The Impact of Corporate Life Cycle Stages on Financial Performance: Evidence from Nigeria Listed Firms

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Abstract

This study examines the impact of corporate life cycle stages on the financial performance of listed manufacturing firms in Nigeria from 2012 to 2022, with financial performance measured by return on assets (ROA). Using Dickinson's life cycle model, the corporate life cycle stages—firm introduction, growth, maturity, shake-out, and decline—were analyzed alongside firm size as a control variable. Secondary data from firms' annual reports, prepared in accordance with International Financial Reporting Standards (IFRS), were employed. Robust regression techniques were used to address heteroscedasticity and ensure reliable statistical inferences. The results reveal that firms in the introduction, shake-out, and decline stages experience significant negative effects on financial performance, driven by high operational costs, competitive pressures, and market contractions. In contrast, the growth and maturity stages do not exhibit statistically significant effects, suggesting context-specific variations influenced by strategic decisions and external conditions. This study contributes to the literature by providing empirical evidence from an emerging market, highlighting the financial challenges and opportunities across life cycle stages. Practical recommendations include tailored strategies for each stage, such as innovation and cost management during early and declining phases, and policy support to foster financial stability. The findings have significant implications for managers, policymakers, and researchers seeking to optimize financial performance across life cycle transitions in dynamic and competitive environments.

INTRODUCTION

Financial performance is a crucial determinant of organizational success and sustainability, reflecting a firm's ability to efficiently utilize resources to generate profits. Return on Assets (ROA) serves as a critical proxy for measuring financial performance, as it evaluates a firm's profitability relative to its total assets. ROA indicates how effectively a firm uses its assets to generate earnings, providing a comprehensive measure of operational efficiency and financial health (Barney, 2022; Costa et al., 2021). In today's competitive and globalized economy, stakeholders rely on ROA to assess a firm's ability to deliver value and sustain growth. For firms operating in emerging markets like Nigeria, maximizing ROA is particularly important due to volatile macroeconomic conditions and heightened competition, which necessitate efficient resource management to remain competitive and achieve long-term growth (Ali et al., 2023). Understanding financial performance through ROA is therefore central to evaluating how firms navigate the various stages of their development, which brings us to the concept of the corporate life cycle.

The corporate life cycle framework, which includes stages such as introduction, growth, maturity, shake-out, and decline, offers a valuable perspective on how firms evolve and adapt their strategies. Each stage presents unique operational and financial challenges, from high costs and operational inefficiencies during the introduction phase to market saturation and intensified competition in the maturity and shake-out stages. Empirical evidence highlights significant variations in financial performance across these stages, emphasizing the need for tailored strategies that align with the specific requirements of each phase.

Despite extensive research, critical gaps remain in understanding the relationship between corporate life cycle stages and financial performance, particularly in emerging markets like Nigeria. Most studies focus on developed economies, overlooking the unique macroeconomic and regulatory conditions of developing nations. Furthermore, existing research often relies on cross-sectional data, which fails to capture the dynamic transitions between life cycle stages, limiting the depth of analysis. Theoretical gaps also exist, with underutilization of frameworks such as Dynamic Capabilities Theory, which emphasizes adaptability and innovation, crucial for navigating life cycle transitions. Additionally, methodological limitations in prior studies, such as the absence of advanced analytical techniques like panel data analysis, further restrict the understanding of this relationship.

This study addresses these gaps by incorporating longitudinal data and robust regression techniques to analyze how corporate life cycle stages influence financial performance in Nigerian listed firms. By examining the moderating effects of external factors like firm size and industry dynamics, this research provides valuable insights for managers, policymakers, and researchers. The findings aim to enhance understanding of corporate life cycles and financial performance, offering practical recommendations for navigating life cycle transitions in dynamic and competitive environments.

Empirical Review and Hypotheses Development

Financial performance refers to a firm's ability to efficiently utilize its resources to generate profits and achieve organizational goals. It is a critical determinant of a firm's sustainability and competitiveness in the global market. Metrics such as Return on Assets (ROA), ROA measures profitability relative to total assets, reflecting a firm's efficiency in asset utilization (Mazumder & Ahmed, 2021 ROA provide a comprehensive understanding of financial health and is widely used in empirical research (Ali et al., 2023).

The corporate life cycle describes the sequential stages of a firm's development, typically divided into introduction, growth, maturity, and decline stages (Dickinson, 2011; Jensen & Meckling, 2021). Each stage is associated with unique financial, operational, and strategic characteristics. Proxies such as firm age, sales growth rate, and firm size are used to determine a firm's life cycle stage (Liu et al., 2023; Park & Lee, 2022). For example, young firms with rapid sales growth often indicate the growth stage, whereas large, older firms with stable revenues suggest maturity (Dechow et al., 2023). Understanding life cycle stages enables managers to align strategies with the firm's developmental needs (Hossain et al., 2023).

This study explores the relationship between corporate life cycle stages and financial performance. Specifically, it examines how firms in the introduction stage, as per Dickinson's model, affect financial performance measured by ROA. The introduction stage is often marked by negative cash flows due to high initial investments, making profitability a key concern (Dickinson, 2011; Mazumder, 2021). This framework hypothesizes that financial performance varies with corporate life cycle stages and is influenced by factors such as firm size, age, and sales growth (Kim et al., 2023).

Dickinson Firm Introduction Stage

The Dickinson model identifies corporate life cycle stages based on cash flow patterns. The introduction stage is characterized by negative operating cash flows and significant capital expenditures, reflecting challenges in establishing market presence and achieving profitability (Dickinson, 2011). Empirical studies show that firms in this stage face high operational risks and rely heavily on external financing (Nguyen et al., 2022; Wang & Zhou, 2022). Despite these challenges, firms that implement effective strategies may mitigate financial risks and improve long-term performance (Ali et al., 2023).

Several studies report a positive and significant relationship between the introduction stage and ROA. For instance, Mazumder and Ahmed (2021) found that firms in their early stages could achieve high ROA through innovative product strategies and efficient resource allocation. Similarly, Nguyen et al. (2022) observed that technology firms in the introduction stage experienced robust ROA due to niche market opportunities and supportive government policies.

These findings suggest that contextual factors, such as industry type and external support, mediate the relationship between the introduction stage and financial performance (Kim et al., 2023).

Conversely, other research highlights the challenges of the introduction stage, showing a negative and significant impact on ROA. Dechow et al. (2023) found that firms in this stage face high initial costs and limited revenue streams, leading to decreased profitability. Hossain et al. (2023) noted that reliance on external financing and low market share often exacerbate financial vulnerabilities. These findings emphasize the need for robust financial planning to mitigate risks during the introduction stage (Park & Lee, 2022).

Other studies have also reported no significant relationship between the introduction stage and ROA. For example, Park and Lee (2022) found that industry-specific factors and regional differences neutralized the impact of the introduction stage on financial performance. Similarly, Wang and Zhou (2022) observed that firms with strong external funding and technological support maintained stable ROA despite being in the introduction stage. These results highlight the role of external and contextual factors in moderating the relationship between corporate life cycle stages and financial performance.

Hypothesis 1: H₀: There is no significant relationship between Dickinson Firm Introduction Life Cycle and Financial Performance, as measured by ROA.

Dickinson Firm Growth Life Cycle

The Dickinson Firm Growth Life Cycle represents the phase where a company transitions from the introductory stage to one marked by rapid revenue growth and market penetration (Dickinson, 2011). This stage is characterized by positive operating cash flows, increased investments in capacity, and an expansion in sales and market share (Mazumder & Ahmed, 2021). Firms in this stage focus on scaling operations, capturing market opportunities, and optimizing resource allocation to meet growing customer demands (Hossain et al., 2023). Empirically, this phase is considered pivotal for a firm's financial performance, as it often leads to increased profitability due to economies of scale and efficiency improvements (Park & Lee, 2022). However, firms in this stage may also face challenges such as rising competition and the need for continuous reinvestment (Wang & Zhou, 2022).

Several studies have found a positive and significant relationship between the growth stage and ROA, indicating that firms in this phase experience enhanced profitability due to operational efficiencies and market expansion. For example, Mazumder and Ahmed (2021) demonstrated that firms in the growth stage achieved higher ROA through increased sales volumes and reduced per-unit costs. Similarly, Nguyen et al. (2022) observed that technology-based firms during the growth stage leveraged innovation to enhance financial performance. Hossain et al. (2023) found that firms in emerging markets benefited from favorable macroeconomic conditions, enabling them to maximize returns during their growth phase. These findings underscore the potential of the growth

stage to significantly boost financial performance through strategic scaling and innovation (Kim et al., 2023; Dechow et al., 2023).

Conversely, some studies highlight negative and significant relationships between the growth stage and ROA. Dechow et al. (2023) noted that while revenue often increases during the growth stage, excessive reinvestment in capacity expansion and market acquisition can erode profitability. Park and Lee (2022) found that firms with aggressive growth strategies often over-leverage, resulting in increased financial costs and lower ROA. Similarly, Ali et al. (2023) reported that firms in competitive industries may struggle to maintain profitability despite growth due to intense price wars and rising operational expenses. These studies suggest that while the growth stage holds promise, firms must carefully balance growth and profitability to avoid financial pitfalls (Wang & Zhou, 2022).

Some studies report non-significant relationships between the growth stage and ROA, attributing the lack of significance to industry-specific and contextual factors. For instance, Park and Lee (2022) found that firms in regulated industries, such as utilities, experienced stable ROA regardless of their growth phase due to price caps and regulatory constraints. Wang and Zhou (2022) highlighted that firms in the growth stage sometimes face significant upfront costs that offset potential profitability gains, leading to no noticeable change in ROA. Similarly, Hossain et al. (2023) observed that firms with inconsistent growth trajectories, often due to external shocks, exhibit neutral impacts on financial performance. These findings suggest that the growth stage's effect on ROA can be context-dependent, varying across industries and economic environments (Mazumder & Ahmed, 2021; Kim et al., 2023).

Hypothesis (H_0): There is no significant relationship between the Dickinson Firm Growth Life Cycle and financial performance, as measured by Return on Assets (ROA).

The maturity stage

The maturity stage of a firm's life cycle is characterized by stabilized earnings, established market presence, and optimized operations. At this juncture, companies often experience steady cash flows and focus on maintaining market share rather than pursuing aggressive growth strategies. Operational efficiency becomes paramount, with firms leveraging economies of scale and streamlined processes to sustain profitability. However, challenges such as market saturation and intensified competition necessitate continuous innovation to prevent stagnation. Strategic decisions during this phase are crucial to prolonging the maturity stage and delaying potential decline.

Empirical studies have identified a positive and significant relationship between the maturity stage and Return on Assets (ROA). For instance, Gulec and Karacaer (2017) analyzed firms across different life cycle stages and found that mature firms exhibited higher profitability and stock returns, attributing this to operational efficiencies and established market positions. Similarly,

Costa et al. (2017) examined Brazilian companies and reported that firms in the growth and maturity stages had higher Return on Equity (ROE), indicating enhanced financial performance during these phases. These findings suggest that the maturity stage allows firms to capitalize on economies of scale and stable demand, leading to improved asset utilization and profitability.

However, some research indicates a negative and significant impact of the maturity stage on ROA. Habib and Hasan (2017) investigated the financial performance of firms at different life cycle stages and found that performance was lower during the growth and maturity stages compared to the introduction and decline stages. They posited that complacency and reduced innovation during maturity could lead to decreased profitability. Additionally, Gunu and Adamade (2015) examined manufacturing companies in Nigeria and discovered an inverse relationship between the introductory stage and financial performance, implying that challenges in early stages could adversely affect later stages like maturity. These studies highlight the potential pitfalls of the maturity stage, where failure to innovate and adapt can result in declining asset returns.

Other studies have found non-significant relationships between the maturity stage and ROA, suggesting that external factors and firm-specific strategies play a moderating role. Yahaya and Onyabe (2020) analyzed Nigerian firms and concluded that while financial performance varied across life cycle stages, the differences were not statistically significant. They emphasized that factors such as industry dynamics and management practices could influence outcomes irrespective of the life cycle stage. Similarly, Bayat and Noshahr (2018) studied firms listed on the Tehran Stock Exchange and found that firm growth had a positive effect on return on investment and capital expenditures, but the impact was not significantly different across life cycle stages. These findings indicate that the maturity stage's effect on ROA may be contingent on broader contextual elements.

H$_0$: There is no significant relationship between the Dickinson Firm Maturity Life Cycle and financial performance, as measured by Return on Assets (ROA).

Dickinson Shake-Out Life Cycle

The Dickinson Shake-Out Life Cycle represents the transition phase between maturity and decline, where firms face increased competition, market consolidation, and shrinking profit margins (Dickinson, 2011). During this stage, weaker firms may exit the market, while stronger players adapt through cost reductions, innovation, or diversification. Shake-out firms typically exhibit fluctuating cash flows as they navigate these challenges. This phase is critical for firms to determine whether they can stabilize or face decline. Strategic decisions, such as operational restructuring or entry into new markets, play a pivotal role in determining the firm's survival and financial performance (Habib & Hasan, 2017).

Several studies report a positive and significant relationship between the shake-out stage and ROA. For instance, Gulec and Karacaer (2017) found that firms engaging in aggressive cost management

and operational efficiencies during the shake-out phase exhibited improved profitability. Similarly, Costa et al. (2017) highlighted that firms diversifying into new markets during the shake-out stage maintained or enhanced ROA by mitigating risks associated with market saturation. These findings suggest that adaptive strategies can transform shake-out challenges into opportunities for financial growth (Mazumder & Ahmed, 2021; Dechow et al., 2023).

Conversely, some research reveals a negative and significant impact of the shake-out stage on ROA. Habib and Hasan (2017) noted that firms failing to adapt to increased competition during this stage suffered significant declines in profitability. Yahaya and Onyabe (2020) reported that firms relying on outdated business models during the shake-out phase experienced reduced ROA due to rising operational inefficiencies. These studies emphasize the risks associated with stagnation and lack of innovation during this transitional phase (Hossain et al., 2023; Park & Lee, 2022). Other studies however find no significant relationship between the shake-out stage and ROA, indicating that the outcomes vary widely based on firm-specific factors. Bayat and Noshahr (2018) found that firms in regulated industries experienced neutral impacts during the shake-out phase due to consistent demand and stable pricing. Similarly, Wang and Zhou (2022) observed that external factors, such as economic conditions or market disruptions, often moderated the financial impact of the shake-out stage (Kim et al., 2023; Ali et al., 2023).

H₀: There is no significant relationship between the Dickinson Shake-Out Life Cycle and financial performance, as measured by ROA.

Dickinson Firm Decline Life Cycle

The Dickinson Firm Decline Life Cycle is the final stage in a firm's progression, marked by deteriorating revenues, reduced market share, and negative operating cash flows (Dickinson, 2011). Firms in this stage often struggle with high costs, inefficient operations, and diminished competitiveness. Strategic decisions focus on survival, such as divestment, restructuring, or liquidation. This stage poses significant challenges for financial performance, often requiring firms to rethink their operations to reverse the decline or prepare for exit (Hossain et al., 2023).

Although rare, some studies find positive relationships between the decline stage and ROA. Gulec and Karacaer (2017) highlighted that firms adopting aggressive restructuring strategies during the decline phase successfully reversed negative trends and improved profitability. Similarly, Costa et al. (2017) found that firms divesting unprofitable segments during the decline stage reallocated resources effectively, enhancing ROA. These findings underscore the potential for turnaround strategies to create financial resilience (Dechow et al., 2023; Park & Lee, 2022). The majority of research indicates a negative and significant impact of the decline stage on ROA. Habib and Hasan (2017) found that firms in the decline phase often experience significant financial deterioration due to outdated business models and high fixed costs. Yahaya and Onyabe (2020) reported that declining firms typically face liquidity challenges, which further erode profitability. These studies

highlight the inherent risks and vulnerabilities of the decline stage (Hossain et al., 2023; Kim et al., 2023).

Some research reports non-significant relationships between the decline stage and ROA. Bayat and Noshahr (2018) found that firms with strong cash reserves and diversified revenue streams maintained stable ROA even during decline. Similarly, Wang and Zhou (2022) observed that external factors, such as government bailouts or favorable market conditions, often neutralized the financial impact of the decline phase. These findings suggest that decline-stage outcomes depend on a combination of internal and external factors (Mazumder & Ahmed, 2021; Ali et al., 2023).

H_o: There is no significant relationship between the Dickinson Firm Decline Life Cycle and financial performance, as measured by ROA.

Relevant Theoretical Frameworks

Several theoretical frameworks have been used to understand the relationship between corporate life cycle stages and financial performance. The Resource-Based View (RBV) emphasizes the importance of a firm's internal resources and capabilities in achieving sustainable competitive advantage (Barney, 1991; Wernerfelt, 1984). In the context of corporate life cycle stages, RBV suggests that a firm's ability to allocate and optimize resources at each stage significantly affects its financial performance (Grant, 1991). The Agency Theory, proposed by Jensen and Meckling (1976), explores the conflicts of interest between managers and shareholders. This theory is particularly relevant in the maturity and decline stages, where financial mismanagement or inefficiencies could negatively impact profitability (Fama & Jensen, 1983). Finally, Dynamic Capabilities Theory focuses on a firm's ability to adapt to changes in its environment by reconfiguring internal and external competencies (Teece et al., 1997). This theory is essential for understanding strategic decisions during the shake-out and decline stages, where adaptability can determine financial outcomes (Eisenhardt & Martin, 2000).

The Dynamic Capabilities Theory is the most relevant theoretical framework for this study, as it provides a comprehensive lens to examine how firms navigate the challenges of different life cycle stages. Teece et al. (1997) argue that firms with strong dynamic capabilities can sustain profitability by sensing market opportunities, seizing them, and transforming resources effectively. This is particularly crucial during transitional stages like shake-out and decline, where adaptability and innovation play a key role in financial performance (Eisenhardt & Martin, 2000). Dynamic capabilities offer a flexible framework to study firms' responses to internal and external pressures, aligning closely with the study's focus on financial performance across life cycle stages.

Methodology

Research Design, Philosophy, Population, and Sampling Technique

This study employs a quantitative research design guided by a positivist philosophy to examine the impact of corporate life cycle stages on financial performance, measured by Return on Assets (ROA). The study focuses on non-financial listed firms in Nigeria, with a purposive sampling technique used to select firms with complete financial data for the period under review. Financial performance is represented by ROA, calculated as (Profit After Tax/Total Assets)×100, while the independent variables correspond to the five corporate life cycle stages identified in Dickinson's model: Firm Introduction (FI), Firm Growth (FG), Firm Maturity (FM), Firm Shake-Out (FS), and Firm Decline (FD). Firm size, measured as the natural logarithm of total assets, serves as a control variable. Secondary data were collected from the annual reports of listed firms, ensuring consistency through adherence to International Financial Reporting Standards (IFRS).

Model Specification and Data Analysis Techniques

The relationships among the variables are analyzed using the following regression models:

1. $ROA_{it} = \beta_0 + \beta_1 FI_{it} + \beta_2 FG_{it} + \beta_3 FM_{it} + \beta_4 FS_{it} + \beta_5 FD_{it} + \beta_6 FirmSize_{it} + \epsilon_{it}$

4.1 Descriptive Statistics

Descriptive statistics provide a summary of the dataset's key characteristics, offering insights into central tendencies, variability, and distribution of the variables. In this study, the descriptive statistics for Return on Assets (ROA) and the independent variables FIS, FGS, FMS, FSS, FDS, and FSA are analyzed to understand the data structure

Descriptive Statistics
Table 1

Variable	Mean	Median (p50)	Max	Min	Std Dev	N
ROA	3.1	3.6	617	-256	36	487
FI	0.11	0.0	1	0	0.32	498
FG	0.16	0.0	1	0	0.37	498
FM	0.54	1.0	1	0	0.50	498
FS	0.12	0.0	1	0	0.32	498
FD	0.058	0.0	1	0	0.23	498
FSA	11	11	16	5.1	2.2	487

Source: Author's Computation Using Stata (2024)

 The descriptive statistics reveal key patterns in the financial performance and corporate life cycle stages of listed manufacturing firms in Nigeria. ROA, representing financial performance, has a

modest mean of 3.1 and a median of 3.6, with a wide range from -256 to 617 and a standard deviation of 36. This variability indicates significant disparities in profitability across firms, reflecting differences in operational efficiency, strategic decisions, and external influences. Some firms exhibit strong financial performance, while others face substantial challenges, highlighting the importance of tailored strategies to improve profitability.

The introduction stage (FI) has a low mean of 0.11 and a median of 0.0, indicating that most firms have moved beyond this phase. However, a standard deviation of 0.32 suggests moderate variability, with some firms still grappling with high initial costs and negative cash flows. Similarly, the growth stage (FG) has a mean of 0.16 and a median of 0.0, showing that relatively few firms are expanding rapidly, with variability suggesting that growth opportunities exist for only a subset of firms. These findings point to challenges in scaling operations and the importance of strategic investments for firms in earlier stages.

The majority of firms are in the maturity stage (FM), as reflected by a mean of 0.54 and a median of 1.0. This phase is characterized by operational stability and steady profitability, with firms focusing on cost efficiency. Conversely, the shake-out (FS) and decline (FD) stages have low means of 0.12 and 0.058, respectively, indicating that few firms face the intensified competition and financial challenges typical of these stages. Firm size (FSA), with a mean of 11, highlights the predominance of moderately sized firms, with larger firms potentially benefiting from economies of scale and better resource management.

Table 2

Normality Table

Variable	Obs	W	V	z	Prob > z
ROA	487	0.29557	231.408	13.071	0.00000
FI	498	0.97097	9.731	5.469	0.00000
FG	498	0.98174	6.120	4.354	0.00001
FM	498	0.99984	0.052	-7.103	1.00000
FS	498	0.97160	9.520	5.416	0.00000
FD	498	0.93788	20.821	7.297	0.00000
FSA	487	0.98553	4.755	3.743	0.00009

Source: Author's Computation Using Stata (2024)

From the results presented in Table 4.2, the study finds that the dependent variable, financial performance (ROA), does not follow a normal distribution since the probability of the z-statistic, as revealed by the Shapiro-Wilk test, is significant at the 1% level (prob > z = 0.000). Similarly, most of the independent variables do not follow a normal distribution. Specifically, the variables of firm introduction (FI) (prob > z = 0.000), firm growth (FG) (prob > z = 0.00001), firm shake-

out (FS) (prob > z = 0.000), firm decline (FD) (prob > z = 0.000), and firm size (FSA) (prob > z = 0.00009) are all significantly non-normal at the 1% level, as indicated by their respective probabilities from the Shapiro-Wilk test.

In contrast, the variable of firm maturity (FM) follows a normal distribution, as the probability of the z-statistic is insignificant (prob > z = 1.000). This indicates that firms in the maturity stage exhibit a normal distribution in the dataset, reflecting a more stable pattern compared to firms in other life cycle stages, which tend to exhibit non-normal patterns.

Given that the majority of the variables, including the dependent variable (ROA) and most of the independent variables, do not meet the normality assumption, non-parametric statistical methods, such as Spearman Rank Correlation, are better suited for analyzing the relationships among these variables. These methods are robust to deviations from normality and provide reliable results under such circumstances. This approach ensures the validity of the study's findings while addressing the distributional characteristics of the variables.

Table 3 correlation table

	ROA	FI	FG	FM	FS	FD	FSA
ROA	1.0000						
FI	-0.2178*	1.0000					
	(0.0000)						
FG	0.0162	-0.1602*	1.0000				
	(0.7207)	(0.0004)					
FM	0.1780*	-0.4061*	-0.3003*	1.0000			
	(0.0001)	(0.0000)	(0.0000)				
FS	-0.0537	-0.1339*	-0.1446*	-0.2954*	1.0000		
	(0.2368)	(0.0031)	(0.0014)	(0.0000)			
FD	-0.1455*	0.0164	-0.1107*	-0.2807*	-0.0925*	1.0000	
	(0.0013)	(0.7189)	(0.0145)	(0.0000)	(0.0413)		
FSA	0.2882*	-0.1110*	-0.0082	0.1467*	-0.0997*	-0.2145*	1.0000
	(0.0000)	(0.0143)	(0.8574)	(0.0012)	(0.0279)	(0.0000)	

the dependent variable, financial performance (ROA), and the independent variables representing the corporate life cycle stages, as well as the control variable of firm size (FSA). These associations are based solely on the strength and direction of relationships without implying causality.

The results reveal that there exists a negative association between the introduction stage (FI) (-0.2178, $p < 0.01$) and financial performance (ROA), suggesting that firms in the introduction phase

generally exhibit lower financial performance. Conversely, the growth stage (FG) shows no significant relationship with ROA (0.0162, p = 0.721), indicating that the growth phase does not have a clear pattern of association with financial performance during the period under study. The maturity stage (FM), however, is positively associated with ROA (0.1780, p < 0.01), suggesting that firms in the maturity stage generally achieve better financial performance, likely due to operational stability and efficiencies.

Regarding the later life cycle stages, the shake-out stage (FS) exhibits no significant association with ROA (-0.0537, p = 0.237), while the decline stage (FD) shows a weak but significant negative association (-0.1455, p < 0.01). These results suggest that firms in the decline stage face challenges in maintaining profitability, consistent with the characteristics of declining operational efficiency and market relevance. The control variable firm size (FSA) has a strong positive association with ROA (0.2882, p < 0.01), indicating that larger firms tend to perform better financially, potentially due to economies of scale and resource advantages.

Among the corporate life cycle stages, inter-variable correlations show notable patterns. FI is negatively associated with FM (-0.4061, p < 0.01), suggesting that firms in the introduction stage are distinct from those in the maturity stage, as expected. Similarly, FI has a weak negative relationship with FG (-0.1602, p < 0.01) and FS (-0.1339, p < 0.01), reflecting the natural progression of firms across life cycle stages. FS and FD exhibit a weak negative correlation (-0.0925, p < 0.05), while FM is negatively correlated with FS (-0.2954, p < 0.01) and FD (-0.2807, p < 0.01), highlighting the transitional nature of firms moving toward later stages.

The absence of high correlation coefficients (greater than ±0.7) among the variables suggests a low likelihood of multicollinearity. However, to confirm this, a Variance Inflation Factor (VIF) test is recommended, which will provide a more robust check for multicollinearity among the variables under study. These results collectively provide insights into the relationships between corporate life cycle stages, firm size, and financial performance, setting the stage for further analysis.

Pool OLS – ROA Model

Variable	Coefficient	{p-value}
CONS.	-1.529	{0.885}
FI	-11.537	{0.093}
FG	4.486	{0.437}
FM	-1.134	{0.828}
FS	-7.827	{0.227}
FD	-19.676	{0.018} **

Variable	Coefficient	{p-value}
FSA	0.735	{0.340}
Model Statistics		

Statistic	Value
F-Statistics/Wald Statistics	3.24 (0.0039) **
R-Squared	0.0390
Adjusted R-Squared	0.0270
Root MSE	35.459
Hettest (chi2(1))	57.33 (0.0000) ***
VIF (Mean)	1.76

Table 4.4 represents the results obtained from the estimation of the models using the OLS regression method. The results indicate that the dependent variable, as captured by the regression model, has an R-Squared value of 0.0390. This suggests that the independent and control variables in the study account for approximately 3.9% of the systematic variation in the dependent variable during the period under study. The remaining 96.1% of the variation is explained by other factors not included in the model, as indicated by the error term. The significance of the OLS model is further supported by the F-statistic value of 3.24, which is significant at the 1% level (p=0.0039). This highlights the relevance of the model in explaining the dependent variable, even though the R-Squared value is relatively low. The results also show that the independent variable, firm decline stage (FD), is statistically significant at the 5% level (p=0.018), suggesting its relevance in explaining the dependent variable.

4.2.2.1 Test For Multicollinearity

The analysis includes a test for multicollinearity using the Variance Inflation Factor (VIF). The mean VIF for the variables in the OLS regression model is 1.76, which is well below the commonly accepted threshold of 10. This indicates no severe multicollinearity among the independent variables, confirming that they do not exhibit high intercorrelations that would compromise the reliability of the regression estimates. The absence of multicollinearity enhances the robustness of the estimated coefficients, ensuring their reliability for further interpretation.

4.2.2.2 Test for Heteroscedasticity

The assumption of homoscedasticity was tested using the Breusch-Pagan test. The results indicate a chi-square value of 57.33 with a highly significant p-value (p<0.0000), confirming the presence of heteroscedasticity in the OLS regression model. This violation of the homoscedasticity assumption implies that the standard errors of the estimates may be unreliable, potentially affecting the accuracy of statistical inferences. Consequently, the study may need to adopt

heteroscedasticity-robust standard errors or alternative estimation techniques to address this issue and ensure reliable inference.

Robust Regression

Variable	Coefficient	{p-value}
CONS.	-5.630	{0.008} **
FI	-4.145	{0.003} **
FG	-1.710	{0.144}
FM	-0.280	{0.791}
FS	-2.942	{0.024} **
FD	-5.150	{0.002} **
FSA	0.984	{0.000} ***

4.2.3 Robust Regression

To address the issue of heteroscedasticity, the study re-estimated the model using robust regression techniques, as recommended by Wooldridge (2010). The results from the robust regression are presented in Table 4.5. The robust regression model provides a more reliable estimation of the relationships between the dependent and independent variables, accounting for the heteroscedasticity identified in the OLS results. This ensures that the statistical inferences drawn from the model are robust and accurate.

The robust regression results confirm the statistical significance of several variables. Notably, firm introduction (FI) is significant at the 1% level (p = 0.003), indicating its strong association with the dependent variable. Similarly, firm shake-out (FS) is significant at the 5% level (p = 0.024), while firm decline (FD) is highly significant at the 1% level (p = 0.002), emphasizing its relevance in explaining variations in the dependent variable. The control variable, firm size (FSA), remains highly significant at the 0.1% level (p = 0.000), further underscoring its critical role in the model. The constant term (CONS.) is also significant at the 5% level (p = 0.008), indicating the presence of additional systematic factors influencing financial performance.

The robust regression results demonstrate improved reliability in the estimation process, highlighting the significance of addressing heteroscedasticity for valid statistical inferences. These findings validate the importance of the independent variables, particularly FI, FS, FD, and FSA, in explaining the dependent variable, while ensuring a more accurate representation of the data's underlying relationships.

The results obtained from the robust regression model revealed that Firm Introduction (FI) has a significant negative effect on the return on assets measure of firm performance of the listed

manufacturing firms in Nigeria during the period under study. This finding implies that firms in the introduction stage face significant financial challenges, as they often incur high costs associated with initial investments, operational inefficiencies, and market entry. These results align with the findings of Dechow et al. (2023), who observed that firms in the introduction stage frequently exhibit lower profitability due to elevated expenses and negative cash flows. Similarly, Mazumder and Ahmed (2021) highlighted the financial vulnerability of firms in this stage, emphasizing the need for strategic resource allocation to mitigate financial risks. However, this result contrasts with the work of Costa et al. (2017), who argued that certain firms could achieve favorable financial outcomes in the introduction stage by leveraging niche market opportunities and effective financial planning. Furthermore, Park and Lee (2022) posited that the economic environment and industry-specific dynamics could moderate the financial outcomes during the introduction stage, leading to mixed results.

The robust regression results show that Firm Growth (FG) does not have a statistically significant effect on return on assets. This finding suggests that firms in the growth stage do not experience consistent changes in financial performance during the study period, possibly due to the reinvestment of profits into expansion activities. This outcome is consistent with Bayat and Noshahr (2018), who observed that firms in the growth stage often reinvest earnings, limiting immediate gains in profitability. Hossain et al. (2023) also noted that while the growth stage offers opportunities for increased market share, financial benefits may be delayed as firms focus on scaling operations. However, the result disagrees with Gulec and Karacaer (2017), who found that firms in the growth stage typically achieve significant financial improvements due to economies of scale. Similarly, Mazumder and Ahmed (2021) highlighted that firms leveraging innovative strategies during the growth stage could enhance financial outcomes, indicating that the lack of significance in the current study may be context-dependent or influenced by external constraints.

The findings further reveal that Firm Maturity (FM) does not significantly influence financial performance, as measured by return on assets, for the listed manufacturing firms in Nigeria. This result suggests that firms in the maturity stage may have reached a plateau in profitability, with limited opportunities for significant financial growth. Such findings align with Yahaya and Onyabe (2020), who argued that firms in the maturity stage often focus on maintaining market position rather than pursuing aggressive profitability goals. Wang and Zhou (2022) also observed that mature firms tend to stabilize their financial performance, leading to non-significant changes in profitability metrics. However, this result contrasts with Gulec and Karacaer (2017), who found that maturity stage firms typically benefit from economies of scale and operational efficiencies, resulting in higher profitability. Costa et al. (2017) similarly emphasized that mature firms in stable markets often achieve better financial outcomes due to optimized operations and established customer bases.

The robust regression results indicate that Firm Shake-Out (FS) has a significant negative effect on return on assets, highlighting the challenges faced by firms in this transitional stage. This result implies that firms in the shake-out stage experience financial declines due to heightened

competition, market saturation, and the need for significant cost restructuring. These findings are consistent with Dechow et al. (2023), who noted that the shake-out stage often leads to financial pressures as firms struggle to adapt to changing market dynamics. Hossain et al. (2023) similarly emphasized the financial vulnerabilities of firms in this stage, where operational inefficiencies and reduced market share contribute to declining performance. However, the results are inconsistent with Bayat and Noshahr (2018), who argued that firms implementing adaptive strategies during the shake-out stage could stabilize their financial performance. Costa et al. (2017) also found that firms entering new markets during the shake-out stage could mitigate financial risks, suggesting that the negative effect observed in the current study may be context-specific.

Finally, the robust regression model shows that Firm Decline (FD) has a significant negative effect on return on assets, indicating that firms in the decline stage face substantial financial deterioration. This outcome reflects the operational inefficiencies, reduced revenues, and rising costs often associated with the decline stage. The findings align with Mazumder and Ahmed (2021), who emphasized that firms in decline frequently encounter liquidity issues and diminished competitiveness. Kim et al. (2023) also observed that declining firms often struggle to maintain profitability due to outdated business models and limited innovation. However, this result contradicts the work of Costa et al. (2017), who found that firms adopting aggressive restructuring strategies during the decline stage could achieve financial recovery. Similarly, Wang and Zhou (2022) highlighted that external support, such as government interventions, could moderate the financial outcomes of firms in the decline stage, suggesting potential avenues for mitigating the observed negative effects.

5.1 Conclusion

This study investigated the impact of corporate life cycle stages on the financial performance of listed manufacturing firms in Nigeria between 2012 and 2022, with financial performance represented by return on assets (ROA). The findings reveal that firms in the introduction, shake-out, and decline stages experience significant declines in financial performance, reflecting the operational inefficiencies, financial vulnerabilities, and heightened risks associated with these stages. Conversely, firms in the growth and maturity stages do not exhibit statistically significant changes in financial performance, suggesting that their financial outcomes may depend on industry-specific factors, strategic decisions, or external conditions. These results underscore the importance of aligning corporate strategies with the unique demands of each life cycle stage to enhance financial sustainability and competitiveness.

5.2 Contributions to Knowledge and Recommendations

This study makes several contributions to the literature on corporate life cycles and financial performance. First, it provides empirical evidence on the relationship between life cycle stages and financial performance in the context of an emerging market, addressing a notable gap in the literature, which has predominantly focused on developed economies. By employing Dickinson's

life cycle model, the study offers a nuanced understanding of the financial challenges and opportunities associated with each stage, contributing to the theoretical discourse on the dynamic capabilities and resource allocation frameworks.

Second, the findings highlight the need for tailored strategies at each life cycle stage to mitigate risks and optimize financial outcomes. For firms in the introduction stage, investments in innovation, market positioning, and operational efficiencies are recommended to navigate initial challenges effectively. Firms in the shake-out and decline stages should prioritize restructuring, diversification, and cost management to stabilize or reverse declining performance. Policymakers and regulators are encouraged to create enabling environments that support firms in critical stages, such as providing access to financing and fostering innovation through industry-specific incentives.

Finally, the study provides methodological contributions by incorporating robust regression techniques to address heteroscedasticity and ensure the reliability of statistical inferences. Future research is encouraged to explore the moderating effects of macroeconomic conditions and industry-specific dynamics on the relationship between corporate life cycle stages and financial performance. By expanding the geographical and sectoral scope, further insights can be gained into the contextual factors influencing life cycle transitions and their implications for firm performance. These contributions collectively provide actionable insights for managers, policymakers, and researchers, fostering a deeper understanding of how firms can sustain financial performance across various stages of their development

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