and exchange rates were not statistically significant. This is contrary to the study by Kiganda (2014) conducted in Kenya but with a focus on Equity Bank, which reported that real GDP, inflation and exchange rate had insignificant effect on profitability. Similarly, Kandir (2008) investigating the effect of macroeconomic factors on stock returns in Turkey reported that exchange rate and interest rate affect all the portfolio returns, while inflation rate was significant for 3 out of the 12 portfolios.

The analysis of firm characteristics showed that firm size, leverage and liquidity had positive and significant effect. The study by Dioha *et al.* (2018) in Nigeria found that size and

leverage have significant effect on profitability; but liquidity was not significant. This is consistent with the study by Bist *et al.* (2017) in Nepal that showed that leverage had a positive and significant effect; but, size and liquidity were negative and insignificant. Chandrapala and Knápková (2013) in Czech Republic found that firm size has a significant positive impact on ROA. However, contrary to the present study, they found that debt ratio had significant negative impact on ROA.

Using firms from the agricultural sector the study by Lasisi *et al.* (2017) in Nigeria revealed that liquidity has a positive and significant effect on ROE, but leverage had a negative and significant effect on ROE.

The study by Mohammed and Usman (2016) in Nigeria showed that size and leverage have a positive and significant effect on share price. In Pakistan, the study by Bhutta and Hasan (2013) on firms listed on the food sector of Karachi Stock Market reported a significant negative relationship between size and profitability, and a positive insignificant relationship between food inflation and profitability. Also, debt to equity ratio had insignificant negative relationship.

Studies conducted on other sectors also show similar and mixed findings. Kaguri (2013) on a sample of life insurance companies in Kenya found that size, leverage and liquidity were statistically significant. On a sample of insurance companies in Ethiopia, Mehari and Aemiro (2013) revealed that size and leverage were positive and statistically significant; however, liquidity was statistically non-significant. Similarly, Sumaira and Amjad (2013) in Pakistan found that leverage and size were significant determinants of profitability, while liquidity was not significant. Sambasivam and Ayele (2013) in Ethiopia, which proxied profitability as ROA, found that leverage and liquidity were significant and negative.

The *F*-statistic which tests the significance of the model was significant ($p < 0.05$). Therefore, jointly macroeconomic factors and firm characteristics interact to determine firm performance. Studies such as Rani and Zergaw (2017) on the banking sector in Ethiopia showed that macroeconomic factors (inflation, GDP and exchange rate) had positive but insignificant impact on ROE. Earnings and liquidity ratios significantly affected ROE. An additional industry-specific variable proxied by industry growth rate had also a significant impact on net interest margin. Also, the study by Owoputi *et al.* (2014) on banks in Nigeria found that inflation rate was significant for both ROA and ROE. Interest rate was significant for ROA and NIM. The GDP growth rate was not significant. Size was significant for ROA, ROE and NIM. From an Islamic perspective, Zeitun *et al.* (2007) in Jordan found that interest rate negatively and significantly affects ROA. The significant microeconomic variables were size and total debt to total assets.

Riaz and Mehar (2013) in Pakistan reported a significant impact of asset size and interest rate on ROE; and interest rate had a significant impact on ROA. Kanwal and Nadeem (2013) found that there is a strong positive relationship of real interest rate with ROA, ROE and EM. Second, real GDP is found to have an insignificant positive effect on ROA, but an insignificant negative impact on ROE and EM. Inflation rate, on the other hand, has a negative link with all three profitability measures.

Using samples drawn from manufacturing firms, studies by Ghareli and Mohammadi (2016) on firms in Iran showed that exchange rate, interest rate and leverage had positive and significant effect, while GDP was negative and significant. Inflation rate was negative but not significant, while firm size was not significant. Mirza and Javed (2013) in Pakistan found that inflation was significant but negative. Leverage was significant and positive, firm size was significant and positive, while liquidity (current ratio) was significant but negative. Specifically, Charles (2012) in Nigeria reported a positive relationship between money supply and manufacturing index performance, while inflation rate and exchange rate had negative effect on the performance of manufacturing sector.

7. Conclusion and recommendations

7.1 Conclusion

The study was undertaken to explore the interrelationship between macroeconomic factors, firm characteristics and financial performance of manufacturing firms in Nigeria. Studies have shown that both micro and macro factors interact to determine the financial performance of a firm. While micro factors are under the control of management, the macro factors are outside the company and not under the control of management. The Nigerian economy has shown volatility in macroeconomic factors, such as exchange rate, inflation, interest rate, etc. These have hindered performance of manufacturing firms over time; however, firm performance also depends on interaction of such factors with firm characteristics. As decisions regarding financing and liquidity are purely within the ambit of the manager. This then calls for a need to provide evidence on the joint association between macroeconomic factors, firm characteristics and financial performance in developing countries.

7.2 Recommendations

The study makes the following recommendations:

- (1) managers should effectively consider interest rates in making borrowing decisions, as this may affect the cost of debt;
- (2) government should be wary of the prevailing inflation rate because of its negative effect on manufacturing capacity utilization;
- (3) government should endeavor to maintain a stable exchange rate to enable firms secure the needed resources from foreign countries;
- (4) the government and regulatory authorities should make sustainable effort at ensuring a sustainable GDP growth rate by providing policies which favor the growth of domestic manufacturing firms;
- (5) managers should seek efforts at expansion and diversification; this is because of the positive benefits of firm size on growth potential of a firm;
- (6) the leverage position of a firm should be adequately monitored by managers because a highly geared firm may experience a negative performance over time; and
- (7) the liquidity posture of a firm should be monitored by managers; emphasis on industry and across firm comparison may be used in monitoring the status of a firm in relation to competitors.

References

- Acha, I.A. and Acha, C.K. (2011), "Interest rates in Nigeria: an analytical perspective", *Research Journal of Finance and Accounting*, Vol. 2 No. 3, pp. 71-81.
- Adeoye, A.O. and Elegunde, A.F. (2012), "Impacts of external business environment on organisational performance in the food and beverage industry in Nigeria", *British Journal of Arts and Social Sciences*, Vol. 6 No. 2, pp. 56-65.
- Adidu, F.A. and Olanye, P.A. (2006), *Basic Small Business Entrepreneurship: A Modern Approach*, Royal Pace Publisher, Agbor.
- Agu, S.U., Idike, A.N., Okwor, I.M.I and Ugwunta, D. (2014), "Fiscal policy and economic growth in Nigeria: Emphasis on various components of public expenditure", *Singaporean Journal of Business Economics, and Management Studies*, Vol. 2 No. 12, pp. 37-54.
- Aguilar, F.J. (1967), *Scanning the Business Environment*, Macmillan, New York, NY.

- Ahmed, M. (2006), "An empirical study to find out the relationship between macroeconomic variables, financial variables, bank-specific variables and bank profitability in context of Bangladesh", BBA dissertation, Independent University.
- Akers, H. (2014), "Key macroeconomic variables", EHow Contributor.
- Akhavein, J.D., Berger, A.N. and Humphrey, D.B. (1997), "The effects of megamergers on efficiency and prices: evidence from a bank profit function", *Review of Industrial Organization*, Vol. 12 No. 1, pp. 95-139.
- Akintoye, I.R. (2008), "Effect of capital structure on firms' performance", *European Journal of Social Science*, Vol. 4 No. 5, pp. 40-61.
- Akinyomi, O.J. (2013), "Effect of firm size on profitability: evidence from Nigeria manufacturing sector", *Prime Journal of Business Administration and Management*, Vol. 3 No. 9, pp. 1171-1175.
- Alimi, R.S. (2014), "Inflation and financial sector performance: the case of Nigeria", *Timisoara Journal of Economics and Business*, Vol. 7 No. 1, pp. 55-69.
- Barakat, M.R., Elgazzar, S.H. and Hanafy, K.M. (2016), "Impact of macroeconomic variables on stock markets: evidence from emerging markets", *International Journal of Economics and Finance*, Vol. 8 No. 1, pp. 195-207.
- Barney, J.B. (1986), "Strategic factor markets: expectations, luck and business strategy", *Management Science*, Vol. 32 No. 10, pp. 1231-1241.
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Barney, J.B. (1996), "The resource-based theory of the firm", *Organization Science*, Vol. 7 No. 5, p. 469.
- Barnor, C. (2014), "The effect of macroeconomic variables on stock market returns in Ghana (2000-2013)", doctoral dissertation, Walden University.
- Bharadwaj, S.G., Varadarajan, P.R. and Fahy, J. (1993), "Sustainable competitive advantage in service industries: a conceptual model and research propositions", *The Journal of Marketing*, Vol. 57 No. 4, pp. 83-99.
- Bhutta, N.T. and Hasan, A. (2013), "Impact of firm specific factors on profitability of firms in food sector", *Open Journal of Accounting*, Vol. 2 No. 2, pp. 19-25.
- Bist, J., Mali, R., SabitaPuri, Jha, R.K., SachyamKayastha and Bhattarai, S. (2017), "Impact of firm characteristics on financial performance of insurance companies in Nepal", *Osmania Journal of International Business Studies*, Vol. 12 No. 1, pp. 1-11.
- Booth, L., Aivazian, V., Demircuc-Kunt, A. and Maksimovic, V. (2001), "Capital structures in developing countries", *The Journal of Finance*, Vol. 56 No. 1, pp. 87-130.
- Borg, W.R. and Gall, M.A. (1989), *Educational Research: An Introduction*, 5th ed., Longman, New York, NY.
- Broadstock, D.C., Shu, Y. and Xu, B. (2011), "The heterogeneous impact of macroeconomic conditions on firms' earnings forecast", *Proceedings of Macao International Symposium on Accounting and Finance, Macao*.
- Čater, T. (2001), "Hipoteze o osnovah konkurenčne prednosti podjetja", *Organizacija*, Vol. 34 No. 2, pp. 64-74.
- Chandrapala, P. and Knápková, A. (2013), "Firm-specific factors and financial performance of firms in the Czech Republic", *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, Vol. 61 No. 7, pp. 2183-2190.
- Charles, A.N.B. (2012), "Investigating the performance of monetary policy on manufacturing sector in Nigeria", *Arabian Journal of Business and Management Review*, Vol. 2 No. 1, pp. 12-25.
- Claire, S., Wrightsman, L.S. and Cook, S.W. (1962), *Research Methods in Social Sciences*, McGraw-Hill, New York, NY.
- Davis, E.P. (1995), *Debt, Financial Fragility, and Systemic Risk, Revised and Expanded Edition*, Oxford University Press, New York, NY.

- Davis, G.F. and Powell, W.W. (2012), "Organization-environment relations", in Dunnette, M.D. and Hough, L.M. (Eds), *Handbook of Industrial Organizational Psychology*, 2nd ed., Consulting Psychologists Press, Palo Alto, CA.
- Denizel, M. and Özdemir, Ö. (2006), "A resource based and context dependent model of firm competitiveness", available at: www.pomsmeetings.org/confpapers/004/004-0557.pdf
- Dess, G.G. and Beard, D.W. (1984), "Dimensions of organizational task environments", *Administrative Science Quarterly*, Vol. 29 No. 1, pp. 52-73.
- Dioha, C., Mohammed, N.A. and Okpanachi, J. (2018), "Effect of firm characteristics on profitability of listed consumer goods companies in Nigeria", *Journal of Accounting, Finance and Auditing Studies*, Vol. 4 No. 2, pp. 14-31.
- Djalilov, K. and Piesse, J. (2016), "Determinants of bank profitability in transition countries: what matters most?", *Research in International Business and Finance*, Vol. 38 No. 2016, pp. 69-82.
- Dogan, M. (2013), "Does firm size affect firm profitability? Evidence from Turkey", *Journal of Finance and Accounting*, Vol. 4 No. 4, pp. 53-59.
- Douglas, J.E. (2014), "Bank liquidity requirements", The Brookings Institution, pp. 1-30.
- Duncan, R.B. (1972), "Characteristics of organizational environments and perceived environmental uncertainty", *Administrative Science Quarterly*, Vol. 17 No. 3, pp. 313-327.
- Enyioko, N. (2012), "Impact of interest rate policy and performance of Deposit Money Banks in Nigerian", *Global Journal of Management and Business Research*, Vol. 12 No. 21, pp. 23-30.
- Fosu, O.G., Bondzie, E.A. and Okyere, A.G. (2014), "Does foreign direct investment really affect Ghana's economic growth?", *International Journal of Academic Research and Management Science*, Vol. 3 No. 1, pp. 1-15.
- Foyeke, O.I., Iyoha, F.O. and Ojeka, S. (2015), "Firm size and financial performance: a determinant of corporate governance disclosure practices of Nigerian companies", *Journal of Accounting and Auditing: Research & Practice*, Vol. 1 No. 2015, pp. 223-225.
- Gado, N.D. (2015), "The impact of the Nigerian business environment on company performance: a case of 20 most capitalised companies in Nigeria", *International Journal of Business and Management Review*, Vol. 3 No. 4, pp. 36-48.
- Ghareli, S. and Mohammadi, A. (2016), "A study on the effect of macroeconomic variables and firm characteristics on the quality of financial reporting of listed firms in Tehran Stock Exchange", *Journal of Fundamental and Applied Sciences*, Vol. 8 No. 2, pp. 1777-1797.
- Gilchris, M. (2013), "Influence of bank specific and macroeconomic factors on the profitability of 25 commercial banks in Pakistan during the time period 2007-2011", *American Journal of Business and Finance*, Vol. 3 No. 2.
- Goddard, J., McMillan, D. and Wilson, J.O.S. (2006), "Do firm sizes and profit rates converge? Evidence on Gibrat's law and the persistence of profits in the long run", *Applied Economics*, Vol. 38 No. 3, pp. 267-278.
- Hair, J.F.J., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*, Vol. 6, Pearson Education, New Jersey, NJ.
- Harvey, H. (2012), "Exchange-rate volatility and money demand in selected South East Asian countries", *Economics and Finance Review*, Vol. 2 No. 10, pp. 1-7.
- Hunt, S.D. (1999), "The strategic imperative and sustainable competitive advantage: public policy implications of resource-advantage theory", *Journal of the Academy of Marketing Science*, Vol. 27 No. 2, pp. 144-159.
- Ibrahim, M.H. and Aziz, H. (2003), "Macroeconomic variables and the Malaysian equity market: a view through rolling subsamples", *Journal of Economic Studies*, Vol. 30 No. 1, pp. 6-27, available at: <https://doi.org/10.1108/01443580310455241>
- Issah, M. and Antwi, S. (2017), "Role of macroeconomic variables on firms' performance: evidence from the UK", *Cogent Economics & Finance*, Vol. 5 No. 1, pp. 1-18.

- Izedonmi, P.F. and Abdullahi, I.B. (2011), "The effects of macroeconomic factors on the Nigerian stock returns: a sectoral approach", *Global Journal of Management and Business Research*, Vol. 11 No. 7, pp. 25-29.
- Jhingan, M.L. (2002), *Macroeconomic Theory*, 10th ed., Vrinda Publications, New Delhi.
- Kaguri, W.A. (2013), "Relationship between firm characteristics and financial performance of life insurance companies in Kenya", unpublished master's thesis, University of Nairobi.
- Kandir, S.Y. (2008), "Macroeconomic variables, firm characteristics and stock returns: evidence from Turkey", *International Research Journal of Finance and Economics*, Vol. 16 No. 1, pp. 35-45.
- Kanwal, S. and Nadeem, M. (2013), "The impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan", *European Journal of Business and Social Sciences*, Vol. 2 No. 9, pp. 186-201.
- Katchova, A.L. and Enlow, S.J. (2013), "Financial performance of publicly-traded agribusinesses", *Agricultural Finance Review*, Vol. 73 No. 1, pp. 58-73.
- Kerlinger, F.N. and Rint, N. (1986), *Foundations of Behaviour Research*, Winston, London.
- Khan, M.R. and Mahmood, Z. (2013), "Interest rate sensitivity and stock returns", *Research Journal of the Institute of Business Administration Karachi-Pakistan*, Vol. 8 No. 1, pp. 20-33.
- Kiganda, E.O. (2014), "Effect of macroeconomic factors on commercial banks profitability in Kenya: case of Equity Bank limited", *Journal of Economics and Sustainable Development*, Vol. 5 No. 2, pp. 46-56.
- Kioko, N.P. (2013), "The relationship between firm size and financial performance of Commercial Banks in Kenya", unpublished master's thesis, University of Nairobi.
- Kogan, L. and Tian, M. (2012), "Firm characteristics and empirical factor models: a data-mining experiment", International Finance Discussion Papers No. 1070.
- Kühn, A. (1974), *The Logic of Social Systems*, Jossey-Bass, San-Francisco, CA.
- Lasisi, I.O., Dikki, C.A. and Okpanachi, J. (2017), "Empirical determinant of firm's profitability: evidence from listed agricultural companies in Nigeria", *Sahel Analyst: Journal of Management Sciences*, Vol. 15 No. 8, pp. 66-88.
- Laszlo, A. and Krippner, S. (1998), "Systems theories: their origins, foundations, and development", *Advances in Psychology*, Vol. 126, pp. 47-76.
- Lebans, M. and Euske, K. (2006), *A Conceptual and Operational Delineation of Performance, Business Performance Measurement*, Cambridge University Press, Cambridge, pp. 65-79.
- Lemma, T.T. and Negash, M. (2013), "Institutional, macroeconomic and firm-specific determinants of capital structure: the African evidence", *Management Research Review*, Vol. 36 No. 11, pp. 1081-1122.
- Liargovas, P. and Skandalis, K. (2008), "Factors affecting firms' financial performance: the case of Greece", Working Papers No. 0012, Department of Economics, University of Peloponnese.
- Lin, J.W., Li, J.F. and Yang, J.S. (2006), "The effect of audit committee performance on earnings quality", *Managerial Auditing Journal*, Vol. 21 No. 9, pp. 921-933.
- Lopez-Valeiras, E., Gomez-Conde, J. and Fernandez-Rodriguez, T. (2016), "Firm size and financial performance: intermediate effects of indebtedness", *Agribusiness*, Vol. 32 No. 4, pp. 454-465.
- McKnight, P.J. and Weir, C. (2008), "Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: a panel data analysis", *The Quarterly Review of Economics and Finance*, Vol. 49 No. 2, pp. 139-158.
- Mahoney, J.T. and Pandian, J.R. (1992), "The resource-based view within the conversation of strategic management", *Strategic Management Journal*, Vol. 13 No. 5, pp. 363-380.
- Malhotra, N.K. and Birks, D.F. (2000), *Marketing Research: An Applied Approach*, Pearson Education Ltd, Harlow.
- Malik, H. (2011), "Determinants of insurance companies' profitability: an analysis of insurance sector of Pakistan", *Academic Research International*, Vol. 1 No. 3, pp. 315-321.

- Mariuzzo, F., Walsh, P. and Whelan, C. (2003), "Firm size and market power in carbonated soft drinks", *Review of Industrial Organization*, Vol. 23 No. 4, pp. 283-299.
- Marsh, P. (1982), "The choice between equity and debt: an empirical study", *The Journal of Finance*, Vol. 37 No. 1, pp. 121-144.
- Martin, A.D. and Mauer, L.J. (2003), "Exchange rate exposures of US banks: a cash flow-based methodology", *Journal of Banking & Finance*, Vol. 27 No. 5, pp. 851-865.
- Mehari, D. and Aemiro, T. (2013), "Firm specific factors that determine insurance companies' performance in Ethiopia", *European Scientific Journal*, Vol. 9 No. 10, pp. 245-255.
- Mirza, S.A. and Javed, A. (2013), "Determinants of financial performance of a firm: case of Pakistani stock market", *Journal of Economics and International Finance*, Vol. 5 No. 2, pp. 43-52.
- Mnang'at, S.A., Namusonge, G. and Oteki, E.B. (2016), "The effects of interest rate on financial performance of micro enterprises: a case study of Makutano Township in West Pokot County", *International Journal of Novel Research in Marketing Management and Economics*, Vol. 3 No. 3, pp. 22-29.
- Mohammed, A. and Usman, S. (2016), "Corporate attributes and share value of listed pharmaceutical firms in Nigeria", *Journal of Arts, Science and Commerce*, Vol. 7 No. 1, pp. 88-98, doi: 10.18843/rwjasc/v7i1(1)/10.
- Mule, R.K. and Mukras, M.S. (2015), "Financial leverage and performance of listed firms in a frontier market: panel evidence from Kenya", *European Scientific Journal*, Vol. 11 No. 7, pp. 534-550.
- Murungi, D.U. (2014), "Relationship between macroeconomic variables and financial performance of insurance companies in Kenya", unpublished master's thesis, University of Nairobi.
- Mutende, E.A., Mwangi, M., Njihia, J.M. and Ochieng, D.E. (2017), "The moderating role of firm characteristics on the relationship between free cash flows and financial performance of firms listed at the Nairobi securities exchange", *Journal of Finance and Investment Analysis*, Vol. 6 No. 4, pp. 1-3.
- Mwangi, F.K. (2013), "The effect of macroeconomic variables on financial performance of aviation industry in Kenya", unpublished master's thesis, University of Nairobi.
- Mwangi, E.N. and Wekesa, S. (2017), "Influence of economic factors on organizational performance of airlines: a case study of Kenya Airways Ltd", *IOSR Journal of Humanities and Social Science*, Vol. 22 No. 5, pp. 8-14.
- Naser, K. and Mokhtar, M.Z. (2004), "Firm performance, macro-economic variables and firm size", *Journal of Finance*, pp. 543-679.
- Ngugi, R.W. (2001), "An empirical analysis of interest rate spread in Kenya", African Economic Research Consortium, Research Paper No. 106.
- Nigerian Stock Exchange Website (2017), Available at: www.nse.com.ng
- Nwachukwu, C.C. (2006), *Management Theory and Practice*, Africana First Publishers, Onitsha.
- Obamuyi, T.M. and Olorunfemi, S. (2011), "Effects of financial reforms and interest rate behaviour on economic growth in Nigeria", *Journal of Applied Finance & Banking*, Vol. 1 No. 4, pp. 39-55.
- Ogbole, F.O., Amadi, S.N. and Essi, I.D. (2011), "Fiscal policy: its impact on economic growth in Nigeria (1970-2006)", *Journal of Economics and International Finance*, Vol. 3 No. 6, pp. 407-417.
- Ogunbiyi, S.S. and Ihejirika, P.O. (2014), "Interest rates and deposit money banks' profitability nexus: the Nigerian experience", *Arabian Journal of Business and Management Review*, Vol. 3 No. 11, pp. 133-148.
- Okwoli, A.A. and Kpelai, S.T. (2006), *Introduction to Managerial Finance*, 1st ed., Tomma Press, Jos.
- Omondi, M.M. and Muturi, W. (2013), "Factors affecting the financial performance of listed companies at the Nairobi securities exchange in Kenya", *Research Journal of Finance and Accounting*, Vol. 4 No. 15, pp. 99-104.

- Osamwonyi, I.O. and Michael, C.I. (2014), "The impact of macroeconomic variables on the profitability of listed commercial banks in Nigeria", *European Journal of Accounting Auditing and Finance Research*, Vol. 2 No. 10, pp. 85-95.
- Otambo, T.D. (2016), "The effect of macro-economic variables on financial performance of commercial banking sector in Kenya", unpublished master's thesis, School of Business, University of Nairobi.
- Owolabi, B.A. (2017), "Economic characteristics and financial performance of selected manufacturing companies in Nigeria", unpublished master's thesis, Department of Accounting, School of Management Sciences, Babcock University, Ogun State.
- Owoputi, J.A., Kayode, O.F. and Adeyefa, F.A. (2014), "Bank specific, industry specific and macroeconomic determinants of bank profitability in Nigeria", *European Scientific Journal*, Vol. 10 No. 25, pp. 408-423.
- Oyebanji, T.A. (2015), "Firm's characteristics and financial performance of Nigerian listed companies", unpublished master's thesis, Babcock University, Ogun State.
- Pandey, I.M. (2005), *Financial Management*, 9th ed., Vikas Publishing House, New Delhi.
- Rajan, R.G. and Zingales, L. (1995), "What do we know about capital structure? Some evidence from international data", *The Journal of Finance*, Vol. 50 No. 5, pp. 1421-1460.
- Rajkumar, P. (2014), "Impact of financial leverage on financial performance: special reference to John Keells Holdings Plc. in Sri Lanka", *Scientific Research Journal*, Vol. 2 No. 2, pp. 15-20.
- Rani, D.M.S. and Zergaw, L.M. (2017), "Bank specific, industry specific and macroeconomic determinants of bank profitability in Ethiopia", *International Journal of Advanced Research in Management and Social Sciences*, Vol. 6 No. 3, pp. 74-96.
- Rao, D.T. (2016), "The relationship of macroeconomic factors and financial performance of the five firms listed in the energy and petroleum sector of the NSE", unpublished master's thesis, Strathmore University, Nairobi.
- Rasheed, O.A. (2010), "Productivity in the Nigerian manufacturing sub-sector", *European Journal of Economics, Finance and Administrative Science*, Vol. 6 No. 8, pp. 1450-2375.
- Rehana, K., Tahira, B., Muhammad, A. and Masood, H. (2012), "Inter-relationship between profitability, growth and size: a case of non-financial companies from Pakistan", *Pakistan Journal of Commerce and Social Sciences*, Vol. 6 No. 2, pp. 405-419.
- Riaz, S. and Mehar, A. (2013), "The impact of bank specific and macroeconomic indicators on the profitability of commercial banks", *Romanian Economic Journal*, Vol. 16 No. 47, pp. 91-110.
- Richard, P.J., Devinney, T.M., Yip, G.S. and Johnson, G. (2009), "Measuring organizational performance: towards methodological best practice", *Journal of Management*, Vol. 35 No. 3, pp. 718-804.
- Robson, M.T. (1996), "Macroeconomic factors in the birth and death of UK firms: evidence from quarterly VAT registration", *Manchester School*, Vol. 64 No. 2, pp. 57-69.
- Sambasivam, Y. and Ayele, A.G. (2013), "A study on the performance of insurance companies in Ethiopia", *International Journal of Marketing, Financial Services & Management Research*, Vol. 2 No. 7, pp. 138-150.
- Sarkaria, M. and Shergill, G.S. (2000), "Market structure and financial performance – an Indian evidence with enhanced controls", *Indian Economic Journal*, Vol. 48 No. 2, pp. 98-105.
- Sinha, P. and Sharma, S. (2016), "Determinants of bank profits and its persistence in Indian Banks: a study in a dynamic panel data framework", *International Journal of System Assurance Engineering and Management*, Vol. 7 No. 1, pp. 35-46.
- Smirlock, M. (1985), "Evidence on the (non) relationship between concentration and profitability in banking", *Journal of Money, Credit and Banking*, Vol. 17 No. 1, pp. 69-83.
- Stock, J.H. and Watson, M.W. (2008), "Forecasting in dynamic factor models subject to structural instability", in Castle, J. and Shephard, N. (Eds), *The Methodology and Practice of Econometrics*, A Festschrift in Honour of Professor David F. Hendry, Oxford University Press, Oxford, pp. 1-57.

- Subrahmanyam, A. and Titman, S. (2001), "Feedback from stock prices to cash flows", *Journal of Finance*, Vol. 56 No. 18, pp. 2389-2413.
- Sullivan, A. and Sheffrin, S.M. (2003), *Economics: Principles in Action*, Pearson Prentice Hall, Upper Saddle River, NJ.
- Sumaira, B.J.K. and Amjad, T.S. (2013), "Determinants of profitability panel data evidence from insurance sector of Pakistan", *Elixir Finance Management*, Vol. 57A, pp. 14377-14382.
- Swiss, R. (2008), "World Insurance in 2007: emerging markets leading the way", *Sigma* No. 3, Zurich.
- Taher, M.A., Uddin, M.S. and Shamsuddoha, M. (2010), "Determinants of key favorable environment for entrepreneurship development: an empirical study of some selected companies in Bangladesh", *Journal of Public Administration and Policy Research*, Vol. 2 No. 4, pp. 54-57.
- Tan, Y. and Floros, C. (2012), "Bank profitability and GDP growth in China: a note", *Journal of Chinese Economic and Business Studies*, Vol. 10 No. 3, pp. 267-273.
- Tarawneh, M. (2006), "A comparison of financial performance in the banking sector: some evidence from Omani commercial banks", *International Research Journal of Finance and Economics*, Vol. 3 No. 3, pp. 25-36.
- The Economic Times (2017), "Definition of 'exchange rate'", Available at: <https://economictimes.indiatimes.com/definition/exchange-rate>
- Trujillo-Ponce, A. (2013), "What determines the profitability of banks? Evidence from Spain", *Accounting & Finance*, Vol. 53 No. 2, pp. 561-586.
- Udu, A.A. (2015), "Environmental factors and business operations in Nigeria", *International Journal of Business and Social Science*, Vol. 6 No. 11, pp. 144-154.
- Usman, O.A. and Adejare, A.T. (2013), "Inflation and capital market performance: the Nigerian outlook", *Journal of Emerging Trends in Economics and Management Sciences*, Vol. 5 No. 1, pp. 93-99.
- Vanguard (2018), "CBN raises 2018 money supply growth forecast to 10.98%", April, available at: www.vanguardngr.com/2018/04/cbn-raises-2018-money-supply-growth-forecast-10-98/
- Wadhvani, S. (1986), "Inflation, bankruptcy, default premia and the stock market", *Economic Journal*, Vol. 96 No. 381, pp. 120-138.
- Wald, J.K. (1999), "How firm characteristics affect capital structure: an international comparison", *Journal of Financial Research*, Vol. 22 No. 2, pp. 161-187.
- Walker, D. (2001), "Exploring the human capital contribution to productivity, profitability and the market evaluation of the firm", available at: www.lib.umi.com/dissertations
- World Bank Group (2015), "Kenya economic update", available at: www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/10/14/090224b08314473e/1_0/Rendered/PDF/Kenya0economic0public0participation.pdf (accessed 15, June 2015).
- Zeitun, R., Tian, G. and Keen, S. (2007), "Macroeconomic determinants of corporate performance and failure: evidence from an emerging market the case of Jordan", *Corporate Ownership and Control*, Vol. 5 No. 1, pp. 179-194.
- Zou, S. and Stan, S. (1998), "The determinants of export performance: a review of the empirical literature between 1987 and 1997", *International Marketing Review*, Vol. 15 No. 5, pp. 333-356.

Further reading

- Ahmed, E.M.A. (2011), "The long run relationship between money supply, real GDP, and price level: empirical evidence from Sudan", *Journal of Business Studies Quarterly*, Vol. 2 No. 2, pp. 68-79.
- Akinade, E.A. and Owolabi, T. (2009), *Research Methods. A Pragmatic Approach for Social Sciences, Behavioral Science Education*, Connel Publications, Lagos.
- Awoniyi, S.S., Aderanti, R.A. and Tayo, A.S. (2011), *Introduction to Research Methods*, 1st ed., Ababa Press, Ibadan.

- Cherry, K. (2016), "Introduction to research methods: theory and hypothesis", available at: www.verywell.com/introduction-to-research-methods-2795793
- Davis, G.F. and Powell, W.W. (1992), "Organization-environment relations", in Dunnette, M.D. and Hough, L.M. (Eds), *Handbook of Industrial and Organizational Psychology*, 2nd ed., Vol. 3, Consulting Psychologists Press, Palo Alto, CA, pp. 315-375.
- Heylighen, F. and Joslyn, C. (1992), "Systems theory", in Heylighen, F., Joslyn, C. and Turchin, V. (Eds), *Principia Cybernetica Web*, Principia Cybernetica, Brussels, available at: <http://pespmc1.vub.ac.be/SYSTHEOR.html> (accessed October 20, 2017).
- Yao, H., Haris, M. and Tariq, G. (2018), "Profitability determinants of financial institutions: evidence from banks in Pakistan", *International Journal of Financial Studies*, Vol. 6 No. 53, pp. 1-28.

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