World Journal of Finance and Investment Research E-ISSN 2550-7125 P-ISSN 2682-5902
Vol 8. No. 1 2024 www.iiardjournals.org (Online Version)

Capital Structure Determinants of Zombie Status of Listed Non-Finance Firms in Nigeria

G. I Anyanwu, P. Ihejirika
Department of Banking and Finance,
Imo State University, Owerri

Fortune Bella Charles
Ph.D. Candidates, Department of Banking and Finance,
Imo State University, Owerri

DOI: 10.56201/wjfir.v8.no1.2024.pg222.243

Abstract

The study investigates capital structure determinants of Zombie firm status by drawing samples from listed non-finance firms in Nigeria from 2012 to 2021. Long term debt to asset and debt to equity ratio are the capital structure proxies employed in this study while the dependent variable of the study is zombie firm status. Furthermore, the study employed the variables of profitability as the control variable. The population of the study consists of all the listed non-finance firms in Nigeria from 2012 to 2021. As of December 2021, we had 109 firms listed on the floor of the Nigerian Exchange Group (NGX) (NGX Factbook, 2021). The sampling technique employed in this study is the filtering sampling technique since firms were included in the sample on certain selection criteria. Logistic regression is employed to test the hypotheses of this study. Based on the findings of the study, we conclude that a 1% increase in long term debt to asset ratio will lead to about 1% insignificant increase in interest coverage ratio and thus decreasing zombie status of the firms during the period under investigation. We also conclude that a 1% increase in debt-to-equity ratio will lead to about 1% significant decrease in interest coverage ratio and thus increasing zombie status of the firms during the period under investigation. The study recommends that where non-financial firms must consider using debt in their capital structure, non-current debt should be prioritized ahead of short-term debt. This recommendation is based on the finding that long term debt reduces the incidence of zombies among non-financial firms.

Keywords: *Capital Structure, Zombie Status, Non-Finance, Firms, Nigeria*

INTRODUCTION

The significance of maintaining the health of firms in order to achieve the objective of maximizing shareholders' wealth is of utmost importance, particularly in light of the macroeconomic challenges that are prevalent in the global corporate landscape. A healthy firm can be defined as an entity that exhibits a surplus of income in relation to its liabilities. Furthermore, it is characterized by its ability to maintain an optimal level of liquidity, ensuring the availability of

sufficient funds to meet its financial obligations. Additionally, a healthy firm possesses the capability to fulfill its fixed interest charges in a timely manner, as they become due. Lastly, it demonstrates the capacity to generate profits within both short-term and medium-term time frames. In instances where a company is unable to meet the aforementioned criteria, it may potentially transition into a state commonly referred to as "zombie status" (Binh, Uyen, & According to Andrews and Petroulakis (2019), there appears to be a lack of sufficient research on the topic of zombie firms, indicating that this particular area remains relatively under explored. This suggests that there is significant untapped potential for researchers, particularly those based in developing countries such as Nigeria, to delve into this subject matter and contribute to the existing body of knowledge. Luo, Li, and Zhang (2015) have highlighted the limited attention given by scholars in the field of international finance to the study of firms experiencing negative equities and the subsequent ripple effects. Similarly, Retolaza, San-Jose, Urionabarrenetxea, and Garcia-Merino (2016) have also emphasized this research gap. The present study aims to address a significant research gap pertaining to the development and keen observation of zombie firms.

According to Tan et al. (2016), the term "zombie firms" refers to firms that are currently operating despite being insolvent. In recent times, there has been a notable surge in the level of attention directed towards them, primarily due to the significant expansion of their population and the consequential ramifications they have on the economy. According to Acharya et al. (2019), the presence of zombie firms in the market has the potential to disrupt competition dynamics by exerting downward pressure on product prices and causing an upward shift in wages. Additionally, Ahearne and Shinada (2005) suggest that these zombie firms may further exacerbate the situation by diverting credit away from productive firms, thereby impeding their ability to access necessary financial resources. According to previous studies conducted by Caballero et al. (2008) and McGowan et al. (2018), it has been observed that industries that are predominantly influenced by zombie firms tend to display a decrease in job creation and a decline in productivity levels. Notwithstanding the potential negative implications for the economy, it is worth noting that there has been a steady increase in the prevalence of zombie firms on a global scale, as highlighted by Banerjee and Hofmann (2018).

When a creditor, such as a bank, provides a loan to a business firm, it demonstrates an interest in the business firm's capacity to fulfill both the fixed interest charges and the principal amount borrowed. Creditors also exhibit a vested interest in the prosperity of a commercial entity. The profitability of a firm provides a reliable indication to creditors that the firm is financially sound and capable of repaying any credit facilities, such as loans, that may be extended to it. The occurrence of defaults in interest charges and loan repayment, potentially resulting from liquidity and profitability crises, can significantly impact the movement of funds from surplus units to deficit units. This, in turn, hinders the prompt availability of capital for investment activities, production of goods, provision of services, and ultimately impedes economic growth. The provision of financing by banks to enterprises in a state of zombie status has the potential to promote the misallocation of credit, hence exerting a corresponding impact on the financial sector of the respective economy (Ahearne & Shinada, 2022). The presence of zombie enterprises might potentially hinder financial intermediation, investment, and overall economic activity, thereby exerting a negative impact on the broader economy. Zombie enterprises are characterized by their

inability to meet salary and wage obligations to employees, primarily stemming from negative profitability and equity. According to Ogbeide (2021), employees exhibit a lack of willingness to remain employed inside organizations that are unable to provide consistent assurances on job security and timely wage disbursement. Zombie enterprises have a propensity to participate in downsizing, hence exerting a notable influence on the unemployment rate within an economy.

The objective of this research is to analyze the impact of capital structure on the classification of listed organizations as Zombie firms in the Nigerian context. A comprehensive review conducted across various continents has yielded diverse findings regarding the factors influencing the status of zombie firms. Previous research has predominantly focused on Asian countries, particularly India (Surahbi Somya & Madhuri Saripalle, 2021; Aggarwal, 2016), Malaysia (Rahim, Nor, Ramli, & Marzuki, 2021; Nor, Ramli, Marzuki, & Rahim, 2020; Indonesia (Sunard, Pertiwi, & Supramono, 2021; Listiani & Supramono, 2020; Nastiti, Atahau, & Supramono, 2019; Wahyuni & Dino, 2016), Jordan (Wasfit, Walid, & Hashem, 2021; Al-Slehat & Altameemi, 2021), and Pakistan (Mubeen & Hanif, 2017).Therefore, our study is timely and fills this research gap. It is on the basis of the gaps above that this study is intended.

REVIEW OF RELATED LITERATURE

Zombie Firm Status

Zombie firms are characterized by their ability to persist while consistently reporting negative equity. The notion of a zombie corporation was initially introduced by Kane (1980) during the emergence of the America Savings & Loan crisis in the 1980s. The author characterizes a zombie firm as a company that is at risk of being rendered insolvent by its creditors, were it not for the timely intervention of the government of the respective nation, facilitated by its monetary authority, utilizing bailout monies. According to Kane (1980), a corporation can be classified as a zombie when it consistently experiences financial losses that result in the actual worth of its assets being lower than the value of its obligations. A zombie firm refers to a financially insolvent company that persists in its operations solely due to the government's provision of timely credit support, enabling it to fulfill its financial obligations. Organizations classified as having zombie status are characterized by a demonstrable failure to fulfill its fixed interest payment commitments in a timely manner.

Consequence of Zombie Firms

Zombie firms refer to corporations that exhibit an inability to meet their financial obligations during a specified time frame, typically spanning three to ten continuous years, but yet remaining operational. Zombie corporations are perceived by the general public and financial analysts as entities that are no longer viable yet continue to operate, resembling lifeless bodies awaiting their eventual demise in a corporate burial ground. Zombie firms are commonly seen as financially distressed companies that are at risk of undergoing liquidation. According to Papworth (2013) and Dvouletý (2019), zombie firms are characterized by significant levels of debt, where their cash inflow is sufficient to cover interest charges but not the principal amount of the debts. These firms rely on reduced interest payments for a continuous period of three years to sustain their ability to

meet loan interest obligations. Zombie firms exhibit characteristics that are reminiscent of business firms experiencing insolvency, financial difficulties, and displaying evident signs of negative equity (Urionabarrenetxea et al., 2016). Companies that possess a substantiated zombie status tend to exert cascading impacts on the economy. In the context of their operational environment, enterprises that have challenges in generating profits, meeting interest obligations, and maintaining positive equity may encounter difficulty in meeting the expectations of many stakeholders, including the government, creditors, employees, and the public. For example, governmental entities demonstrate a vested interest in the pre-tax profitability of commercial enterprises over a specific time frame. In the event that a corporation incurs continuous losses, it becomes unable to fulfill its obligation of paying the company income tax (CIT) to the government. Hence, the unfavorable profitability (resulting in losses) experienced by companies in a state of zombie status has the potential to detrimentally influence government income, consequently exerting a negative impact on economic activity and overall performance within a nation.

Capital Structure

There are several definitions of a company's capital structure. Brealey and Myers (1991) defined capital structure as the firm's debt, equity, or hybrid securities. VanHorn (1989) defined capital structure as the percentage of debt to total business capital. Pandey (2005) defined capital structure as a firm's choice of internal vs external financial instruments. According to several past academics' definitions, a firm's capital structure defines how a corporation raises cash needed to launch and extend its economic operations. It is a combination of various forms of equity and debt capital that a company retains because of its financing decisions. The amount of debt that a company employs to fund its assets is referred to as leverage. A highly leveraged company has a lot of debt in its capital structure. Unlevered refers to a company that has no debt. The term "capital structure" refers to a company's mix of debt and equity funding (Brealey, Myers & Allen, 2007). The main difference between the two is that the former establishes a financial responsibility to repay a principal sum plus interest, whilst the latter accrues any residual earnings to its holders.

A firm's capital structure defines how it raises funds to launch and extend its commercial operations. It is a combination of various forms of equity and debt capital that a company keeps as a result of its financing decisions. A company's financial leverage indicates its debt severity. The ratio of financial debt to asset is a broad measure of leverage that is widely used in the literature; differences exist depending on whether long-term or total debt is utilized, and whether book or market values are employed. While market values, which represent investors' valuation of securities, appeal to economists, business practitioners prefer book value assessments since they are not subject to market volatility, according to Megginson and Smart (2005). Fernandez (2007) also contends that firms should base their desired capital structure on book values, which are more realistic. Rajan and Zingales (1995), and more recently Welch (2011), identified a subtle flaw in the common measurement of leverage: comparing financial debt to assets that contain non-financial liabilities (such as accounts payable, which is typically used for transaction purposes) tends to understate leverage.

Capital Structure and Zombie Firms; A Stylized Effect

Leverage is the portion of the fixed costs which represents risk to the company. The leverage ratio emphasized how much the debt proportion is used in the funding of a company's assets. Moreover, in the agency theory, the company's survival is in the agents' hands. Leverage ratio is known to play a significant implication in financial condition companies. A study on leverage done by Baza and Rao (2017) shows that leverage has negative and significant influence on zombie. The pecking order theory says that the decline in the value of a company is caused by the high ratio of this debt (Weston and Copeland, 1992 in Eliu, 2014). The higher the debt ratio the greater the risk which leads to potential bankruptcy, Hussan (2016) does research on the impact of leverage on risk of the companies. He says that leverage ratios include the debt-toassets ratio and debt-to-equity ratio. Higher leverage ratio, higher debt level. All creditors and debt holders have first claim to a company's assets in the event of failure. If a company with high debt level fails, its shareholders may not receive anything. So, it can be concluded that leverage positively influences the zombie firm status which is suitable to the Pecking Order Theory.

Why do creditors of zombie firms continue supporting them instead of claiming their debts? One would expect that lenders dealing with troubled borrowers would stop granting new loans, hastening their death. However, Peek and Rosengren (2005) showed that Japanese banks, especially the undercapitalized ones, misallocated loans in the 1990s. This was due to regulatory forbearance and perverse incentives that led them to make additional loans to severely impaired borrowers (the so called "evergreening" loans) to avoid having to declare the loans as nonperforming and record losses on their own balance sheets. This seminal study from Japan seems to provide insights into the proximate causes of zombie prevalence in Europe. Using data on bank lending to individual enterprises in Croatia during the global financial crisis and the subsequent sovereign debt crisis, for example, Broz and Ridzak (2017) concluded that banks grant loans to zombie firms only when this is in their self-interest. Likewise, Acharya *et al.* (2019) and Schivardi *et al.* (2022) provide some evidence that banks undercapitalized during the crisis period directed loans to zombie firms to avoid the recognition of loan losses. Similarly, Andrews and Petroulakis (2017) and Storz *et al.* (2017) found that zombie firms tend to be associated with weak banks, suggesting that the zombie problem is at least partly due to bank forbearance. Blattner *et al*. (2019) observed that, following an unexpected increase in capital requirement imposed by the European Banking Authority in 2011, affected Portuguese banks significantly decreased lending. However, consistent with the evergreen lending to zombie firms, they also found that these banks reallocated credit to borrowers with previously under reported loan loss.

Theoretical Framework

Agency Theory

The subject matter of agency theory is the agency issue and its resolution (Jensen & Meckling, 1976; Ross, 1973). The agency problem has existed since since humans began trading and attempting to maximize their own personal benefit. Since the establishment of corporations, the agency problem has remained. Possibly in a number of ways, every firm has been touched by this issue. The scholarly literature provides growing evidence that the agency problem has evolved through time. To comprehend the agency issue, its multiple manifestations, and the numerous costs

connected with its resolution, it is necessary to research the literature on agency theory. Problems with agency have been frequently observed in a variety of academic disciplines. Economics (Jensen & Meckling, 1976; Ross, 1973; Spence & Zeckhauser, 1971), Political Science (Hammond & Knott, 1996; Weingast & Moran, 1983), Sociology (Adams, 1996; Kiser & Tong, 1992), This theory has gained relevance in the finance and economics literature due to the pervasiveness of the agency problem in all types of organizations.

It analyzes the issues that may arise when business owners are separated from their company's management and proposes solutions. This theory is beneficial for directing the adoption of a number of governance techniques for regulating the conduct of stakeholders in jointly owned firms.

Empirical Review

Carreira and Lopes (2022) examined whether suppliers, such as banks, engage in "evergreen" lending to zombie firms and whether their behavior differs from that of banks. They found that highly productive, larger and younger firms are less likely to become zombie firms. The behavior of suppliers is, in fact, different from that of banks; they are indeed more cautious in lending to zombie firms. Unlike suppliers, banks seem to have contributed to the rise of resource misallocation, a key explanation for the productivity slowdown in the new century.

Banerjee and Hofmann (2022) using firm-level data on listed non-financial companies in 14 advanced economies, document a rise in the share of zombie firms, defined as unprofitable firms with low stock market valuation, from 4% in the late 1980s to 15% in 2017. These zombie firms are smaller, less productive, more leveraged, invest less in physical and intangible capital and shrink their assets, debt and employment. Their performance deteriorates several years before zombification and remains significantly poorer than that of non-zombie firms in subsequent years. Over time, some 25% of zombie companies exited the market, while 60% exited from zombie status. However, recovered zombies underperform compared to firms that have never been zombies and they face a high probability of relapsing into zombie status.

De Martiis, Heil, and Peter (2021) examine the determinants of zombie companies using a comprehensive firmlevel dataset of public corporations from Europe and the United States. They show that US zombie companies differ from their European peers on a modest number of firm-specific and industry-specific factors but follow a similar pattern. Using decision trees, they document that income and leverage-related variables are among the main drivers classifying zombie companies in Europe and in the US. Shareholders' interests are however relevant to separate zombie from non-zombie corporations in the US. They observe a frequent mislabeling of zombie firms into other unviable types of firms. To account for this, they also examine the determinants of distressed firms and compare them to the zombie. They find that zombie and distressed are not comparable types of companies, rather companies at a different stage of their financial unviability. They also document that zombification is especially a European phenomenon, while distressed type of firms is mostly populating the US economy.

Evers (2021) analyses which determinants increase or decrease the odds for a zombie firm to recover or exit the market by using annual data of global public firm data over the period 2002 –

2021. The results show that the share of zombie firms has indeed increased in the last two decades, during which it rose from around 8% of all firms in 2002 to 12% in 2021, while peaking at 16% during the global financial crisis. The increase in zombie firms results in more capital and labour being held by insolvent firms, which would create more value if used by non-zombie firms, thus slowing down economic growth. The regression results show that employee downsizing and debt restructuring are effective in increasing the odds for zombie firms to recover, as well as increasing sales and investing in a firm's assets. The odds for zombie firms to exit the market is significantly lower after the global financial crisis than during the crisis.

Widhiadnyana and Ratnadi (2019) obtain empirical evidence of the effect of managerial ownership, institutional ownership, the proportion of independent commissioner board, and intellectual capital on financial distress. The population of this research is all of manufacturing companies listed on Indonesian Stock Exchange (IDX) on 2014-2016. The sample was taken using a non-probability sampling with a saturated sample technique. The numbers of samples analyzed were 423 financial reports of manufacturing companies published on IDX during 2014--2016. The analysis technique used in this research is multinomial logistic regression. It was found that managerial ownership has a negative effect on financial distress, institutional ownership has a negative effect on financial distress, proportion of independent commissioner has a positive effect on financial distress, and intellectual capital has a negative effect on financial distress.

Carreira, Teixeira, and Nieto-Carrillo (2021) examine the recovery and exit of zombie firms among small- and medium-sized enterprises (SME), as well as the determinants of these transitions. The study also contributes to the discussion of the definition of zombie firms. Based on a panel of Portuguese manufacturing and services firms covering the 2004–2017 period, they did find a widespread presence of zombies. As expected, they are relatively less productive than non-zombies, while the probability of transition into recovery and exit is relatively low, which we interpret as evidence in favour of the presence of high barriers to firm mobility. In turn, the regression results show that downsizing and restructuring, as well as debt restructuring, are crucial in enhancing recovery of zombie firms. These are non-trivial results from the perspective of managers and policy makers.

Han, You, and Nan (2019) investigates the relationship among zombie firms, external support, and corporate environmental responsibility. Zombie firms refer to firms that should go bankrupt because of low efficiency and profitability but survive with external support from government or bank. Using a sample of Chinese listed companies over the period 2010e2016, they find that zombie firms have lower corporate environmental responsibility performance than no zombie firms. Such an effect is more pronounced when zombie firms receive a greater amount of external support from government or bank. The negative impact of zombie firms on corporate environmental responsibility performance is stronger in heavily polluting industries and state-owned enterprises. To deal with potential self-selection and endogeneity issues, Heckman two-step estimation and propensity score matching approaches are used to verify the validity of our results.

Naimo and Ogbeide (2022) examined determinants of zombie firms using a sample of seventy-five (75) listed non-financial firms in Nigeria. The correlation statistics, panel fully modified ordinary least squares (FMOLS) and panel ordinary least squares estimation methods were applied to analyze the data for the period 2012 to 2019. The study evidenced about 17.3% existence of zombie firms in the non-financial sector. Capital adequacy, interest coverage ratio, earnings before interest, and tax and firm age were found to be the key drivers of zombie phenomenon in the Nigeria clime. These drivers of zombie phenomena were also found to contribute adversely to the economic development of Nigeria, although the impact was not significant. The study concludes that the infiltration/prevalence of zombie firms causes a dragging effect on the economy of Nigeria. The study recommends that the regulatory authority should develop a framework with which firms with a zombie status can be monitored and managed in order to safe guide the interest of shareholders and the adverse implication on economic development.

San-Jose and Retolaza (2017) shows the existence of extreme types of zombie firm, i.e., companies with negative equity that continue to do business despite having lost their entire equity. They explain how these firms are measured and how the riskier ones are defined with different determinants. Using a Spanish sample from 2010 to 2014 an index called the EZIndex is developed that includes four dimensions of the extreme zombie problem: extension, contagion, recovery signs and immediacy. The study contributes to zombie theory on the one hand by developing a method for ranking zombie firms based on risks and changes over time, and on the other hand by using a log-linear model to detect the riskiest corporate profiles out of all these risky firms. It demonstrates significant implications that need to be considered by the competent authorities not only in terms of their impact as a whole but also in regard to the particular profile of extreme zombie firms: they are less regulated, large and located in regions with large business fabrics.

Nurmi, Vanhala, and Virén (2022) analyses zombie firms in a dynamic setup where firm survival not only depends on its current returns, but the firm's exit decision is forward-looking. Building on a model of firm entry and exit and using firm-level data from Finland, they show that the expected future value and growth of a firm are key determinants in whether it is likely to recover from losses accumulated during a spell of weak performance. They find that including firm growth in zombie identification substantially reduces zombie incidence in the data as one third of low interest coverage ratio firms in a common zombie definition are growing companies. Moreover, over half of exits from zombie status are recoveries to become healthy firms. A policy that may promote the survival of zombie firms is public subsidies.

Zhang, Chen, and Zhou (2020) seek to understand why zombie firms have been emerging in the last 10 years and to further explore the mechanisms of their formation. Based on a dataset of Lu, Li, and Qian (2020) examines the financing channels for zombie firms in China. They find that equity markets and suppliers provide substantial financing support for zombie firms, while banks and other financing channels are less important. They also find that the amount of investment does not increase accordingly after zombie firms obtain external financing, which indicates an inefficient use of funds by these zombie firms. Their results are robust to various definitions of zombie firms, and also to a propensity score matching method.

Zoller-Rydzek and Keller (2020) investigate the impact of the Swiss federal loan program (Bundeshilfe) on the business activities. To this end, they develop a stylized theoretical model of financially constrained heterogeneous firms. They find that policy makers face a trade-off between immediate higher unemployment rates and long-term higher public spending. The former arises from a combination of a too strong economic impact of the COVID-19 lockdown (demand drop) and too low levels of loans provided. Nevertheless, providing (too) high levels of loans to firms creates zombie firms that are going to default in the future leading to an increase in public spending.

Wilbur (2019) zombie firms impede the normal flow of capital and human resources to healthy businesses, and thereby defy creative destruction and hurt investment and employment growth. But what causes zombie firms to occur? Addressing this question from a political economy perspective, the study investigates a novel hypothesis about the role of credit guarantees in supporting weak firms. The results of a case study of small and medium-sized enterprises (SME) in Japan in the 1990s and 2000s suggest that Japan's credit guarantee system may indeed have contributed to numerous zombies among this firm category. However, evidence also suggests that these firms tended to quickly escape from zombie status, calling into question the negative connotation of the zombie firm concept.

METHODOLOGY

In this study, the *ex-post facto* research design is employed. This is because data was gotten from a secondary source that cannot be manipulated by the researcher. Furthermore, to answer the seminar questions, the *ex-post facto* research design allows us to retrieve the needed data from the annual report of non-finance firms from 2012 to 2021. The population of the study consists of all the listed non-finance firms in Nigeria from 2012 to 2021. As of December 2021, we had 109 firms listed on the floor of the Nigerian Exchange Group (NGX) (NGX Factbook, 2021). The sampling technique employed in this study is the filtering sampling technique since firms were included in the sample on certain selection criteria. These criteria include that the firms are listed on the Nigerian Exchange Group market for the period between 2012-2021; there was access to their annual financial reports within the period and they were not firms operating subsidiaries in Nigeria that are not listed in the Nigerian Exchange Group Market. Furthermore, newly listed firms are also excluded from the study. We employed the secondary data source of data collection since the data were sourced from the stock exchange Fact books and related firms' annual financial reports for the periods. However, the computed measures of external auditor's attribute and income smoothing are sourced from each listed firm's annual audited financial reports.

Model Specification

Based on the theoretical literature and earlier empirical studies on the determinants of zombie firm status, we will specify our model to capture the determinants of zombie firm status of listed firms in Nigeria. Thus, the study adapted the first model specified by Evers (2021). Particularly, the Evers (2021) model was stated as $ZOB_{it} = \alpha_0 + \alpha_1 ROA_{it} + \alpha_2 AGE_{it} + \alpha_3 LVRG_{it} + e_{it}$. Where ZOB represented Zombie firm, ROA represented return on asset, AGE represented firm age, and LVRG represented Leverage. Specifically, we modified their model for the purpose of

establishing the relationship between the dependent variables and the linear combinations of several determining variables captured in the study. Succinctly, the functional form of our model is expressed as follows:

$$In(\frac{ZOBS}{1-ZOBS})_{it} = \beta_0 + \beta_1 LTDA_{it} + \beta_2 DETE_{it} + \beta_3 RETA_{it} + \mu_{it}$$

Where:

ZOBS	=	Zombie Firm Status
LTDA	=	Long term debt to asset
DETE	=	Debt to Equity
RETA	=	Return on Asset
β_0	=	Constant
β_1- β_3	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	i^{th} firm
t	=	time period

Method of Data Analysis

This study employed analytical software of Stata version 16 and Microsoft excel for the analysis. The secondary data collected was analyzed using descriptive statistics, correlation, and regression analysis. The descriptive statistics were used to evaluate the characteristics of the data: mean maximum, minimum, and standard deviation and also check for normality of the data. Logistic regression is employed to test the hypotheses of this study. Particularly, logistic regression is used in this study based on the following reasons. First, logistic regression has the advantage of being less affected than discriminant analysis when the basic assumptions particularly normality of the variables, are not met (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). Second, in logistic regression, the estimated coefficients can be interpreted separately as the significance of each of the predictive variables. Third, statistically, logistic regression seems to fit well with the features of the distress prediction problem, where the dependent variable is binary and with the groups being discrete, non-overlapping and identifiable (Ciampi 2015). Fourth, it has straightforward statistical tests, similar approaches to incorporating metric and non-metric variables and non-linear effects, and a wide range of diagnostics (Hair Jr et al. 2014). Fifth, logistic regression produces reliable results because of its ability to produce a nonlinear transformation of the input data that reduces the effects of outliers**.**

Operationalization of the Variables

S/N	Variables	Definition	Measurements	Sources	Apriori Sign
Dependent Variable					
1	Zombie Firm Status	Zombie firms are companies which are unable to pay back their borrowed funds for a defined period, maybe in a three to ten years consecutive period and continue operating.	Zombie firm status is measured in dummy as "1" where the interest coverage ratio is less than 1 and "0" for otherwise.	Wijaya and Atahau (2021)	
Independent Variables					
2	Long Term debt	Long-term debt is debt that matures in more than one year.	Long Term debt ratio is computed as the ratio of non-current liabilities to total asset	Teng, Aslam, Onder and Ludo (2012)	+
3	Debt to Equity	Debt-to-equity ratio is used to evaluate a company's financial leverage and is calculated by dividing a company's total liabilities by its shareholder equity.	Debt to equity ratio is measured as the ratio of total liabilities to total equity	Wijaya and Atahau (2021)	+
4	Return on Asset	Return on assets is a metric that indicates a company's profitability in relation to its total assets.	Return on asset is computed as the ratio of profit after tax to total asset	Teng, Aslam, Onder and Ludo (2012)	+

Source: ***Author's Compilation (2023)***

ANALYSIS AND DISCUSSION OF RESULTS

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
zoms	730	.763	.426	0	1
ltda	730	17.957	25.5	-113.2	205.65
dete	730	2.447	20.645	-343.17	207.53
reta	730	1.279	17.278	-179.92	176.27

Source: Author (2023)

The result of the descriptive statistics is presented in table 1. The result shows that the mean of the dependent variable of zombie status (ZOMS) is 0.763 with a standard deviation of 0.426. The result implies that, on average, about 76% of the firms in our sample were zombies. In the case of the independent variables, our results show that the mean of long-term debt to asset ratio (LTDA) is 17.96 with a standard deviation of 25.50. The result implies that on average, the ratio of long-term debt to asset ratio was about 18% during the period under study. We also find that the mean of debt-to-equity ratio (DETE) was 2.47 with a standard deviation of 20.65. This indicates that on average, the ratio of debt to equity was about 2% during the period under study. In the case of the control variable, the result indicates that the mean of return on asset (RETA) was 1.28 with a standard deviation of 17.28 indicating that on average, for every 1 unit of asset utilized in the firms under study, it returned a profit of N1.28K during the period under study.

Normality Test

Table 2: Shapiro-Wilk Test for Normality of Data

Variable	Obs	W	V	z	Prob>z
zoms	730	0.995	2.140	1.859	0.031
ltda	730	0.739	123.707	11.775	0.000
dete	730	0.182	387.314	14.565	0.000
reta	730	0.663	159.862	12.402	0.000

Source: Author (2023)

Particularly, when testing for normality, where the probabilities > 0.05, it indicates that the data are NORMAL. Conversely, where the probabilities < 0.05, it indicates that the data are NOT NORMAL.

The result from the normality tense of data is presented in table 4.2. It is observed that the dependent variable of zombie firm (Z=1.859; Prob>Z=0.031) is not normally distributed since the probability of the z-statistics is significant at 5% level. In the case of the independent variables, the table shows that long term debt to asset ratio (Z=11.775; Prob>Z=0.000), debt to equity ratio (Z=14.565; Prob>Z=0.000) as well as the control variables of return on asset (Z=12.402; Prob>Z=0.000) are not normally distributed since the probabilities of the z-statistics are significant at 1% level. The interpretation of the data normally test is in line with the studies of Jarque and Bera (1987).

Correlation is a statistical tool that helps to measure and analyze the degree of relationship between two variables. Correlation quantifies the degree and direction to which two variables are related. Correlation does not fit a line through the data points. In statistics, the value of the correlation coefficient varies between +1 and -1. When the value of the correlation coefficient lies around ± 1, then it is said to be a perfect degree of association between the two variables. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. Usually, in statistics, we measure three types of correlations: Pearson correlation, Kendall rank correlation and Spearman correlation. In this study, the Spearman rank correlation is employed since the data employed does not come from a normal distribution. The result obtain from the Spearman correlation is presented.

Table 3: Spearman's Rank Correlation

Variables	(1)	(2)	(3)	(4)
(1) zoms	1.000			
(2) ltda	-0.055	1.000		
(3) dete	-0.267	0.375	1.000	
(4) reta	0.655	-0.092	-0.213	1.000

Source: Author 2023

In the case of the correlation between the variables, the results obtained from the Spearman rank correlation above shows that there exist a negative association between long term debt to asset (-0.055) and the dependent variable of zombie firm status during the period of study. The table also shows that there exists a negative association between debt to equity (-0.267) and the dependent variable of zombie firm status during the period of study. In the case of the control variables, we find that return on asset (0.655) has positive association with the dependent variable of zombie firm status during the period of study. All associations are seen to be weak and thus we cannot suspect the presence of multicollinearity among the explanatory variables.

Binary Logit Regression Analyses

Specifically, to examine the cause-effect relationships between the dependent variables and independent variables of the study, we employ the binary logit regression since the dependent variable is dichotomous. The result obtained is presented below.

Table 4: Binary Logistic Regression Result

	ZOMS Model (Logistic Regression)	ZOMS Model (Marginal Effect)
CONS.	1.225	
	{0.0000} ***	
LTDA	0.005	0.007
	{0.163}	{0.162}
DETE	-0.028	-0.004
	{0.032} **	{0.031} **
RETA	0.103	0.014

	{0.000} ***	{0.000} ***
LR (Prob>chi2)	163.89 (0.0000) ***	
Pseudo R- Squared	0.2050	
Goodness of Fit Test	789.59 {0.5123}	
Sensitivity	96.23%	
Specificity	35.26%	
Classification	81.78%	

*Source: Author (2023) Note: (1) bracket {} are p-values; (2) **, ***, implies statistical significance at 5% and 1% levels respectively*

In the table above, we observed from the Logistic regression of the zombie firm status model that the Pseudo R-squared value of 0.2050 shows that about 21% of the systematic variations in zombie status of the pooled non-finance firms over the period of interest was jointly explained by the independent and control variables in the model. The unexplained part of zombie status can be attributed to exclusion of other independent variables that can impact on zombie status but were captured in the error term. The LR Statistics of the logistic regression [163.89 {0.0000}] shows that the model on the overall is statistically significant at 1% level, this means that the Logistic regression model is valid and can be used for statistical inference. Furthermore, the result of the LR Statistics is confirmed by the Pearson goodness of fit test [787.59 {0.5123}] indicating that the model on the overall is fit. From the foregoing, we subject the model into further diagnostic test to validate the reliability of the estimates.

Sensitivity and Specificity Test

Sensitivity (also called the true positive rate) measures the proportion of actual positives which are correctly identified as such and is complementary to the false negative rate while Specificity (also called the true negative rate) measures the proportion of negatives which are correctly identified as such and is complementary to the false positive rate. Particularly, the classification table shows that out of 648 cases that fell into the group of zombie status samples, 536 cases were predicted correctly with 96.23% sensitivity accuracy while 61 of 82 cases that fell into the group of not-zombie status samples were predicted correctly and with 35.26% specificity accuracy. However, we find that the overall accuracy rate is seen to be roughly 81.78% which suggests that the model is free from any significant bias hence can be employed for interpretation and policy recommendation.

Discussion of Findings

In this study, we find that the independent variable of long-term debt is a positive and insignificant determinant of zombie status. The result implies that a 1% increase in long term debt to asset ratio will lead to about 1% insignificant increase in interest coverage ratio and thus decreasing zombie status of the firms during the period under investigation. We find inconsistencies with the studies of Kapopoulos and Lazaretou (2007). In their study, Kapopoulos and Lazaretou (2007) found that severe industry competition leads to decline in sales turnover and hence reduced profitability for the affected firms. The authors argued that if the situation is sustained, the firm suffers from

liquidity shortages that culminate in financial distress and thus zombie status.This finding mirrors that by Aggarwal and Kyaw (2006) who posited that, debt maturity can have both positive and negative effects on performance of the firm so that the optimal debt structure is determined by balancing the agency costs and other costs of debts as a means of alleviating the under and over-investment problems.

However, our findings reveal that the independent variable of debt-to-equity ratio is a negative and significant determinant of zombie status. The result implies that a 1% increase in debt-to-equity ratio will lead to about 1% significant decrease in interest coverage ratio and thus increasing zombie status of the firms during the period under investigation. We find consistency with the study of Abu-Rub (2012) who used a sample of 28 firms over the five years period (2006 – 2010). In the study, total debt to total assets and total debt to total equity were used as proxies of financial leverage while return on equity represented corporate financial distress. The results showed that debt financing had a positive and significant effect on ROE. The author argued that companies that employed 21 debts to finance their operations benefited from interest-tax savings that helped in building up more reserves for shareholders.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study investigates capital structure determinants of Zombie firm status by drawing samples from listed non-finance firms in Nigeria from 2012 to 2021. Long term debt to asset and debt to equity ratio are the capital structure proxies employed in this study while the dependent variable of the study is zombie firm status. Furthermore, the study employed the variables of profitability as the control variable. Particularly, to test the hypotheses of the study, we employed the marginal logistic regression. The results reveal that.

1. Long-term debt is a positive and insignificant determinant of zombie status {coeff. 0.007; p-value: 0.162}.
2. Debt-to-equity ratio is a negative and significant determinant of zombie status {coeff. -0.004; p-value: 0.031}.

The significance of maintaining the health of firms in order to achieve the objective of maximizing shareholders' wealth is of utmost importance, particularly in the face of the macroeconomic challenges that impact the corporate landscape on a global scale. A healthy firm can be defined as an entity that exhibits a surplus of income in relation to its liabilities. Furthermore, it is characterized by the ability to maintain a desired level of liquidity, ensuring sufficient resources are available to meet financial obligations. Additionally, a healthy firm possesses the capacity to fulfill fixed interest charges in a timely manner, as they become due. Lastly, it demonstrates the potential to generate profits within both short and medium-term time frames. In instances where a company is unable to meet the aforementioned criteria, it is possible that said company is exhibiting signs of transitioning into a state commonly referred to as "zombie status." On the basis of this, we investigate capital structure determinants of Zombie firm status by drawing samples from listed non-finance firms in Nigeria from 2012 to 2021. Based on the findings of the study,

we conclude that a 1% increase in long term debt to asset ratio will lead to about 1% insignificant increase in interest coverage ratio and thus decreasing zombie status of the firms during the period under investigation. The study further concludes that a 1% increase in debt-to-equity ratio will lead to about 1% significant decrease in interest coverage ratio and thus increasing zombie status of the firms during the period under investigation.

Recommendation

The implications of this study may be leveraged by various stakeholders to underscore the significance of capital structure in the surveillance and assessment of a company's Zombie status. Specifically, based on the findings of the study, the following recommendations are made:

1. The study recommends that where non-financial firms must consider using debt in their capital structure, non-current debt should be prioritized ahead of short-term debt. This recommendation is based on the finding that long term debt reduces the incidence of zombies among non-financial firms.
2. The study recommends that in configuring their equity structure, financing managers of non-financial firms should prioritize the use of internally generated capital such as retained earnings and reserves ahead of externally issued equity.

REFERENCES

Ahmad, N., & Abdul-Rahim, F. (2013). Theoretical investigation on determinants of government-linked companies capital structure. *Journal of Accounting, Finance and Economics*, *3*(2), 72-85.

Ahmed, W., Minnaert, A., van der Werf, G., & Kuyper, H. (2010). Perceived social support and early adolescents' achievement: The mediational roles of motivational beliefs and emotions. *Journal of Youth and Adolescence*, *39*(1), 36-46.

Alayemi, S. A., & Akintoye, R. I. (2015). Strategic management of growth in manufacturing companies in Sub-Saharan Africa: a case study of Nigeria. *British Journal of Economics, Management & Trade*, *6*(2), 151-160.

Al-Nasser, Aqdas, and Mahdi Al-Jubouri. 2020. Use analysis of internal growth rate and sustainable growth rate and its relation to performance. *International Journal of Psychosocial Rehabilitation* 24: 8635–51.

Al-Slehat, Z. A. F., & Altameemi, A. F. (2021). The relationship between non-interest revenue and sustainable growth rate: A case study of commercial banks in Jordan. *The Journal of Asian Finance, Economics and Business*, *8*(5), 99-108.

Amidu, M. (2017). The effects of cross-border banking and institutional quality on accounting information of banks in Africa. *International Journal of Economics and Accounting*, *8*(3-4), 240-274.

Amouzesh, N., Moeinfar, Z., & Mousavi, Z. (2011). Sustainable growth rate and firm performance: Evidence from Iran Stock Exchange. *International Journal of Business and Social Science*, *2*(23).

Amran, N. A., & Ahmad, A. C. (2011). Board mechanisms and Malaysian family companies' performance. *Asian Journal of Accounting and Governance*, *2*(1), 15-26.

Anton, S. G., & Nucu, A. E. A. (2021). The effect of financial development on renewable energy consumption. A panel data approach. *Renewable Energy*, *147*, 330-338.

Aregbeyen, O. (2012). The determinants of firm growth in Nigeria. *Pakistan Journal of Applied Economics*, *22*(1-2), 19-38.

Arora, L., Kumar, S., & Verma, P. (2018). The anatomy of sustainable growth rate of Indian manufacturing firms. *Global Business Review*, *19*(4), 1050-1071.

Arouri, H., Ben Youssef, A., Quatraro, F., & Vivarelli, M. (2018). *The determinants of young firms growth in Tunisia* (No. 11400). IZA Discussion Papers.

Ataünal, L., Gürbüz, A. O., & Aybars, A. (2016). Does high growth create value for shareholders? Evidence from S&P500 firms. *European Financial and Accounting Journal*, *11*(3), 25-38.

Burger, A., Damijan, J. P., Kostevc, Č., & Rojec, M. (2014). Determinants of firm performance and growth during economic recession: The case of Central and Eastern European countries. *Economic Systems*, *41*(4), 569-590.

Chaibi, H., & Ftiti, Z. (2015). Credit risk determinants: Evidence from a cross-country study. *Research in international business and finance*, *33*, 1-16.

Dabić, M., & Lamotte, O. (2017). Internationalization of Central and Eastern European firms: trends and strategies. *European Business Review*, *29*(2).

Dinku, T. (2013). Impact of working capital management on profitability of micro and small enterprises in Ethiopia: The case of Bahir Dar City Administration. *International Journal of Accounting and Taxation*, *1*(1), 15-24.

Emekekwue, P. E. (2018), Corporate Financial Management, Congo; 5th edition, *AfricanBureau of Educational Sciences*.

Endri, E. (2019). Determinants of Return on Assets (ROA) On Conventional Banks Listed On Indonesian Stock Exchange (IDX) Period 2013–2017. *IOSR Journal of Business and Management (IOSR-JBM)*, *21*(4), 52-62.

Epaphra, M., & Nyantori, S. N. (2018). Analysis of the determinants of dividend policy: Evidence from manufacturing companies in Tanzania. *Corporate Governance and Organizational Behavior Review*, *2*(1), 18-30.

Filsaraei, M., & Zarei, A. (2017). The relationship between ownership and dividend policy: Evidence from Tehran Stock Exchange. *International Journal of Economics and Financial Issues*, *7*(2), 664.

Fonseka, M. M., Ramos, C. G., & Tian, G. L. (2012). The most appropriate sustainable growth rate model for managers and researchers. *Journal of Applied Business Research (JABR)*, *28*(3), 481-500.

Friedman, M. (1953). *Essays in positive economics*. University of Chicago press

Fumey, A., & Doku, I. (2013). Dividend payout ratio in Ghana: Does the pecking order theory hold good. *Journal of Emerging Issues in Economics, Finance and Banking*, *2*(2), 616-637.

Genc, A., & Angelo, P. (2012). Ownership concentration and effects over firm performance: Evidence from Italy. *European Scientific Journal*, *8*(22), 39-49.

Getachew, S. (2017). *Determinants of Dividend Policy: Evidence* (Doctoral dissertation, Addis Ababa University Addis Ababa, Ethiopia).

Hartono, G. C., & Utami, S. R. (2016). The comparison of sustainable growth rate, firm's performance and value among the firms in Sri Kehati Index and Idx30 Index in Indonesia Stock Exchange. *International Journal of Advanced Research in Management and Social Sciences*, *5*(5), 68-81.

Hassan, R. S., & Hart, M. (2016). The determinants of small firm growth: An empirical study on Egypt. *The Business & Management Review*, *7*(2), 41.

Huang, L., Ying, Q., Yang, S., & Hassan, H. (2019). Trade credit financing and sustainable growth of firms: Empirical evidence from China. *Sustainability*, *11*(4), 1032.

Huang, X., & Zhang, J. (2015). Research on the financial sustainable growth of the listed companies on GEM. *International Business and Management*, *10*(2), 32-37.

Insalaca, V. G. (2017). *The impact of growth strategies on the performance of large food and beverage companies (Dissertation)*. University of Research, UK

Ionita, C., & Dinu, E. (2020). The effect of intangible assets on sustainable growth and firm value–Evidence on intellectual capital investment in companies listed on Bucharest Stock Exchange. *Kybernetes*. 24: 8635–51

Kajola, S. O., Desu, A. A., & Agbanike, T. F. (2015). Factors influencing dividend payout policy decisions of Nigerian listed firms. *International Journal of Economics, Commerce and Management*, *3*(6), 539-557.

Kalyebara, B., & Islam, S. (2020). Discounted cash flow for Tom. com. In *Corporate Governance, Capital Markets, and Capital Budgeting* (pp. 75-106). Physica, Berlin, Heidelberg.

Kanani, M. A., Moradi, J., & Valipour, H. (2013). Sustainable growth and firm risk from the signaling perspective. *Asian Economic and Financial Review*, *3*(5), 660-667.

Korent, D., & Orsag, S. (2018). The impact of working capital management on profitability of Croatian software companies. *Zagreb International Review of Economics & Business*, *21*(1), 47-65.

Kosikoh, J. C. (2014). Determinants of financial distress in insurance companies in Kenya. *Jomo Kenyatta University of Agriculture and Technology*. 36(3), 19.

Kumari, N. N., & Anthuvan, M. V. L. (2017). A study on the impact of the working capital management on the profitability of the leading listed automobile companies in India. *International Journal of Scientific Research and Management*, *5*(8), 6744-6757.

Kumo, W. L. (2009). Growth and macroeconomic convergence in Southern Africa.

Listiani, N., & Supramono, S. (2020). Sustainable growth rate: Between fixed asset growth and firm value. *Management and Economics Review*, *5*(1), 147-159.

Madoroba, E., & Kruger, J. W. (2018). Relationship between sustainable growth and share price. *Available at SSRN 2635904*.

Mahdzan, N., & Zainudin, R. (2016). Interindustry dividend policy determinants in the context of an emerging market. *Economic Research-Ekonomska Istraživanja*, *29*(1), 250-262.

Mamilla, R. (2018). A study on sustainable growth rate for firm survival. *Strategic Change*, *28*(4), 273-277.

Manaf, N. B. A., Saad, N. B. M., Mohamad, N. E. A. B., Ali, I. B. M., & Rahim, N. B. (2018). Determinants of sustainable growth rate (SGR) By using Zakon's Model to encounter with shariah compliance requirements for shariah securities compliance firms in Malaysia. *International Journal of Industrial Management*, *4*, 61-69.

Memon, M. Z., Channar, Z. A., & Obaid, S. (2011). Dynamic relationship among sustainable growth rate, profitability and liquidity of firms. *International Journal of Business and Social Science*, *2*(23), 249.

Mogos, S., Davis, A., & Baptista, R. (2020). High and sustainable growth: persistence, volatility, and survival of high growth firms. *Eurasian Business Review*, *11*(1), 135-161.

Mohammed, I. (2016). An approach to assess the effectiveness of smart growth in achieving sustainable development. *Sustainability*, *8*(4), 397.

Momčilović, M., Begović, S. V., Tomašević, S., & Ercegovac, D. (2015). Sustainable growth rate: Evidence from agricultural and food enterprises. *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, *20*(76), 63-75.

Morakinyo, F. O., David, J. O., Adeleke, E. O., & Omojola, S. O. (2018). Determinants of dividend policy of listed deposit money banks in Nigeria. *World Journal of Finance and Investment Research (International Institute of Academic Research and Development)*, *3*(1), 25-40.

Mubeen, M., Ahmed, M., Iqbal, A., & Arif, K. (2021). Sustainable growth of non-financial firms: An empirical examination of emerging economies. *Journal of Entrepreneurship, Management, and Innovation*, *3*(2), 331-354.

Muigai, R. G., & Muriithi, J. G. (2017). The moderating effect of firm size on the relationship between capital structure and financial distress of non-financial companies listed in Kenya. *Journal of Finance and Accounting*, *5*(4), 151-158.

Mukherjee, T., & Sen, S. S. (2019). Intellectual capital and corporate sustainable growth: The Indian evidence. *Asian Journal of Business Environment*, *9*(2), 5-15.

Mumu, S., Susanto, S., & Gainau, P. (2019). The sustainable growth rate and the firm performance: Case study of issuer at Indonesia stock exchange. *Journal Homepage: http://www. ijmra. us*, *9*(12).

Nadaraja, P., Zulkafli, A. H., & Masron, T. A. (2011). Family ownership, firm's financial characteristics and capital structure: evidence from public listed companies in Malaysia. *Economia Seria Management*, *14*(1), 141-155.

Napompech, K. (2012). Effects of working capital management on the profitability of Thai listed firms. *International Journal of Trade, Economics and Finance*, *3*(3), 227-232.

Nastiti, P. K. Y., Atahau, A. D. R., & Supramono, S. (2019). Working capital management and its influence on profitability and sustainable growth. *Business: Theory and Practice*, *20*, 61-68.

Nor, F. M., Ramli, N. A., Marzuki, A., & Rahim, N. (2020). Corporate sustainable growth rate: The potential impact of COVID-19 on Malaysian companies. *The Journal of Muamalat and Islamic Finance Research*, 25-38.

Nuredin, M. (2012). Determinants of dividend policy of insurance companies in Ethiopia. *Available: etd. aau. edu. et/dspace/bitstream/.../4665/1/Muhamm ed% 20nuredin. pdf*.

Nurlaela, S., Mursito, B., Kustiyah, E., Istiqomah, I., & Hartono, S. (2019). Asset turnover, capital structure and financial performance consumption industry company in Indonesia stock exchange. *International Journal of Economics and Financial Issues*, *9*(3), 297.

Ocak, M., & Fındık, D. (2019). The impact of intangible assets and sub-components of intangible assets on sustainable growth and firm value: evidence from Turkish listed firms. *Sustainability*, *11*(19), 5359.

Oladimeji, J. A., & Aladejebi, O. (2020). The impact of working capital management on profitability: evidence from selected small businesses in Nigeria. *Journal of Small Business and Entrepreneurship Development*, *8*(1), 27-40.

Onodje, M. A., & Farayibi, A. O. (2020). Determinants of manufacturing growth in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF)*, *11*, 36-44.

Pham, H. N., Kalyebara, B., & Islam, S. (2020). Ownership structure, capital structure and firm growth: Empirical evidence and sustainable growth implications. *International Journal of Business & Economics*, *19*(3).

Pouraghajan, A., & Emamgholipourarchi, M. (2012). Impact of working capital management on profitability and market evaluation: Evidence from Tehran Stock Exchange. *International Journal of Business and Social Science*, *3*(10).

Qiao, S., Shen, T., Zhang, R. R., & Chen, H. H. (2021). The impact of various factor market distortions and innovation efficiencies on profit sustainable growth: From the view of China's renewable energy industry. *Energy Strategy Reviews*, *38*, 100746.

Rahayu, E. A., & Susilowibowo, J. (2014). The effect of cash turnover, receivables turnover and inventory turnover on the profitability of manufacturing companies. *Journal of Management Science*, *2*(4), 1444-1455.

Rahim, K., & Munir, S. (2018). Agricultural exports and economic growth in Pakistan: an econometric reassessment. *Quality & Quantity*, *52*(4), 1561-1574.

Rahim, N. (2017). Sustainable growth rate and firm performance: A case study in Malaysia. *International Journal of Management, Innovation & Entrepreneurial Research*, *3*(2), 48-60.

Rahim, N., Nor, F. M., Ramli, N. A., & Marzuki, A. (2021). Sustainable growth rate for Malaysian public-listed Shariah-Compliant companies: Does Financing Behaviour Matter?. *International Journal of Industrial Management*, *4*, 61-69.

Safiah, F., & Nizam, D. I. (2015). The effects of Working Capital Management on the profitability of plantation and pertroleum sector in Malaysia. *International Journal of Accounting & Business Management*, 87-108.

Şahin, A., & Ergün, B. (2018). Financial sustainable growth rate and financial ratios: A research on Borsa İstanbul manufacturing firms. *Journal of Business Research Turk*, *10*(1), 172-197.

Shafiquea, A., Kashifb, A. R., Haiderc, A., Zaheerd, N., & Khan, S. (2021). Effect of asset utilisation and corporate growth on financial performance. *Int. J. Innov. Creat. Chang*, *15*, 1104-1118.

Shahnaz Mahdzan, N., Zainudin, R., & Karimi Shahri, N. (2016). Interindustry dividend policy determinants in the context of an emerging market. *Economic research-Ekonomska istraživanja*, *29*(1), 250-262.

Shahwan, T. M., & Habib, A. M. (2020). Does the efficiency of corporate governance and intellectual capital affect a firm's financial distress? Evidence from Egypt. *Journal of Intellectual Capital*. *5*(2), 1-5.

Soetjanto, J. R., & Thamrin, H. (2020). Analysis of factors that effect firm value of consumer goods industry listed on Indonesia stock exchange. *International Journal of Scientific and Research Publications*, *10*(5), 1-9.

Somya, S., & Saripalle, M. (2021). The determinants of firm's growth in the telecommunication services industry: Empirical evidence from India. *International Journal of Industrial Management*, *4*, 61-69.

Sunardi, S., Pertiwi, J., & Supramono, G. H. (2021). Conservative working capital policy: can it increase profitability and sustainable growth rate?. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(3), 5630-5637.

Virani, V. (2013). Sustainable growth rate: refining a measure–a case study of Tata motors and Maruti Suzuki. *Indian Journal of Applied Research*, *3*(4), 317-319.

Vuković, B., Milutinović, S., Mirović, V., & Milićević, N. (2020). The profitability analysis of the logistics industry companies in the balkan countries. *Promet-Traffic&Transportation*, *32*(4), 497-511.

Vuković, B., Pjanić, M., & Kalaš, B. (2018). Analysis of the liquidity of agricultural companies of AP Vojvodina. *Anali Ekonomskog fakulteta u Subotici*, (39), 205-217.

Wahyuni, N. I., & Dino, N. V. G. (2016). Determinant of the sustainable growth rate. *Business: Theory and Practice*, *20*, 61-68.

Wahyuni, N. I., & Dino, N. V. G. (2016). Determinant of the sustainable growth rate. *The Business & Management Review*, *7*(2), 41.

Widayati, E., Yunaz, H., Rambe, T., Siregar, B. W., Fauzi, A., & Romli, R. (2019). Development of entrepreneurship by creating new and independent entrepreneurs. *JMBI UNSRAT*

(Scientific Journal of Business Management and Innovation of Sam Ratulangi University)., *6*(2).

Wijaya, L. A., & Atahau, A. D. R. (2021). Profitability and sustainable growth of manufacturing firms: Empirical evidence from Malaysia and Indonesia. *Jurnal Riset Akuntansi dan Keuangan*, *9*(1), 13-24.

Xu, J., & Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry. *Sustainability*, *10*(12), 4651.

Xu, X. L., Chen, H. H., & Zhang, R. R. (2020). The impact of intellectual capital efficiency on corporate sustainable growth-evidence from smart agriculture in China. *Agriculture*, *10*(6), 199.

Yakubu, I. N. (2019). Revisiting the factors influencing corporate dividend policy decisions: Evidence from listed banks in Ghana. *Management & Accounting Review (MAR)*, *18*(3), 31-50.

Yakubu, Z., Loganathan, N., Hassan, A., Mardani, A., & Streimikiene, D. (2019). Financial and economic determinants of sustainable economic growth in Egypt, Nigeria and South Africa. *Journal of International Studies*, *12*(4).

Yeo, Y., & Park, C. (2018). Managing growing pains for the sustainable growth of organizations: Evidence from the growth pathways and strategic choices of Korean firms. *Sustainability*, *10*(10), 3824.