Firm Attributes and Systematic Risk of Listed Consumer and Industrial Goods Firms in Nigeria

Bridget U. Akwuobi
Department of Accountancy,
Nnamdi Azikiwe University, P. M.B. 5025. Awka
Anambra State, Nigeria
budekwesili1@gmail.com

Nonye S. Agubata
Department of Accountancy
Chukwuemeka Odumegwu Ojukwu University, Igbariam,
Anambra state, Nigeria
nonyeagubata@yahoo.com

Nkechi T. Ofor
Department of Accountancy,
Chukwuemeka Odumegwu Ojukwu University, Igbariam,
Anambra State, Nigeria
tn.ofor@coou.edu.ng

Abstract

The main objective of the study was to examine the effect of firm attributes on systemic risk of listed consumer and industrial goods firms in Nigeria. The specific objective were to ascertain the effect of firm size and firm liquidity on the systemic risk of listed consumer and industrial goods firms in Nigeria. Ex-post facto research design was adopted in the study. The population comprised 44 listed manufacturing firms on the Nigerian exchange from which a sample size of 25 was purposively selected. The secondary data for the study were sourced from the annual reports of the firms over a twelve year period that spanned 2012 to 2023. Summary analysis of data was done using descriptive analysis, while the hypotheses were tested using Panel Estimated Generalized Least Squares. The findings revealed that: firm size has a significant negative effect on the systematic risk (β = -0.000632, p-value = 0.0000); liquidity has a significant positive effect on the systematic risk (β = 0.000178, p-value = 0.0029). In conclusion, while larger firms are better equipped to manage market fluctuations, firms with higher liquidity are more vulnerable to market volatility. It is recommended that business leaders and managers of large firms continue to invest in strategies that capitalize on their scale, such as diversifying operations, expanding into stable markets, and maintaining strong capital reserves, to further mitigate exposure to market-wide fluctuations and reduce systematic risk

Keywords: Firm Attributes, Systemic Risk, Firm Size, Firm Liquidity

1.0 Introduction

The relationship between firm attributes and systematic risk has long been a subject of interest in the field of financial economics. Systematic risk entails the risk inherent to the entire market or a market segment, which cannot be eliminated through diversification (Ashara, EmekaNwokeji & Ozua, 2020). Unlike unsystematic risk, which pertains to specific firms or industries, systematic risk affects all firms in an economy due to macroeconomic factors such as changes in interest rates, inflation, and economic recessions (Badarin, Al-Jarrah, Rababah, & ALotoom, 2024). Systematic risk is especially pertinent for investors as it dictates the overall returns of the market and, by extension, the profitability and financial performance of firms (Atasoy, Özkan & Erden, 2024). In this context, understanding how firm-specific characteristics such as size and liquidity influence systematic risk is of paramount importance, particularly for firms listed on stock exchanges. This is especially true for consumer and industrial goods firms in emerging economies like Nigeria, where macroeconomic fluctuations and market volatilities are common.

In today's dynamic business environment, firm attributes are considered significant factors in shaping a company's ability to withstand and navigate systematic risks (Ashara & Ofor, 2022). The business environment is marked by rapid technological changes, evolving market trends, and unpredictable macroeconomic events that can disrupt operations and affect financial stability (Nworie, Odah & Nworie, 2024). Thus, it is essential for firms, especially those in the consumer and industrial goods sectors, to possess sound attributes to remain resilient in the face of external shocks. Firm size, for example, can influence the risk profile of a company, as larger firms might have more diversified portfolios, better access to financing, and greater economic power, which could help them reduce their exposure to systemic risk (Ashara & Ofor, 2022). Similarly, liquidity is a critical attribute because firms with higher liquidity have more flexibility to manage unforeseen events, giving them an edge in reducing the impact of market-wide shocks (Obani, Ifurueze, Ofor & Ifurueze, 2022).

The consumer and industrial goods sectors in Nigeria represent a vital segment of the economy. The consumer goods sector includes companies that produce goods meant for everyday consumption, while the industrial goods sector encompasses businesses involved in manufacturing and construction. These industries are not immune to the forces of systemic risk, especially considering the volatility of Nigeria's macroeconomic environment, which is often characterized by fluctuating commodity prices, political instability, inflation, and exchange rate volatility (Yisau, Bello & Agbaogun, 2024; Obani, Ifurueze, Ofor & Ifurueze, 2022). The systematic risk faced by Nigerian consumer and industrial goods firms is compounded by their reliance on both local and global markets for raw materials, energy, and labor. This interdependence exposes these firms to global economic shifts, such as changes in oil prices or shifts in global demand, which directly affect their operational stability. Firm size and liquidity are particularly crucial in explaining how firms deal with systemic risk. Larger firms often have the advantage of scale, which allows them to diversify their revenue streams and access more favorable financing terms (Nworie & Mba, 2022). This enables them to weather systemic shocks better than smaller firms, which may be more susceptible to market fluctuations due to their limited financial resources. For instance, during an economic recession, large firms in the consumer and industrial goods sectors may have the financial flexibility to adjust their

strategies, access cheaper credit, and maintain their operations, while smaller firms may struggle with liquidity constraints and higher operational risks. Liquidity, on the other hand, refers to the ability of a firm to meet its short-term obligations, which is crucial in an environment where systemic risks such as currency devaluation or inflationary pressures can lead to cash flow disruptions (Sitti & Sintha, 2022). Firms with higher liquidity are more capable of absorbing the shocks of unexpected economic downturns, making them less prone to severe fluctuations in stock price or market value.

Ideally, firms are expected to operate in a stable, predictable market where they can manage risks effectively, especially those that are systemic in nature (Obani & Ozuomba, 2024). Systematic risk, which arises from broader economic or market-wide events, can significantly affect a company's profitability, stock performance, and overall financial stability (Yisau, Bello & Agbaogun, 2024). In such an ideal scenario, firms, especially those in the consumer and industrial goods sectors, would have well-established strategies to mitigate their exposure to market-wide risks. Critical firm attributes such as size and liquidity play a significant role in this process (Wiyono & Mmardijuwono, 2020). Larger firms typically enjoy economies of scale, diversified portfolios, and better access to financing, while firms with strong liquidity are able to weather short-term financial disruptions. These attributes are supposed to enable firms to remain resilient against fluctuations in macroeconomic factors like inflation, exchange rate volatility, and global economic shifts, ensuring their long-term viability and success.

However, despite the potential benefits of firm attributes in managing systematic risk, many firms in the consumer and industrial goods sectors face considerable challenges (Yisau, Bello & Agbaogun, 2024; Obani, Ifurueze, Ofor & Ifurueze, 2022). The Nigerian market is characterized by high volatility, economic uncertainty, and frequent policy changes, which exacerbate the level of systemic risk. The fluctuation of key macroeconomic indicators such as inflation rates, exchange rates, and interest rates often leads to unpredictable market conditions. Many firms, especially small and medium-sized enterprises, struggle with limited resources, poor liquidity, and underdeveloped risk management frameworks, which leave them highly vulnerable to market-wide shocks. While some larger firms may possess the financial strength to absorb these shocks, the overall business environment in Nigeria remains fragile, with many companies unable to effectively manage their exposure to systematic risks. This disparity between the ideal and the actual situation calls for a deeper exploration into how firm attributes like size and liquidity impact the exposure of Nigerian firms to systematic risk.

Consequently, firms that fail to effectively manage their exposure to systematic risk often face significant financial instability, which can manifest in declining profitability, increased stock price volatility, and even bankruptcy in extreme cases (Avijit, Tanveer & Nazirul, 2022). Smaller firms, in particular, are at a heightened risk, as their limited access to capital and liquidity makes them more susceptible to economic shocks. This, in turn, affects their ability to attract investors, secure financing, and maintain operations during periods of economic turbulence. On a broader scale, the failure of firms to manage systematic risk can lead to negative economic outcomes for the entire sector, including job losses, decreased consumer spending, and reduced economic growth. Additionally, the lack of effective risk management strategies can diminish investor confidence in the market, making it even more challenging for firms to navigate the economic uncertainties that are characteristic of the Nigerian business landscape. The need to understand how firm attributes such as size and liquidity affect the

systematic risk of listed consumer and industrial goods firms in Nigeria has therefore become critical for ensuring the sustainability and stability of the economy.

1.1 Objective of the study

The main objective of the study is to examine the effect of firm attributes on systemic risk of listed consumer and industrial goods firms in Nigeria. The specific objectives are:

1.   To ascertain the effect of firm size on the systemic risk of listed consumer and industrial goods firms in Nigeria.
2.   To examine the effect of firm liquidity on the systemic risk of listed consumer and industrial goods firms in Nigeria.

1.2 Hypotheses

H01. Firm size has no significant effect on the systemic risk of listed consumer and industrial goods firms in Nigeria.

H02. Firm liquidity has no significant effect on the systemic risk of listed consumer and industrial goods firms in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Firm Attributes

Firm attributes refer to the unique characteristics or qualities that define a firm's operations, structure, and performance (Nworie & Mba, 2022). These attributes can be both internal and external factors that influence the firm's behavior in the market, its competitive positioning, and its overall financial health (Obani & Ozuomba, 2024). These characteristics can include elements such as the size of the firm, its financial structure, its market presence, management quality, innovation capabilities, and organizational culture. In the context of business and financial analysis, firm attributes are essential in understanding how a company operates within its industry and how it responds to both internal and external challenges. These attributes are considered vital because they play a significant role in determining a firm's ability to mitigate risks, compete in the marketplace, and achieve sustained growth over time (Akpan, Odokwo & Akinninyi, 2024). As a result, analyzing firm attributes provides hint into a company's strategic positioning, financial robustness, and its ability to cope with unforeseen economic or financial challenges, including systemic risks (Obani & Ozuomba, 2024).

The attributes of a firm also influence its interactions with the broader market, its financial stability, and its exposure to external risks. For example, a firm's market share, capital structure, and level of innovation can determine its capacity to absorb shocks and capitalize on opportunities. Additionally, firm attributes like organizational agility, technological advancement, and managerial expertise shape the firm's competitive advantage in the market (Nworie, Okafor & John-Akamelu, 2022). When examining the relationship between firm attributes and financial risk, the focus often shifts to characteristics like firm size and liquidity, as these play a pivotal role in how firms respond to market conditions, especially during periods

of economic volatility or systemic crises. Therefore, understanding firm attributes is essential not only for evaluating a company's current performance but also for predicting its resilience in the face of challenges (Akpan, Odokwo & Akinninyi, 2024). By closely studying these characteristics, analysts and investors can gain a deeper understanding of the company's longterm prospects and its ability to manage both systemic and specific risks.

2.1.2 Firm Size

Firm size is one of the most significant firm attributes that refers to the scale or magnitude of a firm in terms of its operations, revenue generation, assets, workforce, and market presence (Nworie & Mba, 2022). The size of a firm can be measured through various metrics, including total assets, annual revenue, number of employees, or market capitalization in the case of publicly listed companies. In the context of financial analysis and economic theory, firm size is often viewed as a key determinant of a company's market power, financial flexibility, and ability to withstand market fluctuations or systemic risk (Ashara, Emeka-Nwokeji & Ozua, 2020). Larger firms are typically characterized by their extensive resources, greater market influence, and ability to diversify their operations across different product lines, markets, or geographic regions. This diversification often serves as a buffer against risks, as larger firms are better equipped to spread their operations across multiple sectors or regions, which may be less sensitive to systemic or economic shocks.

The size of a firm also has significant implications for its access to capital and financing. Larger firms generally enjoy easier access to credit markets, as they are perceived to be less risky by lenders and investors due to their stable financial performance and extensive asset base (Obani & Ozuomba, 2024). According to Nworie and Okafor (2023), they may also benefit from economies of scale, which allow them to lower their average cost of production, achieve higher profitability, and maintain competitive pricing. Moreover, larger firms often have more bargaining power in negotiations with suppliers, customers, and other business partners, further solidifying their position in the market. These advantages make larger firms more resilient to economic downturns, as they are better positioned to weather periods of financial uncertainty, adjust their strategies, and recover more quickly than smaller counterparts.

In contrast, smaller firms, while often more flexible and nimble, tend to face greater challenges due to limited financial resources, reduced market share, and higher exposure to economic fluctuations (Nworie & Mba, 2022). Smaller firms may struggle to access capital markets, face higher borrowing costs, and be more vulnerable to operational risks (Obani & Ozuomba, 2024). In many cases, smaller firms are also more sensitive to changes in market conditions, as they have fewer resources to absorb financial losses or operational disruptions. Despite these challenges, smaller firms may still be able to compete effectively through innovation, agility, or specialized niche markets. However, the overall relationship between firm size and resilience to systemic risk suggests that larger firms, with their ability to diversify and leverage financial and operational advantages, are often better positioned to handle broader market disruptions.

2.1.3 Firm Liquidity

Firm liquidity refers to the ability of a firm to meet its short-term financial obligations without experiencing significant financial distress (Louhichi, Saghi, Srour & Viviani, 2024). Liquidity is a critical measure of a company's financial health, indicating its capacity to convert assets

into cash quickly to meet operational needs, such as paying off short-term debts, salaries, or covering immediate expenses. Liquidity is often assessed through various financial ratios, with the most common being the current ratio, quick ratio, and cash ratio. These ratios provide hints into the availability of liquid assets compared to current liabilities, thus offering an understanding of how easily a firm can access funds in times of need. Liquidity is especially important for managing day-to-day operations and handling unexpected financial demands or crises, which is why it is often closely monitored by investors, analysts, and financial managers (Avijit, Tanveer & Nazirul, 2022).

Firms with high liquidity are better positioned to absorb shocks from market disruptions, economic downturns, or systemic risks (Ashara, Emeka-Nwokeji & Ozua, 2020). For example, during times of economic volatility or when faced with market-wide financial disturbances, companies with strong liquidity are less likely to experience operational difficulties or become insolvent. They can quickly tap into their cash reserves or liquid assets to manage unforeseen expenses or take advantage of opportunities such as acquiring assets at discounted prices. Nworie and Ofoje (2022) and Nworie and Agwaramgbo (2023) argued that liquidity provides firms with the flexibility to adapt to changing market conditions, avoid reliance on external financing in times of crisis, and maintain business continuity even during periods of economic stress.

In contrast, firms with low liquidity may struggle to meet their immediate financial obligations and are more vulnerable to the impacts of systemic risk. A lack of liquidity can lead to the need for external financing, which may be costly or difficult to obtain, particularly during times of financial instability or market stress (Louhichi, Saghi, Srour & Viviani, 2024). Firms with insufficient liquidity may also face difficulties in maintaining operations, paying off suppliers or creditors, or responding to sudden market fluctuations. In extreme cases, a liquidity crisis can lead to insolvency or bankruptcy, as firms are unable to meet their obligations or maintain cash flow. Liquidity risk, therefore, is a critical consideration for any firm, especially in environments subject to high levels of market risk or economic uncertainty.

2.1.4 Systemic Risk

Systemic risk refers to the risk of a collapse or significant disruption in the entire financial system or a key sector of the economy, which is often triggered by an external shock or a chain reaction of failures among major institutions or sectors (Ashara, Emeka-Nwokeji & Ozua, 2020). Unlike unsystematic risk, which affects individual firms or industries, systemic risk is broader and impacts the entire market or economy. This type of risk arises from factors such as economic crises, political instability, natural disasters, or market-wide phenomena that cause widespread financial distress (Badarin, Al-Jarrah, Rababah, & ALotoom, 2024). The effects of systemic risk can be far-reaching, leading to significant economic downturns, widespread financial instability, and even long-term damage to investor confidence and economic growth. Systemic risk is particularly concerning because it is difficult to predict and manage, often requiring coordinated efforts from government authorities, financial institutions, and other stakeholders to mitigate its effects (Atasoy, Özkan & Erden, 2024).

One of the key features of systemic risk is its contagious nature. When one major financial institution or sector faces significant losses or fails, the effects often ripple through the rest of

the economy, causing a cascade of additional failures or disruptions. For example, the global financial crisis of 2007-2008 demonstrated how the collapse of large financial institutions in the banking sector could trigger a chain reaction, causing widespread economic instability and impacting various industries, from real estate to manufacturing. Similarly, systemic risk can result from external factors such as global economic shocks, pandemics, or geopolitical events that affect multiple sectors simultaneously (Atasoy, Özkan & Erden, 2024). In these cases, the interdependence of industries and financial markets amplifies the impact of the initial shock, making the entire system more vulnerable to large-scale disruptions.

Systemic risk is particularly relevant for firms operating in economies that are exposed to external market forces or are reliant on interconnected global supply chains. For example, in developing countries like Nigeria, where markets are often subject to external influences such as fluctuations in oil prices, changes in global interest rates, or international trade policies, systemic risk can have a disproportionate impact on domestic firms. In such contexts, even firms with strong internal characteristics like size and liquidity may find themselves vulnerable to systemic risks that transcend individual business operations. As a result, managing systemic risk requires a comprehensive approach that involves both internal strategies (e.g., diversification, liquidity management) and external efforts, including government policies and international cooperation, to ensure market stability and prevent the spread of economic distress (Badarin, Al-Jarrah, Rababah, & ALotoom, 2024).

2.2 Theoretical Framework

The Capital Asset Pricing Model (CAPM) was developed in the early 1960s by economists William Sharpe, John Lintner, and Jan Mossin, building on earlier work by Harry Markowitz (Atodaria, Shah & Nandaniya, 2021). The model emerged from the need to provide a comprehensive understanding of how investors should price risky assets and how market risk affects the return on investments. Sharpe's original formulation of the model, in particular, introduced the idea of using a linear relationship between expected returns and market risk, which could be generalized to a broader set of assets (Balteș & Pavel, 2021).

The core postulations of the Capital Asset Pricing Model (CAPM) revolve around the relationship between risk and return (Atodaria, Shah & Nandaniya, 2021). CAPM posits that the expected return on an asset is a function of its sensitivity to market risk, which is represented by the asset's beta (β). Beta measures the asset's correlation with the overall market's return and reflects the extent to which the asset's price moves in relation to market movements. The model assumes that investors are rational and risk-averse, meaning they demand higher returns for higher levels of risk. Additionally, CAPM assumes the existence of a risk-free rate, which represents the return on an investment with no risk, such as government bonds (Jain & Joshi, 2021). According to CAPM, an investor can diversify away unsystematic risk, but must accept systematic risk (market-wide risk) that cannot be avoided, and for this risk, investors are compensated with higher expected returns (Balteș & Pavel, 2021).

The relevance of CAPM to the topic of examining the effect of firm attributes on systematic risk lies in its ability to model how characteristics such as firm size and liquidity influence a firm's exposure to market-wide risks. According to CAPM, a firm's exposure to systematic risk is captured by its beta (β), which is a measure of how sensitive the firm's returns are to overall market movements. Larger firms, which are often more diversified, are likely to have

lower betas, indicating less sensitivity to systematic risk, whereas smaller firms, with less diversification and more market volatility, may exhibit higher betas and, thus, higher exposure to systemic risk. Moreover, liquidity plays a critical role in CAPM, as firms with higher liquidity are better equipped to manage financial stress and market downturns, potentially reducing their sensitivity to systematic risk. This theoretical framework is directly relevant to understanding how firm attributes impact the level of systematic risk faced by listed consumer and industrial goods firms in Nigeria, as it allows for the exploration of how firm size and liquidity influence risk exposure and expected returns within a volatile market environment.

2.3 Empirical Review

In recent years, a variety of studies have examined the relationship between financial variables and systematic risk across different sectors and regions. A number of researchers have explored this complex interaction across different industries, countries, and time periods, providing useful hints into the dynamics of systematic risk.

One of the key findings in recent studies is the significant role of liquidity, profitability, and firm size in determining systematic risk. For instance, a study by Lazuardi and Retnasih (2024) in Indonesia analyzed firms listed on the LQ45 index between 2020 and 2023. They employed moderating regression analysis to explore how liquidity, earnings variability, and firm size influence systematic risk. The study found that these factors negatively affect systematic risk, with profitability acting as a mitigating factor, suggesting that profitable firms are better equipped to manage systemic shocks. This highlights the importance of financial stability in reducing exposure to risk.

Similarly, research conducted by Yisau, Bello, and Agbaogun (2024) in Nigeria, which focused on industrial and consumer goods companies between 2012 and 2022, examined the impact of leverage on systematic risk. They employed descriptive statistics, correlation analysis, and panel least squares regression to find that while combined leverage has a positive relationship with systematic risk, financial leverage alone has a negative but statistically significant relationship with risk. This suggests that the type and structure of leverage matter, with financial leverage potentially acting as a buffer in certain circumstances.

In another study by Akpan, Odokwo, and Akinninyi (2024) in Nigeria, the relationship between corporate characteristics and risk management disclosures in insurance companies from 2013 to 2022 was examined. Using an ex post facto design and marginal logistic regression, the researchers found that firm size, profitability, and leverage were influential factors in risk management disclosures, thereby enhancing transparency in the insurance sector. This underscores the importance of financial characteristics in shaping risk management practices and disclosures, which can ultimately affect a firm's resilience to systemic risk.

In Western Europe, Louhichi, Saghi, Srour, and Viviani (2024) conducted a study from 2004 to 2020, analyzing the effects of liquidity creation on systemic risk. Using the MES and ΔCoVaR methodologies, the study found that high liquidity creation exacerbates systemic risk, particularly during periods of financial crises. This finding suggests that while liquidity is generally viewed as a stabilizing force in markets, excessive liquidity creation can lead to greater vulnerabilities, especially in times of financial stress.

Another noteworthy study conducted by Obani and Ozuomba (2024) in Nigeria focused on the impact of firm attributes on systematic risk in the industrial sector between 2012 and 2020. Their research, based on descriptive statistics and regression analyses, revealed that profitability, liquidity, and financial leverage had negative coefficients and were not significant firm attributes of systematic risk. In contrast, firm size was found to have a positive and significant impact on systematic risk, highlighting that larger firms in the industrial sector tend to be more exposed to systemic risks.

Similarly, Ashara and Ofor (2022) analyzed firm-specific dynamics and systematic risk among money deposit banks in Nigeria between 2012 and 2020. Using an ex-post facto research design and robust regression analysis, the study found that firm size and leverage had significant negative effects on systematic risk. This suggests that larger firms and those with greater leverage are better positioned to absorb systemic shocks, highlighting the importance of firm size and leverage in mitigating risk in the banking sector.

In addition, Obani, Ifurueze, Ofor, and Ifurueze (2022) conducted a study on the financial ratios and systematic risk of industrial goods firms in Nigeria from 2012 to 2020. Their findings, based on ordinary least square regression analyses, indicated that liquidity had a negative relationship with systematic risk but was not a significant determinant of risk. Financial leverage, on the other hand, was found to be a significant determinant of systematic risk, further emphasizing the crucial role of leverage in shaping a firm's risk profile.

In Iran, Amirian, Ahmadi, Arani, and Abbasian (2022) examined the determinants of systematic risk in the medical tourism industry. Their study, using SEM-PLS analysis, revealed that debt advantage, liquidity, profitability, and operational efficiency were the most important factors contributing to firms' resilience against systematic risks. This study highlights the unique challenges faced by the medical tourism industry, where both financial and operational factors are critical in managing exposure to systemic risk.

Lestari, Sitti, and Sintha (2022) conducted a study in Indonesia on the impact of financial information on beta stock between 2017 and 2021. Their use of SEM-PLS analysis suggested that firm size significantly moderated the impact of liquidity, profitability, and sales growth on systematic risk. However, firm size did not significantly influence the relationship between solvency, activity, and asset growth and systematic risk, indicating that certain financial metrics may be more important in understanding a firm's exposure to risk.

In the cement manufacturing sector, Avijit, Tanveer, and Nazirul (2022) examined the determinants of systematic risk from 2016 to 2021. Using linear regression and a panelcorrelated standard error model, they found that solvency, asset efficiency, and liquidity were statistically significant determinants of beta. The study also revealed that inventory turnover had a statistically significant relationship with beta, while other variables did not significantly affect systematic risk.

Tekin and Bilgehan (2021) investigated the financial ratios affecting systematic risk in technology firms in Turkey between 2011 and 2019. Their study, using ordinary least square regression, concluded that there was no effect of total assets, return on assets, asset turnover, or return on equity on systematic risk. This finding suggests that the factors influencing

systematic risk in the technology sector may differ from those in other industries, requiring sector-specific analyses.

In Sri Lanka, Rathnayake and Wijesinghe (2021) explored the effect of financial variables on the systematic risk of common stock in the food, beverages, and tobacco sectors between 2014 and 2018. Using regression analysis, they found that liquidity and leverage had a significant positive impact on systematic risk. This suggests that these financial variables are key drivers of risk in the Sri Lankan food and beverage sectors, reflecting broader trends in emerging markets.

Ashara, Emeka-Nwokeji, and Ozua (2020) also studied the financial variables and systematic risk among deposit money banks in Nigeria between 2012 and 2020. Their pooled multiple regression analysis showed that liquidity, leverage, and firm size had a statistically insignificant positive effect on systematic risk, suggesting that these factors did not significantly contribute to risk in the Nigerian banking sector during the period under investigation.

In another study, Azizah, Sholikha, Panuntun, Kamaluddin, and Siliana (2020) analyzed the effect of operating leverage, asset growth, and firm size on systematic risk in the agricultural sector in Indonesia between 2015 and 2018. Their multiple linear regression results showed that operating leverage and asset growth did not affect systematic risk, while firm size had no significant impact on risk, challenging some of the conventional wisdom regarding the relationship between firm characteristics and systematic risk in agriculture.

In Jordan, Alshira, Abdul, Rahman, Mustapa, and Alshirah (2020) studied the effect of firm attributes on corporate risk disclosure at the Amman Stock Exchange. Their content analysis indicated that large firms, industrial firms, and those with high levels of leverage and profitability were more likely to disclose risk information. However, liquidity showed a negative effect on the level of risk disclosure, suggesting that liquidity might not always be perceived as a factor enhancing transparency in risk reporting.

Wiyono and Mmardijuwono (2020) examined the influence of leverage, profitability, firm size, and exchange rates on systematic risk in the manufacturing industry in Indonesia between 2016 and 2018. Using multiple linear regression, they found that leverage had a significantly negative relationship with systematic risk, while firm size showed a significantly positive relationship with risk. These findings underscore the complexity of risk determinants in the manufacturing sector, where both firm size and leverage play critical roles in shaping a firm's exposure to systemic risk.

In Thailand, Vongphachanh and Ibrahim (2020) analyzed the effect of financial variables on systematic risk in six industries, including consumer goods, technology, telecommunications, utilities, and healthcare, between 2002 and 2016. Using panel data analysis, they identified financial leverage, liquidity, firm size, firm growth, and profitability as the main factors influencing systematic risk in these industries. This study highlights the importance of firmspecific characteristics in determining the extent of exposure to systemic risk across different sectors.

Rohith and Selvarani (2019) conducted a study in India, focusing on the relationship between financial ratios and systematic risk in the steel industry between 2015 and 2018. Their

correlation analysis revealed that the quick ratio was negatively correlated with beta, while the return on assets and debt/equity ratio had a positive correlation with beta. These findings highlight the complex nature of financial ratios and their impact on risk in the steel industry.

In Japan, Riaz, Hongbing, and Mansoor (2019) analyzed the determinants of systematic risk in the shipping industry between 2000 and 2017. Their panel regression analysis showed that firm size was positively related to systematic risk, while operating efficiency had a negative association with risk. However, liquidity, growth, profitability, and financial leverage were found to be insignificant in determining the risk profile of Japanese shipping firms.

Osama and Yasmeen (2019) examined the impact of financial variables on systematic risk in the United States, South Korea, Egypt, and Germany, focusing on stock exchanges at the end of 2017. Using panel regression, they found a relationship between financial risks and systematic risk, both in the short and long term, underscoring the global relevance of financial characteristics in understanding market risk.

2.4 Gap in Literature

The existing literature on the effect of firm attributes on systemic risk has predominantly focused on various factors such as firm size, liquidity, profitability, and financial leverage, with studies highlighting different findings depending on the region and industry. For example, studies by Lazuardi and Retnasih (2024), Yisau, Bello, and Agbaogun (2024), and Obani and Ozuomba (2024) underscore the significant role of financial characteristics like firm size, liquidity, and profitability in influencing systematic risk. However, much of the existing research has focused on specific industries, such as banking (Ashara and Ofor, 2022), insurance (Akpan, Odokwo, and Akinninyi, 2024), and the manufacturing sector in other regions (Wiyono and Mmardijuwono, 2020; Vongphachanh and Ibrahim, 2020). Notably, some studies, such as those by Tekin and Bilgehan (2021) and Amirian, Ahmadi, Arani, and Abbasian (2022), suggest a complex and sometimes contradictory relationship between these attributes and systematic risk. However, none specifically examined how both firm size and firm liquidity affect systematic risk in the Nigerian context with particular reference to both listed consumer and industrial goods firms and so this study, therefore, sought to fill this gap.

3.0 Methodology

This study adopted an ex-post facto research design to examine the effect of firm attributes on the systematic risk of listed consumer and industrial goods firms in Nigeria. The ex-post facto design is suitable for this research as it allows for the analysis of existing data from past periods to investigate causal relationships without manipulating the independent variables. The study focuses on a sample of 25 purposively selected firms from a population of 44 listed manufacturing firms on the Nigerian Stock Exchange. The sample firms were chosen based on their availability and consistency of data, ensuring a reliable representation of the sector. Secondary data for the analysis were collected from the annual reports of these firms over a twelve-year period, from 2012 to 2023.

The key firm attributes considered in this study are firm size and liquidity, with systematic risk measured as the firm's beta coefficient. Firm size is calculated using the natural logarithm of total assets, a standard approach for determining the scale of firms in financial studies.

Liquidity is measured by the current ratio, which is the ratio of current assets to current liabilities, reflecting a firm's ability to meet its short-term obligations. Systematic risk is calculated using the beta coefficient, defined as Beta = Covariance (Ri - Rm) / Variance (Rm), where Ri is the return for firm i, and Rm is the return of the market. The beta coefficient represents the degree of a firm's exposure to market-wide risks, making it a critical measure of systematic risk.

For data analysis, descriptive statistics were first performed to understand the basic characteristics of the data. Hypothesis testing was conducted using Panel EGLS (Estimated Generalized Least Squares) to account for potential heteroscedasticity and autocorrelation in the panel data. The model was specified as a multiple regression, where systematic risk (beta) is the dependent variable, and firm size and liquidity are the independent variables.

$$Beta = \beta_0 + \beta_1 FSZ_{it} + \beta_2 LIQ_{it} + e.$$ Where:
SSR = Systematic Risk
FSZ = Firm Size LIQ = Firm liquidity β_0 =
Constant β_1 to β_2 = the coefficient of the parameter
estimate.
ε = the error term or residual. i
= ith firm for cross-section
t = period
The decision rule for hypothesis testing was set at a 5% significance level, meaning that any pvalue below 0.05 was considered statistically significant. This methodology ensures a robust and thorough analysis of the effect of firm attributes on systemic risk in the context of Nigerian consumer and industrial goods firms.

4.0 Data Analysis

4.1 Descriptive Analysis

Table 4.1 shows descriptive analysis.

Table 4.1 Descriptive Analysis

	BETA	FSZ	LIQ
Mean	0.467762	7.412353	1.638724
Median	0.478378	7.480308	1.191551
Maximum	0.690561	9.487205	36.41061
Minimum	0.223805	4.758056	0.005775
Std. Dev.	0.187695	0.993118	2.857323
Skewness	-0.044574	-0.309105	8.937567
Kurtosis	1.272339	2.666084	97.83780
Jarque-Bera	37.40950	6.171048	116421.6
Probability	0.000000	0.045706	0.000000
Sum	140.3287	2223.706	491.6173
Sum Sq. Dev.	10.53356	294.8990	2441.124
Observations	300	300	300

Source: Eviews Output (2024)

The systemic risk (BETA) has a mean value of 0.4678, indicating that, on average, the firms in this sample have moderate exposure to systemic risk. The highest BETA value of 0.6906 suggests some firms face higher systemic risk, while the minimum value of 0.2238 indicates that other firms are less exposed. The standard deviation of 0.1877 reflects moderate variation around the mean, suggesting that while most firms have moderate systemic risk, there are notable differences in their risk profiles. The negative skewness of -0.0446 suggests a slight tendency for the data to be more concentrated on the higher side, while the kurtosis value of 1.2723 indicates a distribution that is somewhat platykurtic, with fewer extreme values than a normal distribution. The Jarque-Bera probability of 0.0000 implies that the data significantly deviates from a normal distribution.

The firm size (FSZ) has an average value of 7.4124, implying that most firms in the sample have moderate sizes in terms of total assets. The maximum value of 9.4872 corresponds to the largest firm, while the minimum value of 4.7581 represents the smallest firm in the sample. With a standard deviation of 0.9931, there is considerable variation in firm size, which reflects differences in the scale of operations among the firms. The skewness of -0.3091 indicates that the distribution is slightly skewed to the left, suggesting a slightly larger number of smaller firms. The kurtosis value of 2.6661 is close to normal but slightly lower, implying a moderately peaked distribution. The Jarque-Bera probability of 0.0457 indicates that the data is marginally non-normally distributed but not at a highly significant level.

The liquidity (LIQ) has an average value of 1.6387, indicating that, on average, the firms in the sample have a healthy current ratio, meaning they are generally able to meet short-term liabilities. However, the maximum value of 36.4106 suggests that some firms have extremely high liquidity ratios, possibly indicating inefficient use of current assets. The minimum value of 0.0058 reflects a very low liquidity ratio for some firms, indicating potential liquidity risks. With a large standard deviation of 2.8573, there is significant variability in liquidity across the sample. The skewness of 8.9376 is highly positive, suggesting a distribution heavily skewed to the right, with most firms having lower liquidity ratios and a few firms with extremely high liquidity. The kurtosis value of 97.8378 indicates a highly leptokurtic distribution, with many extreme outliers in liquidity values. The Jarque-Bera probability of 0.0000 shows that liquidity data is significantly non-normally distributed, largely due to the presence of extreme values.

4.2 Test of Hypothesis

H01. Firm size has no significant effect on the systemic risk of listed consumer and industrial goods firms in Nigeria.

H02. Firm liquidity has no significant effect on the systemic risk of listed consumer and industrial goods firms in Nigeria.

Table 4.2 Regression Analysis
Dependent Variable: SSR
Method: Panel EGLS (Period SUR)
Date: 12/27/24   Time: 08:10
Sample: 2012 2023
Periods included: 12   Cross-sections included: 25
Total panel (balanced) observations: 300

Linear estimation after one-step weighting matrix
Period weights (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t- Statistic	Prob.
FSZ	-0.000632	0.000114	-5.539396	0.0000
LIQ	0.000178	5.95E-05	3.000289	0.0029
C	0.471123	0.000830	567.6089	0.0000

	Weighted	Statis tics	
R-squared	0.049800	Mean dependent var	-9.863225
Adjusted R-squared	0.043401	S.D. dependent var	38.29165
S.E. of regression	0.381875	Sum squared resid	43.31118
F-statistic	7.782888	Durbin-Watson stat	1.304951
Prob(F-statistic)	0.000508		

Source: Eviews Output (2024)

Table 4.2 shows the regression analysis examining how firm size and firm liquidity affects the systemic risk of listed consumer and industrial goods firms in Nigeria. The R-squared value of 0.0498 indicates that the model explains only 4.98% of the variation in systemic risk (BETA), which is quite low. This suggests that while the model includes firm size and liquidity as predictors, other factors not captured in the model may be influencing the variability in systemic risk. A low R-squared in financial studies is not uncommon when only a few variables are included, as systemic risk is often influenced by numerous external factors beyond firmspecific characteristics.

The probability of the F-statistic is 0.000508, which is highly significant at the 5% level. This indicates that the overall model is statistically significant, meaning that the independent variables (firm size and liquidity) collectively have a significant effect on systemic risk. Despite the low R-squared, the significant F-statistic supports the relevance of the model in explaining the systemic risk of the listed consumer and industrial goods firms in Nigeria.

The intercept value of 0.471123 represents the expected value of systemic risk (BETA) when both firm size and liquidity are zero. While this value is statistically significant with a p-value of 0.0000, its practical interpretation is limited, as it does not correspond to a realistic scenario where both firm size and liquidity are zero.

Firm Size (FSZ)

The coefficient for firm size (FSZ) is -0.000632, suggesting a **negative marginal effect** of firm size on systematic risk. This means that as firm size increases, systematic risk decreases,

although the effect is quite small. Specifically, for every one-unit increase in firm size (as measured by the natural logarithm of total assets), the systematic risk is expected to decrease by 0.000632 units. This is a marginal effect, meaning that the effect is minimal in practical terms.

Given that the p-value for FSZ is 0.0000, which is less than 0.05, the effect of firm size on systematic risk is statistically significant at the 5% level. Therefore, we reject the null hypothesis (H01) that firm size has no significant effect on systemic risk, confirming that firm size has a statistically significant negative effect on the systemic risk of listed consumer and industrial goods firms in Nigeria.

Liquidity (LIQ)

The coefficient for liquidity (LIQ) is 0.000178, indicating a **positive marginal effect** of liquidity on systemic risk. This suggests that as liquidity increases, systemic risk also increases, but again, the effect is small. Specifically, for every one-unit increase in liquidity (measured by the current ratio), systemic risk increases by 0.000178 units. Although the effect is positive, the marginal impact is minimal.

The p-value for liquidity is 0.0029, which is less than 0.05, indicating that the effect of liquidity on systemic risk is statistically significant at the 5% level. Therefore, we reject the null hypothesis (H02) that liquidity has no significant effect on systemic risk, concluding that liquidity has a statistically significant positive effect on systemic risk among listed consumer and industrial goods firms in Nigeria.

4.3 Discussion of Findings

Firm Size and Systemic Risk

The significant negative effect of firm size on systemic risk can be understood by considering the general resilience of larger firms during financial disruptions. Larger firms often have greater financial resources, diversified operations, and more robust risk management strategies, which help absorb systemic shocks. Additionally, large firms tend to be more closely monitored by regulators and investors, and they benefit from economies of scale and access to favorable credit terms. These factors collectively reduce their exposure to the risk of systemic events. Therefore, as firm size increases, it may lead to a reduction in the impact of systemic risk on these firms. However, it is worth noting that this effect can vary across industries and markets, as some large firms may also be more complex and interconnected, making them susceptible to wider systemic risks.

Several studies support this relationship. Ashara and Ofor (2022) reported that firm size had a significant negative effect on systematic risk in Nigeria's banking sector, suggesting that larger firms in this sector are better equipped to absorb systemic shocks. On the other hand, For instance, Obani and Ozuomba (2024) found that larger firms in Nigeria's industrial sector were more exposed to systemic risks, potentially due to their size creating greater market interconnections and complexity. Also, Wiyono and Mmardijuwono (2020) found a significantly positive relationship between firm size and systematic risk in Indonesia's manufacturing sector, reinforcing the notion that large firms can sometimes have a higher

exposure to systemic risks. Furthermore, Lazuardi and Retnasih (2024) in Indonesia observed that larger firms, though more capable of managing systemic risks, still faced risks due to their scale and market connections. In contrast, Vongphachanh and Ibrahim (2020) in Thailand found that firm size was significant in determining systematic risk across several industries, underscoring the nuanced role of size in different contexts. Lastly, Riaz et al. (2019) in Japan identified that larger firms in the shipping industry had a higher exposure to systemic risks, suggesting that the relationship between firm size and systemic risk is not always straightforward and depends on industry characteristics.

Firm Liquidity and Systemic Risk

The positive relationship between firm liquidity and systemic risk indicates that firms with higher liquidity are more vulnerable during periods of financial stress. While liquidity is generally seen as a stabilizing factor in normal market conditions, during times of systemic financial crises, an overabundance of liquidity can amplify market imbalances and lead to greater instability. Liquidity can contribute to systemic risk by facilitating excessive risk-taking and inflating asset bubbles, especially in volatile markets. Furthermore, firms with higher liquidity may become more reliant on short-term funding sources, which can exacerbate their exposure to liquidity crises. In some cases, excessive liquidity may signal financial fragility, particularly if it is not matched by underlying profitability or operational stability.

This finding is supported by a variety of studies. For instance, Louhichi et al. (2024) found that high liquidity creation exacerbates systemic risk in Europe, particularly during financial crises, suggesting that liquidity can be a double-edged sword. In contrast, Obani, Ifurueze, Ofor, and Ifurueze (2022) found a negative relationship between liquidity and systematic risk in Nigeria's industrial sector, suggesting that liquidity might serve as a protective cushion in certain contexts. Similarly, Rathnayake and Wijesinghe (2021) observed in Sri Lanka's food and beverage sector that liquidity had a significant positive effect on systematic risk, reflecting a broader trend in emerging markets where high liquidity can be a driver of risk. Furthermore, Amirian et al. (2022) found that liquidity was crucial in mitigating systemic risks in the medical tourism sector in Iran, highlighting that liquidity management is essential in managing exposure to systemic risks. Additionally, Wiyono and Mmardijuwono (2020) in Indonesia also identified liquidity as a factor contributing to systemic risk, though it varied depending on sector characteristics, further emphasizing the complex role of liquidity in shaping a firm's vulnerability to systemic shocks.

5.0 Conclusion and Recommendation

As Nigeria's economy faces persistent volatility and uncertainty, understanding how firmspecific factors like size and liquidity influence exposure to market risk is essential for longterm success. The consumer and industrial goods sectors are particularly vulnerable to systemic risks, making it important for these firms to actively manage their size and liquidity to minimize their exposure to broader market fluctuations. This research sought to contribute to the growing body of knowledge on the relationship between firm characteristics and systemic risk, with a specific focus on firms listed on the Nigerian exchange.

The significant negative effect of firm size on systematic risk suggests that larger firms may be better equipped to mitigate the exposure to broader market fluctuations, possibly due to greater

financial resources, stability, and diversified operations. In contrast, the positive relationship between firm liquidity and systematic risk indicates that firms with higher liquidity may be more vulnerable to market volatility, potentially due to the increased sensitivity of liquid assets to external shocks. This combination of results underscores the dynamic nature of risk factors in corporate environments, where both firm size and liquidity play pivotal roles in shaping the firms' susceptibility to systematic risk. In conclusion, while larger firms are better equipped to manage market fluctuations, firms with higher liquidity are more vulnerable to market volatility.

Given the significant negative nexus between firm size and systematic risk, it is recommended that business leaders and managers of large firms continue to invest in strategies that capitalize on their scale, such as diversifying operations, expanding into stable markets, and maintaining strong capital reserves, to further mitigate exposure to market-wide fluctuations and reduce systematic risk.

In light of the significant positive impact of liquidity on systematic risk, it is recommended that financial managers and decision-makers in firms with high liquidity adopt a more cautious approach to liquidity management, ensuring that excess liquidity is not left idle or used in riskprone investments, but rather allocated towards strategic reserves, risk hedging, and diversification to minimize exposure to market volatility.

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