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Effect of firm specific characteristics and interest rate on lease financing of listed consumer goods firms in Nigeria

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Abstract: This paper aims to assess the effect of firm-specific characteristics and interest rates on the lease financing of listed consumer goods in Nigeria. Secondary data from the annual report and account of the sampled firms were used from 2011 to 2018. A filtering criterion was adopted, and nine listed consumer goods companies were selected as samples of the study. Multiple regression technique using generalised least square (GLS) was employed in analysing the panel data. The study's findings revealed that growth opportunity and business complexity significantly influence the lease financing of listed consumer goods companies in Nigeria. At the same time, the interest rate was found to have an insignificant negative influence on the lease financing of listed consumer goods companies in Nigeria. Therefore, the study recommends

that managers of listed consumer goods in Nigeria should pay more attention to utilising lease financing to attain the desired level of growth. This can be achieved by seeking growth opportunities in firms where they can further expand and diversify their businesses in order to meet up with available opportunities.

Keywords: firm; characteristics; interest rate; lease financing; Nigeria.

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1 Introduction

The consumer goods sector represents one of the largest sectors in Nigeria. It is mainly characterised by companies that supply low-cost products that have a constant high demand. Products classified under the consumer goods banner include food and beverage, personal and home care, pharmaceuticals, etc. The NBS foreign trade goods statistics report (third quarter, 2019) revealed that the food, beverages and tobacco subsector of the consumer goods sector contributes around 5% of Nigeria's gross domestic product (GDP). This has underscored the importance of the sector to the Nigerian economy. The market capitalisation report of the Nigerian Stock Exchange (NSE) for December 2019 also highlights the importance of the sector as consumer goods make up 17% of the total capital value on the NSE. As a result of unprecedented COVID-19 pandemic emergence, the demand for many goods and services has dropped drastically, while some consumer good firms either deficiencies or are overloaded. In addition, consumer goods industrial players would be less able to meet their debt obligations as liquidity positions deteriorate due to reduced cash flows (Arikekpar, 2020).

It is now becoming clear that the consumer goods sector is one of the most affected by the economic crisis caused by the COVID-19 pandemic. The fragility of domestic wallets has been exposed, and statistics now point to even weaker consumer sentiments. The market has responded sharply to these challenges by marking these companies down. So far this year, the consumer goods index has fallen to 28%, this has made it the worst performing index, below the general market index 7%. Consumer companies have also entered an exceptionally tough phase (Business Day, 2020). Net financial income also declined immediately after a 20% drop in financial income to ₦2.86 bn, while financial cost increased 82% to ₦824 m.

After the oil price collapsed in March, access to foreign exchange at higher interbank rates made access to raw materials more difficult (Business Day, 2020). This undesirable economic situation may lead to unhealthy competition for large market share, growth opportunities, expansion in subsidiaries and depending on external source of capital to finance operations in order for the firm to stay in operations. As Accessing capital at a low-interest rate is quite difficult in Nigeria, lease becomes an option for business growth and expansion (Business Day, 2020). There are conflicting motivations for structuring a

lease as an operating lease versus a finance lease. First, from a financial point of view, financial leases have economic characteristics that lie between operating leases and debt. Compared to debt, finance leases may be cheaper or easier to obtain because of the ease with which the lessor can repossess the leased asset should the lessee face bankruptcy. This study therefore centres on factors that can affect finance lease and exclude operating lease.

This mode of financing has assumed a vital role in the Nigeria economy at large and is currently contributing \$0.5 billion to the total world trade lease volume (White Clarke Leasing Report, 2019). Furthermore, the difficulty facing firms in Nigeria especially the consumer goods is on how and where to raise cheap source of capital in order to finance their operations. Funding remains one of the major challenges facing the sector especially during economic down turn (Akinbola and Otokiti, 2012). This negatively affects the sector's operating capacity and limits its ability to contribute its quota to the economy at large. More so, where a firm needs an asset for expanding their business, such firm may decide to explore lease financing rather than out rightly purchasing the asset (Islam et al., 2014).

Interestingly, the leasing industry during this economic downturn has shown great financing potentials by growing from ₦869 billion in 2014 to ₦1.26 trillion in 2016, despite the bad economic condition (Abdulkarim et al., 2020). This performance showed how lease financing can be utilised in period of economic downturn as the firms agitated for aggressive growth opportunities and expansion. Firms with growth opportunities, on the other hand, may require significant funds from external sources for which a strategy of maintaining low-risk debt structures (as obtained through leasing) can be implemented. Fama and French (2002) related this to the prevention of insufficient investment in the absence of internal financing. Financial leasing can also improve liquidity positions for high-growth companies through cash conservation, so that positive correlations between growth and leasing could be expected as found by Malik et al. (2012).

As noted by Olabisi et al. (2015), several literatures that studied the Nigerian quoted manufacturing sector such as Akinbola and Otokiti (2012) and Oko and Anyanwu (2012) have linked lease financing decision to inadequate financial resources to acquire equipment for business operation. Studies such as that of Islam et al. (2014) examined lease financing in Bangladesh, Kwarteng and Li (2015) concentrated on leasing as an alternative means of sourcing finance to SMS in Ghana. Olabisi et al. (2015) studied the determinants of leasing decision of quoted manufacturing firms in Nigeria, Bakar and Yahaya (2016) investigate financial leasing expanding capacity of Malaysian firms, while Musa-Mubi (2017) explore non-financial firms in Nigeria. However, all the aforementioned studies examined the individual effect of firm specific variables on lease financing.

Similarly, Gabriel (2010) examines the impact of macroeconomic indicators on leasing industry in North America and Europe, Korbi and Lleshaj (2015) evaluate the impact of financial leasing on financing costs in Albania. In addition, Bakar and Yahaya (2016) analyse the relationships between financial constrain factors that affect the choosing of leasing for firms in Malaysia. Although, the above studies explore the effect of interest rate on lease financing, the present study examined the individual and collective effect of both firm specific variable and interest rate on lease financing of listed consumer goods in Nigeria. This is because, firms do not operate in isolation, and they are affected by macroeconomic policies and also, a subset of the whole economy.

As such, many companies do not consider it as valuable option for financing the acquisition of assets for their businesses which may be one of the main reasons for dearth of empirical literatures in this area which this present study addressed. In addition, the present study is motivated by the important role consumer goods companies play in the Nigerian economy proved by its contribution to the nation's GDP and the entire economy. In doing this, the following research questions were raised. To what extent does growth opportunity, complexity of business and interest rate affects lease financing decision of listed consumer goods companies Nigeria?

The main objective of this research is to assess the impact of firm specific characteristics and interest rate on lease financing decision of listed consumer goods companies in Nigerian. The research is limited to listed consumer goods companies on Nigerian Stock Exchange as at 31 December, 2018 covering a period of 8 years from 2011–2018. The justification for choosing the period under study is to examine the happenings during the economic recession of 2015 and to suggest base on empirical evidence an alternative way of reducing the impact of future event in order to reduce the number of companies going out of business as a result of such unfavourable economic condition.

The result of this research will be of benefit to financial managers of listed consumer in Nigeria in understanding how lease financing can help grow, expand and stabilise their operations during economic down turn by proving an unexplored alternative source of capital for their businesses. The research will also be of paramount importance to lessors in expanding the leasing industry and create awareness among them of existing market from the consumer goods sector awaiting their products, thus booting investment in the market and the economy entirely. In addition, the research will be of benefit to investors who may want to explore new profitable investment opportunities in the area of lease financing.

The remainder of the paper is structured as follows: Section 2 reviewed relevant literatures and theoretical framework related to firm characteristics, interest rate on lease financing of listed consumer goods in Nigeria. Section 3 discusses the methodology employed for the study. The result of data analysis is presented and discussed in Section 4. Section 5 concluded the study by highlighting the major findings in the study and proffer recommendations appropriately.

2 Literature review

2.1 Concept of leasing

Leasing has been defined by scholars in different ways, but at the same time arriving at the same meaning. Kurfi (2003) sees the concept as “an alternative mode of financing to the traditional debt and equity for the acquisition of capital asset by firms”. As opined by Fubara (2004) the rationale behind leasing is to reduce the risk of utilising an asset by not really owning it, thus giving a firm a greater capacity to leverage on, in term of external financing. In another submission, Kraemer and Lang (2012) defined the concept as a contract between two parties where one party the lessor provides an asset for usage to another party the lessee for a specified period of time, in return for a specified payment.

From regulatory point of view, IAS 17 on leases defined the concept as an agreement where the lessor conveys to the lessee in return for payment or series of payment the right

to use an asset for an agreed period of time. The Financial Reporting Council of Nigeria (FRCN) viewed leasing as a contractual agreement an owner (lessor) and another party (the lessee) which conveys to the lessee the right to use the leased asset for consideration usually a periodic payment called rent.

All the aforementioned definitions of the concept is referring to the same contractual agreement between the two parties, where one party provides the finance and make available the use of an asset to the other party in exchange for a rental payment within an agreed period of time as specified in the lease agreement terms between the two parties involve (lessor and lessee)

2.2 Types of leases

Leases are basically classified under IAS 17 as finance or operating lease depending on whether all risk and reward of ownership is transferred to the lessee or not. Each of these leases is accounted for in different way and the terms of the lease agreement will determine what type of lease it is.

Finance lease is an agreement where the lessee bears substantially all the risk and the reward arising from such contractual ownership. The lessee has the option to purchase the asset at the end of the agreed period for a certain amount as agreed between the parties to the contract. As noted by Kurfi (2003), finance lease are long term and non-cancelable lease combining both benefit of leasing with those of ownership. On the other hand, under IAS 17, an operating lease is a lease other than a finance lease. The concept is seen as a contractual arrangement where the lessee only rent the asset over a time period, which is less than the asset economic life span. In this situation, operating lease may run for some years and the lessor is responsible for the maintenance and insurance of the asset (Adekunle, 2003).

2.3 Empirical literature

2.3.1 Growth opportunity and lease financing

Penrose (1995) defined growth opportunity as an evolutionary process that involves the accumulation of knowledge unique to a firm. This unique knowledge about a firm may be factors affecting the firm internally or externally to its growth. Several studies conducted on the subject matter include that of Fazzari et al. (1988) who examined financing constrain and investment of US manufacturing firms for the period of 1970–1984, the research concluded that firm's growth opportunity measured as market value to book value ratio are positively related with leasing. More so, Koh and Jang (2009) investigate the determinants of operating leasing in the hotel industry for the period of 1995–2004. An unexpected conclusion from their findings was growth opportunity appeared to have no relationship with operating lease in the hotel industry.

On the contrary, Singh (2011) investigates the lease-debt relation using a sample of 233 restaurant and retail firms for a period of 2006–2008. The result of the research shows that, growth opportunity is negative and significantly associated with lease financing. Similarly, Malik et al. (2012) analyse the effect of firm specific characteristics on the leasing tendency of Pakistan listed companies with a sample size of 163 firms for 2009. The research concludes a negative relationship between growth and firm tendency to lease and those companies with low growth potential tend towards leasing compares

with companies with better growth rate. Bialek-Jaworska and Nehrebecka (2016) assess the determinants of Polish enterprises propensity to lease based on statistical annual report for the period of 1995-2011, using GMM technique. It was concluded that, large and medium size companies are more inclined to using lease financing to small businesses

Finally, Musa-Mubi (2017) examined the effect of firm specific attributes on finance lease of listed 14 non-financial firms in Nigeria over a period of 9 years. Using profitability, growth opportunity, information asymmetry, leverage and agency cost in determining the significance of accounting for finance lease with bootstrap-based fixed-effects regression. The study found growth opportunity to be positive and insignificantly affecting finance leasing.

2.3.2 Related literature on complexity of business and lease financing

Complexity of business was found to help improve debt capacity and also reduce the probability of bankruptcy as noted by Lewellen (1971). According to Hossain (2008), the concept is seen as the actual number of subsidiaries a firm is having as evident in Indian banks. Several factors have been found to influence lease financing decision of various firms. For example, Grant et al. (2000) conducted a study on the association between multinational firm complexity and analyst following. Secondary data from audited annual reports were obtained from 249 sampled firms for 1996. The research reveals that firm complexity is significant and negatively related with analyst following. However, the study did not clearly define the scope used, in terms of time dimension, thus leading to covering an indefinite period, which may render the findings of the study misleading as time passes by.

Contrary to this is the study conducted by Hossain (2008) which empirically investigated the extent of both mandatory and voluntary disclosure of Indian banks with firm specific attributes. Secondary data from annual reports for a period of two year from 2002–2003 were collected using 38 Indian banks listed on Bombay Stock Exchange and National Stock Exchange. The disclosure score received for each bank was used as dependent variable, while complexity of business was independent variable. The research reveals Complexity of business is negative and statistically insignificant. However, the period covered by the study is too short to generalise on the population of the study. Thus, the outcome of the study should be accepted with great caution. Koopman (2011) examines the main determinants of analyst coverage, based on an article by Bhushan (1989). Secondary data from audited annual reports were obtained from 839 sampled firms, made up of 498 US firms and 341 European firms operating in ten major industries were used for 2011. Number of major industries the firm is operating in and the firm's historical volatility were used as independent variables. A mixed finding was revealed in the USA and Europe, respectively. The study period is not too current as event after their study must have overtaken their research.

Finally, Abdulkarim et al. (2019) examine the effect of firm specific characteristics on financial leverage of listed diversified companies in Nigeria. Secondary data from audited annual reports of sampled firms was obtained for the period of 2008–2017. Multiple regression technique using ordinary least square (OLS) was employed in analysing the panel data of the study. The result of the study revealed that, complexity of business is positive and significantly influencing financial leverage of quoted diversified firms in Nigeria. However, the study is limited to diversified companies with only six

firms forming the entire population studied. This may be considered inadequate population coverage for study of this nature.

2.4 Interest rate and lease financing

The demand for lease financing can either be positive or negatively related with interest rate. In support of this claim, Gabriel (2010) examined the impact of macroeconomic indicators on leasing industry in North America and Europe for the period of 1993–2007. Using previous literatures and interview, OLS regression method was used to analyse GDP, GDP deviation, credit-GDP ratio, unemployment and interest rate. Interest rate was found to be significant and positively impacting on lease flow in the USA. This shows that, higher interest rate makes credit difficult to obtain. On the contrary, the response from the interview conducted indicated that, higher interest rates negatively impact on lease financing.

Furthermore, Korbi and Lleshaj (2015) evaluate the impact of financial leasing on financing costs in Albania using a sample of 6 non-banking institutions to represent the populations of the study. Multiple regression technique of analysis was employed. The study concludes that interest rate is positive and statistically strongly related with lease financing of non-banking institutions in Albania. However, the study is limited to examining only macroeconomic variable, thereby neglecting the impact firm specific variable may have and their economic importance to the economy as whole.

Finally, Bakar and Yahaya (2016) analyse the relationships between financial constraint factors that affect the choosing of leasing for firms in Malaysia. The sample of firms includes 1,150 firms including listed firms and unlisted SME covering a period of 2007–2014. The research used lease ratio as dependent variable, while bank lending rate was use as macroeconomic variable. The research concludes that not all financially constrain firm tend to use lease financing compare to debt financing.

2.5 Theoretical framework

This research used agency theory and neo-classical theory of interest rate to explain the relationship between firm specific characteristics, interest rate and lease financing. The agency theory propounded by Jensen and Meckling (1976) explains the relationship between the owners of the business (shareholders) called the principals and those that manage the business (managers) called the agents.

A number of mechanisms are used in reducing the agency conflict between shareholders and managers. In light of this theory, Myers (1977) opines that, firms with higher proportion of growth opportunities should use less debt financing in order to reduce under investment problem which is likely to bring about this conflict. However, Stulz and Johnson (1985) argue that high-priority claims such lease financing can help reduce this problem of under-investment. Furthermore, Krishnan and Moyer (1994) posits that, lease financing is more pronounced in some industries compare to others, he specifically noted that firms in the service, transportation, wholesale and retail trade are more likely to use lease financing.

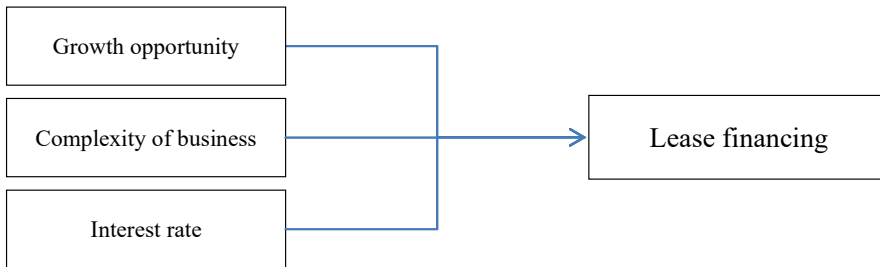
According to Koopman (2011), a reason why insider holdings could be applied to firm diversification is that, there could be principal agent problems which exist between the two parties. This may spring up conflict between shareholders and creditors.

Managers being appointed by the shareholders may act in the best interest of the owners, thereby choose to undertake riskier investment that have the effect of increasing the wealth of the shareholders at the expense of debt providers. This expansion may be in form of increasing the number of lines of business as such increase in complexity of business measured by number of firms' branches may result to propensity of firm in utilising lease financing. This is because as the firms' business expands both in operation capacity and location, firms may be prompted to utilise lease financing in order to minimise the costs associated with ascertaining asset requirements.

2.6 *The neo-classical theory of interest rate*

The theory was propounded by Knut Wicksell in 1951, and it posits that, interest rates are affected by factors such as demand and supply of lendable funds that interplay within the market with a view to spontaneously setting the interest rate. The theory further explains that, the demand for lendable funds has an inverse relationship with interest rate. In line with the theoretical propositions, an increase in interest rate may inversely affect the cost of debt fencing such as leasing financing, thus given rise to production cost and subsequent increase in the use of lease financing.

Figure 1 Graphical representation of the conceptual framework (see online version for colours)



Source: Researchers conceptual framework (2020)

3 Research methodology

Correlational research design was adopted and considered appropriate in determining the relationship between firm specific characteristics, interest rate and lease financing of listed consumer goods in Nigeria, while the research paradigm is based on positivism. This is because the research problem and variables are quantitative in nature and can be tested empirically base on deductive theory. The study also has clearly stated objective as well as a carefully constructed hypothesis with quantitative variables that are measurable, thus calls for robust statistical techniques of analysis.

The population of the study is limited to listed consumer goods companies on the Nigerian Stock Exchange from 2011–2018. A filtering criterion was used and only firms with available data on lease finance obligation were filtered to form the sample of the study. In that process, only 9 out of 24 listed consumer goods firms as at 31 December, 2018 were sampled, representing approximately 38% of the population which is considered adequate for conducting this study. These include Dangote Flour Plc, Cadbury

Plc, Guinness Plc, McNicholas, Nestle Plc, Nigerian Breweries Plc, Uniliver Plc and Vitaform Plc.

The justification for choosing listed consumer goods is premised on the fact that, it is still an area with paucity of studies in the area of lease financing, as evidenced by dearth of literature in the area. Secondary data from annual reports of the sampled firms was used as a source of data, while panel multiple regression technique of data analysis was adopted. The study uses panel data generated by pooling time-series observations across a variety of cross-sectional units including countries, states, regions, firms, or randomly sampled individuals or households. He pointed that panel data have more variability and allow to explore more issues than do cross-sectional or time-series data alone. He puts, ‘panel data gives more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency. A widely used panel data model is to assume that the effects of observed explanatory variables, \tilde{x} , are identical across cross-sectional units (i) and over time (t). While the effects of omitted variables can be decomposed into the individual-specific effects (α_i), time-specific effects (λ_t) and individual time-varying effects ($\delta_{it} = u_{it}$) as follows:

$$y_{it} = \beta_0 x_{it} + \alpha_i + \lambda_t + u_{it} \tag{1}$$

For data analysis, the research employed multiple regressions on the panel data. Further diagnostic tests were conducted to ensure the analysis is best linear unbiased estimate (BLUE) and that appropriate techniques were selected for the interpretation (Wooldridge, 2012). Among the tests carried out in addition to the multicollinearity test, auto or serial correlation, heteroskedasticity and normality based on the recommendation of Wooldridge (2012) are the Hausman tests. Additional tests are also performed, such as the LM test, to decide between random effect and robust OLS, then generalised least squares (GLS). The study employed deductive research approach. This is because deductive approach is concerned with developing a hypothesis (or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis (Wilson, 2010). If a causal relationship or link seems to be implied by a particular theory or case example, it might be true in many cases. A deductive design might test to see if this relationship or link was obtained on more general circumstances (Gulati, 2009).

3.1 Variables measurement and model specification

The dependent variable of the study is lease financing measured as ratio of long term obligation to total asset in line with Slotty (2009). While the independent variables include growth opportunity measured as market price of equity divided by book value, which is in line with Singh (2011), also the complexity of business measured as actual number of subsidiary (Hossain, 2008), interest rate measured as real interest rate in an economy (Gabriel, 2010). The model of the study are panel regression models which differs from a regular time-series or cross section regression model by the double subscript (it) attached to each variable. The study also specifies the general form of the panel data models graphically and mathematically as:

$$LF_{it} = \beta_0 + \beta_1 GOP_{it} + \beta_2 CXB_{it} + \beta_3 IR_{it} + e_{it} \tag{2}$$

where LF – lease financing; GOP – growth opportunity; CXB – complexity of business; RIR – real interest rate; μ – error term; β – Intercept; β_1 – β_4 – parameters to be estimate; it – firm i , time t .

4 Data presentation and discussion

In this section, data collected in the course of carrying out the study were presented and discussed. The hypotheses formulated for the study was tested to establish the effect of firm specific characteristics and interest rate on lease financing of listed consumer goods in Nigeria.

Table 1 Summary descriptive statistics

	<i>Mean</i>	<i>St. dev</i>	<i>Min</i>	<i>Max</i>	<i>Skewness</i>	<i>Kurtosis</i>
Lf	.009	.019	0	.083	2.748	9.461
Gop	6.415	7.074	0.456	27.483	1.377	3.74
Cpx	7.222	7.898	0	27	1.603	4.659
Rir	8.325	2.999	5.69	13.6	.655	1.701

Source: Authors' computation using STATA 13 software (2020)

Table 1 shows the descriptive statistics of explanatory variables and explained variable for this study. It indicates that the extent of average lease financing in the sampled consumer goods firms is 0.9%, while standard deviation of 0.019 (1.9%) indicates high variability across the listed consumer goods firms in Nigeria. The minimum and maximum value of money spent on leasing financing are N0.00 and N.083 million respectively. This implies that, there are firms among the sampled listed consumer goods that have no lease obligation within the period under investigation by the study, this implies that, the firms might have settled for other means of financing their non-current assets in place of lease financing which this study addressed.

Furthermore, the average growth opportunity as measured by market value to book value is approximately 6.42%, with a standard deviation of 7.07%, representing high dispersion of growth opportunity among the sampled consumer goods firms within the period under study. This implies that, the level of growth opportunity among the listed consumer goods is widely spread. Some consumer goods firms tend to record relatively higher level of book value compare to other firms within the sample. The minimum and maximum growth opportunity is 0.45% million and 27.48%. Hence, the range is 27.03%, implying that there is very wide gap between the highest and lowest growth opportunity among the sampled firms. This may not be unconnected with the fact that some of the firms within the sample of the study are spending large by utilising lease financing compare to other firms within the sample of the study.

In addition, complexity of business has an average of 7.22% with the standard deviation of 7.90% number of branches. However, the difference between the mean and the standard deviation is 0.68%. This is an indication of wide variations in the firm complexity around the mean of the sampled firms, indicating an unequal number of branches the listed consumer goods firms in Nigeria. The minimum and maximum number of branches of listed consumer goods firms as revealed by the datasets ranges from 0 to 27 branches, indicating that there are firm without branches within the sampled

consumer goods firms. Finally, the average real interest rate is 8.32% with a standard deviation of 2.99%. This implies moderate variability across listed consumer goods firms, which indicates fairness in the spread of the rate for all firms across the sample that wants to engage into lease financing. While its minimum and maximum rate ranges from 5.69% to 13.6% respectively.

Finally, from the skewness and kurtosis, it appears that, the lease financing may be somewhat skewed and not normally distributed. The skewness of 2.748 and kurtosis of 9.461 imply that, at levels, there are some outliers in the data, meaning that a few of the listed consumer goods companies have greater lease obligation compare to others in the sector. This can further be seen from the fact that on average, the outliers deviate by about 19% from the average (mean).

Table 2 Correlation matrix

<i>Variables</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1 LF	1.000			
2 GOP	0.27*	1.000		
	0.023			
3 CPX	-0.053	0.025	1.000	
	0.662	0.833		
4 RIR	0.024	0.139	0.022	1.000
	0.842	0.243	0.855	

Note: * shows significance at 5% level.

Source: Authors' computations using STATA 13 software (2020)

From the correlation matrix in Table 2, it can be seen that the relationship between growth opportunity (GOP) and real interest rate (RIR) is positive and weakly correlated with lease financing (LF) among listed consumer goods companies in Nigeria. This implies that, the variables move in the same direction with lease financing (LF). However, complexity of business (CPX) is weak and negatively related with lease financing (LF). This implies that, the variable moves in opposite direction with lease financing (LF). With respect to association among the independent variables themselves, the table further reveals that there is negative correlation between complexity of business (CPX), real interest rate (RIR) and growth opportunity (GOP). Finally, the result shows that there exists positive relationship between real interest rate (RIR) and firm complexity (CPX). On the other hand, the relationship among the independent variables is not too strong to warrant problem of multicollinearity.

4.1 Robustness tests

To ensure validity and reliability of the statistical inference of the regression model, robustness tests were conducted. The robustness tests include test for multicollinearity using VIF, Hausman specification test, Lagrangian multiplier (LM) test and heteroskedasticity.

The multicollinearity test result shows that there is correlation among the explanatory variables themselves, which may affect the result of the study. Hence, variance inflation factor (VIF) was carried out and the values for the explanatory variables are less than 10

as indicated with the VIF of 1.0 and the tolerance values for all the variables are greater 0.10 (threshold). This shows there is absence of multicollinearity.

To test for the existence of heteroskedasticity, the present study used Breuch Pagan/Cook-Weisberg. The study revealed χ^2 value of 5.16 with p-value of 0.0231, implying presence of heteroskedasticity, thus, the null hypothesis that the variation of the residual is constant (homoscedastic) is rejected. The Hausman specification test was carried out to choose between the random and fixed effect model. The result of the Hausman test revealed that the value of χ^2 is 0.39 and the prob > chi 0.9424. The insignificant value as reported by the probability of χ^2 indicates that the Hausman test is in favour of random effect model. Further to this, the Breusch and Pagan-Lagrangian multiplier test for random effect was conducted to choose between the random effect result and OLS regression. The result obtained the test showed χ^2 of 43.03 with the p-value of 0.000. This implies that random effect regression model is the best suitable to be interpreted in this study. In addition, modified Wald test for group wise was conducted, the result shows χ^2 of 658.03 with p-value of 0.000, this implies presence of heteroskedadecity.

Table 3 Multicollinearity test

<i>Variables</i>	<i>VIF</i>	<i>Tolerance value</i>
RIR	1.01	0.993
GOP	1.01	0.994
CPX	1.01	0.998
Mean VIF	1.00	

Source: Authors' computations generated using STATA 13 software (2020)

Table 4 Hausman test, Lagrangian multiplier (LM) test and heteroskedasticity test results

	<i>Chi²</i>	<i>P-value</i>
Hetest	5.16	0.0231
Hausman	0.39	0.9424
LM	43.03	0.000

Source: Authors' computations generated using STATA 13 software (2020)

Table 5 Regression results

	OLS	RE	FE	Hausman
Constant	0.728**	0.277**	0.726**	
GOP → LF	0.061**	1.227**	0.549*	
CPX → LF	0.055	0.025*	0.015*	Chi ² = 0.39
RIR → LF	0.150	0.580	0.800	P-v = 0.9424

Note: ***p < 0.01, **p < 0.05, *p < 0.1.

Source: Summary of STATA OUTPUT (2020)

To choose between the two specifications, Hausman (1978) notes that if the FE estimator, θ_{FE} , is consistent, whether α_i is fixed or random and the commonly used RE estimator (or GLS), $\tilde{\theta}_{RE}$, is consistent and efficient only when α_i is indeed uncorrelated with \tilde{x}_{it} and is inconsistent if α_i is correlated with \tilde{x}_{it} . Therefore, he suggests using the statistic:

$$(\tilde{\theta}_{FE} - \tilde{\theta}_{RE})0[Cov(\tilde{\theta}_{FE}) - Cov(\tilde{\theta}_{RE})] - (\tilde{\theta}_{FE} - \tilde{\theta}_{RE}) \tag{3}$$

The study conducted Hausman specification test after fixed and random tests were carried out for the model. The essence of Hausman specification test is to choose alternative model preferably between random and fixed effect models. Hausman specification test conducted produced p-value of 0.9424, which is insignificant. This implies that variation among the sampled firms is presumably random and congruent with independent variable in the model specification and presumably random. But due to the presence of heteroskedasticity therefore, the study further conduct GLS model which overcome the heteroskedasticity issues. Thus, this study report GLS model results as suggested by Wooldridge (2012) based on the issues raised for model.

Table 6 GLS regression

<i>LF</i>	<i>Coef.</i>	<i>St. Err.</i>	<i>t-val.</i>	<i>Z-val.</i>	<i>Sig</i>
GOP	0.027	0.015	1.82	0.068	
CPX	0.047	0.016	2.97	0.003	***
RIR	-0.224	0.138	-0.64	0.524	
Constant	8.055	0.380	21.19	0.000	***
Number of obs.	54		SD dependent var.	3.776	
Prob > chi ²	0.006		Chi-square	13.399	

Note: ***p < 0.01, **p < 0.05, *p < 0.1.

Source: Authors’ computations generated using STATA 13 software (2020)

The growth opportunity coefficient as indicated in Table 6 is 0.027 with p-value of 0.068 shows that, there is positive relationship between growth opportunity and lease financing of listed consumer goods firms in Nigeria, which is statistically significant at 10%. This therefore implies that an increase in growth opportunity will have positive influence on the lease financing. This is because firms with more growth options in their investment opportunity sets will be more likely to lease than firms with less growth options. This provides basis for rejecting null hypothesis which states that, growth opportunity has no significant effect on lease financing. This finding supports the proposition of trade off theory and the findings of Fazzari et al. (1988) however, it is not consistent with the findings of Singh (2011).

In addition, the result shows that complexity of business has positive and significant relationship with lease financing, as indicated with the coefficient value of 0.047 and a p-value of 0.003. By implication, an increase in complexity of business measured by number of firms’ branches may result to propensity of firm in utilising lease financing. This is because as the firms’ business expands both in operational capacity and location, firms may be prompted to utilise lease financing in order to minimise the costs associated with ascertaining asset requirements. Therefore, provides evidence for rejecting the null hypothesis which states that, complexity of business has no significant effect on lease financing. The finding supports the proposition of agency theory and study by Abdulkarim (2019). However, it contradicts the findings of Hossain (2008).

Finally, the negative relationship between real interest rate and lease financing is not significant as shown by coefficient of -0.224 with p-value of 0.524 respectively. The result is line with the response from the interview conducted by Gabriel (2010) which

indicated that, higher interest rates negatively impact on lease financing. Thus provides enough statistical evidence on failing to reject null hypothesis which states that real interest rate has no significant effect on lease financing. The finding supports the proposition of neo-classical interest rate theory. However, it contradicts the findings by Gabriel (2010) and Korbi and Lleshaj (2015).

5 Conclusions and recommendations

The study provides evidence on the usage of three independent variables of firm specific characteristics and macroeconomic variable (growth opportunity, complexity of business and interest rate) in predicting lease financing decision of listed consumer goods in Nigeria. The study introduced interest rate in order to examine the individual and collective effect of both firm specific characteristics and macroeconomic variables on lease financing of listed consumer goods in Nigeria. This is because firms do not operate independently, but are affected by macroeconomic variables in the environment they operate. The study concludes that there is positive and significant relationship between growth opportunity, complexity of business and lease financing decision among listed consumer goods in Nigeria. However, the study reveals a negative relationship between interest rate and lease financing decision of listed consumer goods in Nigeria.

In line with the above findings, the study recommends that managers of listed consumer goods in Nigeria should pay more attention toward utilising lease financing in order to attain the desired level of growth. This can be achieved by seeking growth opportunities in firms where they can further expand and diversify their businesses in order to meet up with the available opportunities. The study further recommends that, management of listed consumer goods in Nigeria should take appropriate measures with respect to those firm specific characteristics that significantly impact on leasing financing decision with respect to expansion in the number of their subsidiaries. This should be done in such a way that, the expansion will not result in agency conflict among various stakeholders.

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