

**FINANCIAL, MANUFACTURED CAPITAL AND FINANCIAL
PERFORMANCE: EVIDENCE FROM LISTED MULTINATIONAL
COMPANIES IN NIGERIA**

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<https://doi.org/10.37602/IJSSMR.2022.5512>

ABSTRACT

The global reporting landscape is evolving with the recent development of integrated reporting that helps in addressing the concerns of stakeholders regarding accountability, transparency, and full disclosure. An integrated reporting system combines financial and non-financial information and communicates it to stakeholders in a concise manner. Consequently, companies and countries are at various levels of adopting integrated reporting, and a need to examine its effect on firm performance arises. This study, therefore, seeks to evaluate the effect of integrated reporting (IR) (financial and manufactured capital) on the financial performance of listed multinational companies in Nigeria. The study employs a longitudinal research design and secondary data sourced from the financial statements of the companies from 2011 to 2020. Financial performance is the dependent variable proxied by Return on Equity (ROE). IR is the independent variable proxied by Financial Capital and Manufactured Capital. Descriptive, correlational, and panel regression analysis of the fixed effect model was employed for the analysis. STATA 16 is the software used to aid the analysis. The findings revealed that financial capital positively and significantly affects the financial performance of listed multinational companies in Nigeria. While manufactured

capital inversely and insignificantly affected financial performance. The study concludes that the adoption of IR improves firm financial performance. The study recommends that companies should mandatorily adopt and continue with the practice of integrated reporting systems since it improves firm performance. Accounting standard setters and regulatory authorities should provide such policy directions.

Keywords: Financial Capital (FC), Manufactured Capital, Financial Performance, Integrated Reporting (IR)

1.0 INTRODUCTION

Corporate reporting has evolved over time because of the changing information needs of stakeholders. These stakeholders required credible information (both financial and non-financial) for decision-making. Initially, the traditional corporate reporting of annual financial statements and reports was thought to be sufficient. However, such reports were criticized for focusing on shareholder interests and majorly on financial matters alone in addition to being historical in nature. Stakeholders demanded more non-financial information including the impact of corporate activities on the environment, social impact, and the governance structure of the corporate entities. This led to corporate sustainability reporting which included not only the financial results but also the impact of the companies on the environment (E), social (S), and the Governance structures (G) commonly referred to as the (ESG) reports. The major challenge of the corporate sustainability report is that it is retrospective in nature and often does not capture future targets and risks which are critical for a company's long-run survival. It, therefore, does not meet the information needs of all the stakeholders including the global community. To overcome this challenge, a new reporting system referred to as Integrated Reporting (IR) has been developed (Smith, 2019).

An integrated reporting is a concise communication about how an organization's strategy, governance performance, and prospects, in the context of its external environment, lead to the creation of wealth, preservation or erosion of value over the short, medium, and long term (IIRC, 2021, IIRC, 2013). Integrated reports, therefore, include both financial and non-financial information. Integrated reporting has been used voluntarily in developed countries since 2002 when the first IR was published (Jensen and Berg, 2012). South Africa is the first country to have made it mandatory for companies to publish their integrated reports in the company's annual financial statements with effect from 2010. (Islam, 2020; Matemane and Wentzel, 2019). According to the IIRC report, two hundred and fifty-four (254) organizations adopted IR in South Africa with one thousand six hundred and fifty-two (1, 652) integrated reports (IFRS Foundation, 2022). An integrated report is said to be beneficial to all stakeholders interested in an organization's ability to create value over time (IIRC 2021). Extant literature also suggests that integrated reporting enhances financial performance (Adegboyegun et al., 2020; Islam 2020; Kaura, et al., 2019; Nurkumalasari et al., 2019; Irungu, 2018; Simnett and Green, 2017). However, most of the studies are based on developed nations and evidence suggests that country-specific differences affect integrated reporting (Jensen & Berg 2012, Matemane and Wentzel, 2019). Some other studies (Islam, 2020; Kaura et al 2021) concentrated on specific sectors whose findings cannot be generalized across the sector since sectoral differences exist and affect integrated reporting (Islam, 2020).

There is a dearth of studies on integrated reporting in Nigeria, as this reporting system is voluntary in nature. It has been found that higher voluntary disclosures are more common in developed than in developing countries (Islam and Deegan, 2008). Evidence also suggests that in developing countries, voluntary disclosures by corporate entities are motivated by pressures exerted by multinational corporations (Jensen and Berg, 2012). In order to bridge these gaps, a study on multinationals can provide greater insights into the relationship between IR and their Financial Performance. This study, therefore, seeks to examine the effects of integrated reporting on the financial performance of listed multinationals in Nigeria. When stakeholders have easy access to financial and non-financial information as provided in an integrated, all stakeholders benefit (IIRC 2021). Extant studies have also documented that companies' financial performance improves with the provision of integrated reports (Kaura et al 2021; Matemane and Wentzel, 2019; Dam and Scholtens, 2015). As a result, this study expects a positive relationship between IR variables and financial performance. Given the foregoing, the following hypotheses were developed for the study:

H01: Financial capital has no significant effect on the financial performance of listed multinational companies in Nigeria.

H02: Manufactured capital has no significant effect on the financial performance of listed multinational companies in Nigeria.

2.0 LITERATURE REVIEW

This section is broken down into three parts conceptual framework, empirical review, and theoretical framework.

2.1 Conceptual Framework

2.1.1 Integrated Reporting

An integrated reporting is a concise communication about how an organization's strategy, governance performance, and prospects, in the context of its external environment, lead to the creation of wealth, preservation or erosion of value over the short, medium, and long term (IIRC, 2021, IIRC, 2013). Integrated reports, therefore, includes both financial and non-financial information. The integrated report includes eight content elements and six capitals out of which two; financial capital and manufactured capital are used as proxies in this study.

The idea of integrated reporting was put in a framework by the International Integrated Reporting Council (IIRC) which is not a profit-making organization established by the global coalition of standard setters, regulators, investors, companies, the accounting profession, academia, and non-governmental organizations (NGOs). The purpose is to develop an integrated reporting framework and promote and monitor the practice of integrated reporting globally (VRF, 2022; IIRC, 2021). Value Reporting Foundation (VRF), was the former, International Integrated Reporting Council (IIRC), Sustainability Accounting Standards Board (SASB), and Climate Disclosure Standards Board (CDSB) amalgamated to form the International Sustainability Standards Board (ISSB) in the 2021 United Nations Climate Change Conference (COP26) in Glasgow, Scotland from 31st October to 12th November 2021 under the umbrella body of International Financial Reporting Standards (IFRS)

Foundation(VRF, 2022) to enable the framework to be used worldwide. Integrated reporting has been adopted voluntarily by companies across the globe since 2002 (Smith, 2019).

Integrated reporting is founded on integrated thinking, that produces a periodic and concise report (Malafronte& Pereira, 2021). "Integrated Thinking refers to the conditions and processes that are conducive to an inclusive process of decision making, management and reporting, based on the connectivity and interdependencies between a range of factors that affect an organization's ability to create value over time" (Busco et al., 2017). Integrated thinking is all about linking performance to the purpose of the organization to achieve goal congruence (CIMA, 2022). Integrated reporting connects capital, governance, strategy, and business models to establish a relationship (Smith, 2019). Increasingly, stakeholders' and regulators' demand necessitated the evolution of integrated reporting to address their concerns (IIRC, 2021). The IR aims to give a holistic view of the company, it explains how resources create value for the business and accounted for financial and non-financial information.

Integrated Reporting accounts for financial and non-financial information in one report (Eccles & Krzus, 2010). "Integrated reporting enhances the way organization think, plan and report", An integrated report contains an organizational overview and external environment; governance; business model; risks and opportunities; resource allocation; performance; and outlook (Jhunjhunwala, 2014). It is worth noting that integrated reporting is Principles-based.

2.2 Capital in the IR framework

Capital is the aggregation of resources and information used in value creation for the stakeholders. International Integrated Reporting Framework, (2021) grouped capital into six, namely financial capital, manufactured capital, intellectual capital, human capital, social and relationship capital, and natural capital. In this study, financial and manufactured capitals are the variables of interest.

Financial Capital is considered the pool of resources that are readily available for the organization to utilize; they are mainly from two sources, debt, and equity (IIRC, 2013). Financial capital is defined as the financial resources and relevant information that help in achieving organizational objectives and value creation for the stakeholders of the business. Financial capital is broadly understood as the pool of funds available to an organization. This includes both debt and equity finance. This description of financial capital focuses on the source of funds rather than its application which results in the acquisition of manufactured or other forms of capital. Financial capital is a medium of exchange that releases its value through conversion into other forms of capital. The long-term debt to equity ratio was the parameter used by Chikwendu et al. (2020) to measure financial capital. This study adopted that variable measurement for financial capital.

Manufactured capitals are the physically tangible resources (property, plant, and equipment) and infrastructure of the business. This capital could be owned, leased, or organizational access to goods and services (IIRC, 2013). Manufactured capital is seen as human-created, production-oriented equipment and tools. A distinction is drawn between inventory (as a short-term asset) and plant and equipment (tangible capital). Although the identification of these items is generally agreed upon, their accounting treatment, particularly in valuation, depreciation, and taxation, is a more contentious and intense argument. The manufactured

capital was measured as the propensity of non-current assets to total assets (Ullah & Ahmad, 2019). The ratio of non-current assets to total assets has been adopted as the measure for manufactured capital.

2.3 Organizational Performance

Corporate organizations aim to improve their performance to meet stakeholders' expectations. They set goals for themselves and the degree by which the set goals are achieved with limited resources within a minimum period can be seen as corporate performance (Taouab and Issor, 2019). Other scholars see corporate performance as the capability and ability of an organization to meet its set goals effectively and efficiently with available resources to add value for the providers of its capital (Lebens and Euske, 2006). Performance may be measured by profit margin, return on assets, or return on equity.

2.4 Return on Equity

Return on Equity is the ratio of profit after tax to total shareholder equity (Zhang et al., 2021). According to Sinie and Socol (2020), the ratio of Return on Equity is known as return on equity. This ratio examines the extent to which a company uses its resources to be able to provide a return on equity. Return on equity can be used to determine the success of management in managing the company's capital in delivering returns to shareholders; the higher this ratio, the better because it provides a greater rate of return to shareholders. Several factors can increase Return on Equity; increasing sales without proportionally increasing expenses and costs, reducing the cost of goods sold or operating expenses of the company, and increasing sales relatively based on asset value, either by increasing sales or reducing the amount of investment in selling assets, increase the use of debt relative to equity, to a point that does not jeopardize the financial well-being of the company.

2.5 Revenue Growth

Revenue growth refers to an increase in revenue over a period. In accounting, revenue growth is the rate of increase in total revenues divided by total revenues from the same period in the previous year. Thus, revenue growth can be measured as a percent increase from a starting point. The revenue growth metric is vital because it indicates the health of a business's sales. Therefore, revenue growth remains a popular method of assessing a company's success in selling its products and services (Campbell, 2020). According to Kasogo (2020), revenue growth is determined by the ratio of prior revenue minus current revenue too prior revenue for the period.

2.6 Empirical Review

Kaura et al (2021) examined the relationship between integrated reporting and firm performance of listed ICT companies in Nigeria. The population of the study was the 10 ICT companies, and purposive sampling was used leaving out one company with incomplete data. Data for the period 2011-2020 were collected from companies' websites, APT securities, and Nigeria Exchange Group using their annual reports. Integrated reporting was the dependent variable, and an IR index was constructed using content analysis. Performance was the independent variable that was proxied by ROA and Market Value Added (MVA). Panel

regression was used to analyze the data with the aid of EViews 10 and STATA 14. The results show that there is an insignificant relationship between IR and ROA. A positive and significant relationship exists between IR & MVA (Financial and Manufactured Capitals) suggesting that companies that adopt integrated reporting signal to the market for future growth. The study is, however, limited to the ICT sector. Further insights can be reached on the relationship between IR & Performance if other companies and sectors are studied as company characteristics and sectoral differences affect integrated reporting (Metamane and Wentzel, 2019).

Islam (2020) investigated the relationship between integrated reporting and firm performance in a voluntary disclosure regime in Bangladesh. A quantitative research design was used, and a pooled Ordinary Least Square (OLS) regression analysis carried out on 20 firms listed on the Dhaka Stock Exchange for three financial years from 2016-2018, with 60 firm-year observations were employed. The purposive sampling technique was used in the selection of samples for the study. Content analysis was used to measure the extent of disclosure in the annual reports. The integrated reporting index score used in the study was self-constructed based on the unweighted method of eight contents of the integrated report. The study which observed the disclosure pattern of integrated reporting and its relationship to a firm's operational, financial, and market growth performance in a voluntary disclosure regime, discovered that the integrated reporting disclosure index is positively and significantly related to all three performance variables (namely, return on assets (ROA), return on equity (ROE), and market-to-book value ratio). The result of the content analysis showed that disclosure pattern increases in sampled firms which could be because of improved performance recorded from the disclosure behaviour. The study concluded that both return on assets and return on equity used as proxies for firm performance have a positive and statistically significant relationship with the adoption of the integrated reporting framework. It was therefore recommended that regulators should adopt the reporting format as it facilitates the tagging of financial and non-financial data streamlining the annual report analysis. The study sample size and firm-year observations are small and concentrated on non-financial firms only, a larger sample size and higher firm-year observations may provide more understanding of the relationship between IR and firm Performance.

Hurghis (2015) carried out an analysis of integrated reporting and financial performance. The study used a quantitative research design to analyze both accounting-based and market-based measurements of quantitative variables. The research attempted to establish a correlation between a disclosure index and financial performance. A sample of 75 observations and 65 companies were selected from among companies participating in the IIRC Pilot Programme between 2012 and 2014. A binary concept was used in the analysis to explain the position when companies present information regarding the six capitals highlighted in the IR framework. The value was "1" if disclosed and "0" if not. Data were sourced manually and from the report uploaded to the IIRC database by participating companies. Given the design of the research, the Pearson Correlation Test was applied. Results from the analysis showed that there is no relationship between Integrated Reporting and Firm performance based on the disclosure index of the IIRC framework. The study concluded that IR does not affect firm performance and the possible reason could be that integrated reporting is a voluntary decision, and new, the companies may still be studying the principles and guidelines. The study was a pilot programme that was based on 2012-2014 data. IR develops over time and

companies embrace it as time passes on. A current study of 2020 gave more current information on the relationship between IR and firm performance.

Neneh (2016) studied the performance implications of financial capital availability on the financial literacy-performance nexus in South Africa. Data for the study was collected using self-administered questionnaires. The sample of 300 entrepreneurs was selected as respondents to the questionnaires using the convenience sampling method which was supplemented with snowball sampling owing to the lack of a database of entrepreneurs in the Free State and South Africa in general. The respondents were identified from the yellow pages directory and then, visited at their specific business locations. 200 questionnaires were fully completed and returned resulting in a valid response rate of 66.7%. The study measured financial capital availability using a subjective measure of the SME owner/manager's level of satisfaction with his/her access to financial capital. This factor was measured on a five-point Likert scale with the opposite statements "insufficient and a great impediment for our development" for 1 and "fully satisfactory for the firm's development" for 5. The result of the analysis showed a positive and significant relationship between financial capital availability and firm performance. It was concluded that while SMEs have low levels of financial literacy and financial capital availability, financial literacy positively influenced SME performance and that the relationship is positively moderated by financial capital availability. It was recommended that since financial literacy is an important driver of firm performance and that the relationship between financial literacy and firm performance is positively moderated by financial resource availability, it should be developed as an essential part of entrepreneurial activities. Also, policymakers should put measures in place to bridge the financial gap, and ensure entrepreneurs can access finance with ease. The results are based on primary data whose outcome may be subjective resulting from respondent bias. Secondary data without such bias may become more beneficial.

Nwauzor and Chukwu (2018) examined the effect of tangible assets on firms' performance in the listed financial sector on the Nigeria Stock Exchange. An ex post facto research design was employed with secondary data extracted from the annual reports and financial statements of sampled companies. Data covered 11 years from 2007-2017. These data were analyzed using STATA statistical package. The result of the analysis showed that each component of the manufactured capital (land and building, computer accessories, furniture and equipment, motor vehicles, etc.) has different behavior in relation to profitability. An investment in land and building and furniture and equipment resulted in an insignificant increase in profit before tax. When regression was applied, investment in computer accessories and motor vehicles resulted in a decline in profit before tax. There was however a positive relationship between work-in-progress and profit before tax. The study concluded that firms should invest in land and building to increase profit. Investing in computer accessories and motor vehicles should be done with caution since it erodes investment. It was recommended that companies should spread operations into branches as it will enhance profitability. Absolute figures were used in the analysis, probably relative measures or figures quantified in ratio form could have given better outcomes. The results may respond to different measures of performance such as return on asset or equity.

Kim et al., (2019) researched the effects of intangible and tangible resources on social, economic, and mixed performance. Data was collected from business and management

information material to cover a period from 2012 to 2017. A total sample of 755 Social Enterprises was used for analysis in this study. Descriptive, correlation and regression analyses were employed. Financial resources and intangible resources were considered in the analysis. Results of the analysis showed that manufactured capital had positive effects on the economic and mixed performance of an organization. An analysis of financial capital showed that debts had negative effects on economic performance and mixed performance of the company. In the same vein, a test on other sources of capital e.g., government subsidies showed a positive effect on economic performance for companies with no significant effect on mixed performance. The study concluded that manufactured capital improves firm performance, this study was based on Korean Enterprises and because of country-specific differences, the results cannot be generalized across nations.

Vanja (2020) researched the effects of capital investments on firm performance. Secondary data were gathered from the financial report of 60 manufacturing companies based in Serbia. The study covered a period of 13 years from 2004-2016. Panel regression was employed for data analysis. The result showed that capital investments have a statistically significant negative effect on the short-term performance of the firm, but a positive effect on the long-term performance of the analyzed firms while controlling for time-fixed effects and certain internal factors. It was concluded that capital investments have a negative effect on the firm performance in the short term, but a positive effect on the firm performance in the long term. Precisely, it was discovered that in the panel data set, using pooled OLS regression, capital investments have a statistically significant effect on firm performance, measured by return on assets, and considering both short-term and long-term aspects, after controlling for time-fixed effects and certain internal factors, such as firm size, leverage, total asset turnover, and asset tangibility. The recommendation was made that the state government should encourage and support capital investment activities to ensure economic sustainability while manufacturing firms should invest more in sustainable production projects. The study concentrated on manufacturing firms whose information disclosures can be sector-dependent. A study across different sectors may prove to be more revealing about the relationship between IR and firm performance.

Gospel and Celestine (2017) investigated the effect of tangible assets and corporate performance: evidence from the manufacturing industry in Nigeria. The study used financial statement data of 10 manufacturing companies listed on the stock exchange. Corporate performance was proxied by return on assets and return on equity. The independent variables were plant and machinery as well as land and building. Multiple regression analysis was adopted, and results showed a significant positive relationship between return on assets and plant and machinery, but the relationship between return on assets and land and buildings is negative. The result is also consistent in respect of the relationship between return on equity and the independent variables, leading to the conclusion that investments in tangible non-current assets (manufactured capital) affect the profitability of firms. It was recommended that every organization should invest prudently in tangible non-current assets and ensure that these assets are properly utilized.

Owais et.al. (2020) investigated the impact of financial and intellectual capital on the financial performance of a firm. The study categorized Intellectual capital which is frequently associated with firm performance into five core components: financial capital, customer

capital, process capital, innovation capital, and human capital. The research employed panel data for a sample other than the financial or services sector from diverse industries listed on the Pakistan Stock Exchange (PSX) for five (5) years. Results indicate that there is a significant relationship between financial capital and financial performance. The study concluded that new causal relations could influence firm performance and help decision makers to develop strategies that will sustain the organization. Understanding the complexity embedded in the Check Relation Strategy firm choice, Innovation Capital (IC), and firm performance is improved by the study. To help managers adopt optimal decision-making strategies, this research explores new causal links that affect business performance. It also sheds light on the contradictory and ambiguous findings gleaned from the literature. The study recommends that companies should sustain the practice of integrated reporting because it improves financial performance.

Shahzad (2015) investigated the impact of financial leverage on the corporate financial performance of the Pakistan textile industry between 1999 and 2012 using panel data. The leverage-performance relationship is examined with a special focus on the Global Financial Crisis of 2007-2008. Both accounting-based (Return on Assets - ROA) and market-based (Tobin's Q) measures of corporate financial performance are used. One hundred and twelve (112) listed companies from the textile sector of Pakistan constitute the population of the study. Data were sourced from the balance sheet analysis issued by the Statistics and Warehouse of the State Bank of Pakistan. The study dependent variable corporate financial performance was measured by accounting measure, return on assets (ROA), and market-based measure, Tobin's Q. The independent variable of the study, financial leverage was measured by Total Debt to Total Assets (TDTA), Long Term Debt to Total Assets (LDTA), Short Term Debt to Total Assets (SDTA), and Debt to Equity (DE). Firm size and firm efficiency are the control variables used in the study. The outcome of the study revealed that financial leverage has a negative impact on corporate performance using the accounting measure return on assets (ROA). Using the market-based measure, Tobin's Q shows that the short-term debt to total assets (SDTA) coefficient is positive, meaning that financial leverage positively influenced the corporate financial companies of listed textile companies in Pakistan. The study concludes that since the cost of borrowing is high in Pakistan and debt capital markets are underdeveloped, companies may be forced to source funds from banks and borrowed funds are at a high cost which affects the companies adversely. The policy implication of this study can assist modern managers in determining the ideal quantity of debt financing they can afford at any given time without incurring significant costs to the company. A smart manager who can keep all the considerations (both internal and external to the organization) in account while deciding about the capital structure of a firm will be able to achieve the balance between debt and equity financing. Since debt financing has been the subject of this study thus far, managers should pay attention to any variables that could raise a firm's debt costs. A company's management should attempt to avoid debt financing when the prospective costs are higher and equity financing is also pricey.

3.0 THEORETICAL FRAMEWORK

3.1 Legitimacy Theory

Dowling and Pfeffer (1975) is the proponent of legitimacy theory. The theory holds that an entity is socially contracted to the society where it operates. The theory assumes that actions should be appropriate within societal norms and values (Ame, 2021). Legitimacy theory targets satisfaction of the aspirations of society in general which is consistent with the integrated reporting approach (Guthie & Cugnanesan, 2006). The company's accomplishment hinges on how it considers the legitimate expectations of external stakeholders. The basic premise of the theory of legitimacy is the belief that a company influences the society in which it operates. At the same time, the company is also socially influenced; that is why its functioning is like a social contract aimed at obtaining and maintaining social acceptance (Guthie & Cugnanesan, 2006). The theory supports the disclosure of environmental, social, and governance information to stakeholders which forms part of the integrated reporting system (Burlea & Popa, 2013). The theory suffers the challenge of clarifying the various stakeholder's interests in society.

3.2 Agency Theory

The Agency Theory was propounded by Jensen and Meckling in 1976. Agency is the contractual relationship between one party called the principal (or shareholders) and another party called the agent (Directors or professional managers) to act in good faith on behalf of the principal in a fiduciary capacity. The basis of the principal-agent relationship is that conflict of interests, information asymmetry, and opportunistic behavior (moral hazards and adverse selection) exist between the agent and the principal. Agency theory assumes that agents are dishonest and therefore the principal incurs agency cost in monitoring the activities of the agents to give them a level of assurance. The bottom line of agency theory is that it assumes that every firm has a form of principal-agent relationship within the walls of its structure. The shareholders, who are the investors or owners of the business, are considered the principal while the managers employed to oversee the firm on behalf of the owners are considered the agents (Jensen and Meckling, 1976). Integrated reporting aims at breaching the information gap between the directors and shareholders of multinational companies in Nigeria, through the provision of a comprehensive reporting system for the information requirement of all stakeholders.

3.3 Stakeholders Theory

In 1984, Edward Freeman propounded the stakeholder theory. Any party or entity that affects or can be affected by the company is considered a stakeholder (Abanyam et al., 2020). Examples of stakeholders are shareholders, management, employees, customers, suppliers, and the community (Jeremy, 2020). Stakeholder theory assumes that company operation affects stakeholders and they have obligation to all its stakeholders (Abanyam et al., 2020). The basis of the theory is the creation of value for all stakeholders (Ame, 2021). However, Charles Blatter argues that is not easy to balance the interest of diverse stakeholders (Abanyam et al., 2020). An integrated report provides comprehensive information in meeting the information needs of various stakeholders (Farneti et al., 2019; Ofoegbu et al., 2018; Kilic & Kuzey, 2017) and value addition to the company (IIRC, 2021; Dagiliene & Nedzinskiene, 2018).

Legitimacy theory assumes a social contract exists between the company and the society (Deephouse & Suchman, 2008, Suchman, 1995), however, the theory is constrained in resolving the interest and balancing the power among stakeholders (Burlea & Popa, 2013). A contractual relationship exists between principal and agent, Jensen and Meckling (1976); the theory concentrates only on managers and the owners (Eisenhardt, 1989). Legitimacy theory and agency theory addresses certain aspects of stakeholders' interest but is unable to take into consideration all inclusion concept upon which stakeholders' theory is anchored. The business model Mendelow's matrix is used to analyze stakeholders based on their interests and the level of power or influence they exert in the company (Lambe, 2021). The stakeholder theory assumed that the interest of diverse stakeholders (shareholders, management, employees, customers, creditors, government, community, and so on) are considered. It is against this backdrop of gaps identified in the theories, that this study is underpinned by stakeholder theory; because of its robustness in satisfying the interest of all stakeholders and not only the satisfying the interest of the providers of financial capital.

4.0 METHODOLOGY

This study adopted a longitudinal research design as it considers a cross-section of multinational companies in twelve (12) sectors of the Nigeria Exchange Group and time series for ten years (10) from 2011 to 2020. Positivism research philosophy followed because the researchers remained independent of the quantitative data collected and operational variables of the study measured objectively. The population of the study is twenty-five (25) listed Multinational companies on the Nigeria Exchange Group as of 31st December 2020. Four companies namely Oando Plc, Thomas Wyatt Plc, R.T. Briscoe Plc, and Chellarams Plc; were outliers not considered in the study for the following reasons. Oando Plc failed to make public its financial statements in the year 2019 and 2020. Also, Thomas Wyatt's 2020 financial statement was not published. R.T. Briscoe and Chellarams Plc outlier were returned on equity in 2015 and 2019 for R.T. Briscoe Plc, and Chellarams Plc were observed respectively. Therefore, twenty-one (21) sampled listed multinational companies were used for the study. The secondary data were sourced from the published financial statements of the companies. Multiple regression was used in evaluating the effectiveness of financial and manufactured capital on the financial performance of listed multinational companies in Nigeria for the analysis with the aid of the STATA 16 statistical tool.

4.1 Model Specification

The study adopts the regression model used by Islam (2021) and is represented as follows:

$$ROE_{it} = \beta_0 + \beta_1 FC_{it} + \beta_2 MC_{it} + \beta_3 RG_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Where: ROE= Return on Equity; FC= Financial Capital; Capital, MC = Manufactured RG = Revenue Growth

$\beta_0 - \beta_3$ = coefficient of the regression; i = number of multinational companies; t = number of years; ϵ = Error term.

Dependent Variable: The dependent variable financial performance is proxied by Return on Equity (ROE); Independent Variables are Financial Capital (FC) and Manufactured Capital

(MC), and the Control variable is proxied by Revenue Growth (RG). Table 3.1 below shows the study variables and their measurement.

Table 3.1 Study Variables Measurement

Variable	Proxies	Measurement	Source(s)
FP	Return on Equity (ROE)	The ratio of Profit After Tax (PAT) to Total Equity (TE) is expressed in percentages.	Zhang et al. (2021) Nailal and Rika (2016)
FC	Financial Capital	Long Term Debt to Equity (LTDE) ratio is expressed in percentages.	Chikwendu et al. (2020).
MC	Manufactured Capital	Non-Current Asset Ratio (NCAR) = Non-Current Assets divided by Total Assets expressed in percentage.	Ullah and Ahmad (2019).
RG	Revenue Growth	Current revenue minus Prior revenue divided by prior revenue expressed in percentage.	Kasogo (2020)
		(CYR-PYR/PYR*100)	

Source: Author’s Compilation (2022)

The apriori expectation for the study is that the independent variables, financial capital, and manufactured capital will have a positive and significant effect on the dependent variable, return on equity (ROE).

5.0 RESULTS AND DISCUSSION

Table 4.1 Descriptive Statistics

stats	roe	fc	mc	rg
N	210	210	210	210
mean	13.86	0.85	42.89	7.84
sd	23.72	1.34	24.26	23.56
max	133.84	10.21	92.73	119.59
min	-71.42	0	1.24	-53.41
skewness	0.80	3.26	0.04	1.08
kurtosis	8.17	16.88	2.01	7.36

Source: Author Computation using STATA 16 Version (2022)

Table 4.1 shows total observations of two hundred and ten (210) indicating 21 multinational companies for the period of 10 years (2011 to 2020). The descriptive statistics for the Model, from Table 4.1 shows that the average return on equity (ROE) of the sampled listed multinational companies in Nigeria was 13.86 with a standard deviation (SD) of 23.72. This is an indication that the return on equity (ROE) of the

Listed multinational companies deviate from both sides of the means by 23.72, which means that the data is widely dispersed from its mean. The return on equity (ROE) also has a minimum and maximum value of -71.42 and 133.84 respectively. The data for return on equity (ROE) is positively skewed with a coefficient of 0.80, meaning that most of the data fall slightly to the right-hand side of the normal curve. The kurtosis coefficient of 8.17 shows that the data is far away from zero.

Table 4.1 also shows that the mean of financial capital (FC) of the listed multinational companies in Nigeria was 0.85 with a standard deviation (SD) of 1.34. This shows that the financial capital (FC) of the listed multinational companies deviates from both sides of the mean by 1.34, which means that the data is slightly dispersed from its mean. The minimum and maximum values of financial capital (FC) are zero (0) and 10.21 respectively. The data for financial capital (FC) is positively skewed with a coefficient of 3.26. The kurtosis coefficient of 16.88 shows that the data deviates from zero normal distribution. On the other hand, the average value of manufactured capital (MC) of the sampled listed multinational companies was 42.89 with an SD of 24.26. This means that the manufactured capital (MC) deviates from both sides of the average by 24.26 meaning that manufactured capital (MC) data is widely dispersed from the mean. The manufactured capital (MC) also has a minimum of 1.24 and a maximum of 92.73 respectively. The data for manufactured capital (MC) is positively skewed with a coefficient of 0.04, which means that the data is normally distributed because of zero skewness. The kurtosis coefficient of 2.01 further confirmed that the data are normally distributed, using the kurtosis coefficient of -2 to +2 criteria for normality of data established by George and Malley (2010).

The descriptive analysis of the control variable in Table 4.1 shows that the revenue growth (RG) of the sampled listed multinational companies in Nigeria has an average of 7.84, with an SD of 23.56. This shows that revenue growth (RG) deviates from both sides of the mean by 23.56, meaning that the data is widely dispersed from the mean. The revenue growth (RG), Also has a minimum and maximum value of -53.41 and 119.59 respectively. The data for revenue growth (RG) was positively skewed with a coefficient of 1.08, meaning that most of the data fall on the right side slightly of the normal curve. The kurtosis coefficient of 7.36 shows that the data was not normally distributed which necessitates a diagnostic test of the data.

Variable	Obs	W	V	z	Prob>z
roe	210	0.90	17.19	6.56	0.00
fc	210	0.60	61.75	9.51	0.00
mc	210	0.97	5.20	3.80	0.00
rg	210	0.92	13.17	5.95	0.00

Source: Author Computation using STATA 16 Version (2022)

The study employed the Shapiro-Wilk (W) data normality test as part of the descriptive analysis, to ascertain how normal the data collected from secondary sources were. The test was conducted to check a variable that ensued from a normally distributed population. The premise is to test the null hypothesis that the data are not normally distributed with data 0.05 level of significance. The results of the test are presented in Table 4.1b above. Table 4.1b shows that the return on equity (ROE) of the sampled listed multinational companies has a W test coefficient of 0.90, with a Z-Value of 6.56 and P- Avalue of 0.00. The test was significant at 5% with a confidence level of 95%. Thus, the study has no reason to reject the null hypothesis that the data for return on equity (ROE) are not normally distributed and concludes that the data for return on equity (ROE) are normally distributed because the p-value is less than 0.05.

Table 4. 1b, shows the financial capital (FC) of the sampled listed multinational companies in Nigeria, which has a W test coefficient of 0.60 with a Z-Value of 9.51 and P-Value of 0.00, meaning that the test was significant at 5% with a confidence level of 95%. Therefore, the study concludes that financial capital (FC) is normally distributed because the p-value is less than 5% Similarly, the W test coefficient of 0.97 for manufactured capital (MC), with a Z-Value of 3.80 and P-Value of 0.00, shows that the test was significant at 5% with a confidence level of 95%. Consequently, the study has no reason to reject the null hypothesis that the data for manufactured capital (MC) are not normally distributed and rejected the alternative hypothesis that the data for manufactured capital (MC) are normally distributed. The revenue growth (RG) of the listed multinational companies in Nigeria has a W test coefficient of 0.92, with a Z-Value of 5.947 and P- Value of 0.00. The study concludes that revenue growth is normally distributed because the p-values are less than 0.005.

Table 4. 2 below presents the outcome of the relationship between financial and manufactured capital against the financial performance of listed multinational companies in Nigeria. The correlation matrix shows the correlation among the variables of the study in Table 4.2.

Table 4. 2 Correlation Matrix

	roe	fc	mc	rg
roe	1.0000			
fc	0.1099	1.0000		
mc	0.1088	-0.0203	1.0000	
rg	0.2142	0.0440	0.0200	1.0000

Source: Author Computation using STATA 16 Version (2022)

Return on equity (ROE) has a positive correlation with the return on financial capital (FC) and manufactured capital (MC) with coefficient values of 0.1099 and 0.1088, respectively. A 1% percent change in return on equity causes a proportional change of 10.99% in financial capital (FC), and a 10.88% change in manufactured capital (MC). Return on equity is positively correlated with revenue growth (RG), and the coefficient of the correlation value is

0.2142 meaning that a 1% variation in return on equity (ROE) causes a direct change in revenue growth (RG) by 21.42%.

Financial capital (FC) has a negative correlation with manufactured capital (MC) with a coefficient of correlation value of - 0.0203; This result is very good because the two independent variables are having a very low degree of correlation of 2.03% between financial capital (FC) and manufactured capital (MC) it is an indication of the absence of multicollinearity in the variables of interest. However, at this point conclusion cannot be drawn on the extent of the relationship between financial capital and manufactured capital; until further tests such as variance inflation factor (VIF) are carried out with other diagnostics tests confirming the multicollinearity existing in the data or otherwise. Furthermore, financial capital (FC) has a positive correlation with the control variable, revenue growth (RG) with a coefficient of correlation value of 0.0440. Implying that a unit change in financial capital (FC) has a direct effect on revenue growth (RG) by 4.4%. It is worthy of note that, the correlation existing between independent variables of the study is paramount which was confirmed by the low degree of correlation between financial capital (FC) and manufactured capital (MC) of 2.03%. Manufactured capital (MC) has a positive correlation with the control variable of the study, revenue growth (RG), with correlation coefficient values of 0.0200, signifying that a unit variation in manufactured capital (MC) will directly influence changes in revenue growth (RG), by 2.00%. In conclusion, no multicollinearity problems exist between financial capital and manufactured capital which are the independent variables of the study.

Table 4.3 Results of Multi collinearity/VIF Test

Variable	VIF	1/VIF
rg	1.00	0.997962
mc	1.00	0.998114
fc	1.00	0.999842
Mean VIF	1.00	

Source: Author Computation using STATA 16 Version (2022)

To validate the outcome of the correlation analysis in Table 4.3 above, a multicollinearity test was conducted on all independent and dependent variables as in Table 4.4 above. The results revealed that revenue growth (RG) has a VIF of 1.00, at a 0.997962 acceptance level, indicating that there is no issue of high collinearity with other variables; manufactured capital (MC) has a VIF of 1.00 at a 0.998114 acceptance level, which indicates that the data for manufactured capital (MC) has lower collinearity with other independent variables in the model. Furthermore, the results revealed that financial capital (FC) has a Variance Inflation Factor (VIF) of 1.00 at a 0.999842 acceptance level, which is an indication that the data for financial capital (FC) has lower collinearity with other explanatory variables of the study. The mean VIF for all explanatory variables is 1.00 indicating that the problem of multicollinearity among the independent variables of the study does not exist in the data. The mean VIF above 10 is an indication of multicollinearity existence in the data, on the other hand, the mean VIF of less than 10 shows the absence of a multicollinearity problem. In this

case, a VIF of 1.00 is less than 10, the conclusion is that there is no problem of multicollinearity among the explanatory variables of the study.

Table 4.4 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity Test Results

The test and result for heteroskedasticity are presented below:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
 Variables: fitted values of roe
 chi2(1) = 0.04
 Prob > chi2 = 0.8403

	Chi ²	Prob > chi2
Hetestest	0.04	0.8403

Source: Author Computation using STATA 16 Version (2022)

Table 4.4 shows a Hetestest Chi2 of 0.04, which is significant at a 5% level of significance (P-Value=0.08403) for fitted values in the models. If the p-value that corresponds to this Chi-Square test statistic with p (the number of predictors) degrees of freedom is less than the 5% significance level (i.e., $\alpha = 0.05$) then reject the null hypothesis and conclude that heteroscedasticity is present. If the probability of Chi-Square is greater than the 5% significant level, it means there is no reason to reject the null hypothesis and conclude that heteroscedasticity is absent. The probability of Chi-Square is 0.8403, which is greater than the significant level of 5%, automatically, no justification to reject the null hypothesis implying that the data are homogenous. The conclusion is that there is no issue of heteroscedasticity.

Table 4.5: Spam test

	Chibar ²	Prob.> chi ²		
Spam test	13.58	0.0000		

Source: Author Computation using STATA 16 Version

The spam test determines the appropriate model between Pooled Ordinary Least Square (OLS) regression model and the Fixed Effects regression model. The Null Hypothesis (Ho) and the Alternate Hypothesis (H1) with the decision criteria are stated thus:

Ho: Pooled OLS regression model rather than a Fixed Effect model is appropriate.

H1: Pooled OLS regression is not appropriate.

If the p-value is greater than 0.05, do not reject Ho and conclude that Pooled OLS model is appropriate.

If the p-value is less than 0.05, reject Ho and conclude that the Fixed Effect model is appropriate.

The results in Table 4.5 above for the model show a wild F value of 13.58 with a corresponding probability of $P > F$ - value of 0.0000 which is less than the value of 0.05. Therefore, the study rejects the null hypothesis and accepts the alternate hypothesis, and concludes that the fixed effect model is the most appropriate.

5.1 Breusch and Pagan Lagrangian multiplier test for random effects

$$roe[pid,t] = Xb + u[pid] + e[pid,t]$$

Table 4.1b Descriptive Statistics - Shapiro-Wilk W test for Normal Data

```

Estimated results:
-----+-----
          |          Var          sd = sqrt(Var)
-----+-----
    roe |          562.7619          23.7226
     e |          239.7189          15.48286
     u |          352.2906          18.7694
Test:   Var(u) = 0
              chibar2(01) = 275.02
              Prob > chibar2 = 0.0000
    
```

Source: Author Computation using STATA 16 Version (2022)

The Breusch and Pagan Lagrangian multiplier (LM), test examines if any random effect exists in the model. The null hypothesis is that individual-specific or time-specific error components are zero. LM test compares the random-effects model with pooled OLS model. The decision stated thus:

The decision rule is that there is no reason to accept the null hypothesis if the P value is greater than 0.05 %, otherwise accept the alternative hypothesis if the P value is less than 5% (0.05).

The Chibar2 value of LM is 275.02 with the probability > Chibar2 of 0.000 (Table 4.6 above, refers) showing that the probability of the LM test is less than the significant level of 0.05; we conclude that the Random Effects model is the most appropriate.

5.2 Hausman Test

```

---- Coefficients ----
          |          (b)          (B)          (b-B)          sqrt(diag(V_b-V_B))
          |          fe          re          Difference          S.E.
-----+-----
    fc |          4.275732          3.584883          .6908486          .8881265
    mc |          -.0719921          -.0080878          -.0639043          .0700013
    rg |          .1940641          .1957776          -.0017134          .0062181
    
```

Source: Author Computation using STATA 16 Version (2022)

Hausman test is the test between the fixed effect regression model and the random effect regression model. The probability of chi2 will determine which of the model is appropriate at the significant level. Based on the outcome of the spam test indicated that the fixed effect model is the most appropriate (Table 4.5 refers) and the Breusch and Pagan Lagrangian multiplier (LM) revealed that the random effect model is the most appropriate (Table 4.6 refers). Hence, the need to conduct a Hausman test to select the most suitable model between fixed and random models.

Hausman test selects the most appropriate model to be interpreted between Random Effects model with the Fixed Effects model as statistically determined by the probability value of chi2 above.

Hausman Test Decision Criteria:

Ho: Random Effects model rather than Fixed Effect model is appropriate.

H1: Random Effects model is not appropriate.

If the p-value is larger than 0.05, do not reject Ho and conclude that the Random Effects model is appropriate.

If the p-value is less than 0.05, reject Ho, and conclude that Fixed Effects is appropriate.

Based on the probability of the chi2 value of 0.7157 in Table 4.7, is above the significant level of 0.05; the study has no reason to reject the null hypothesis because of probability value of 0.7157 falls outside the critical value of 0.05. The study concludes that the random effects model is the most appropriate model to interpret.

The best regression result to be interpreted depends on the outcome of the wild/spam test LM test and Hausman test. The outcome of the spam test suggested that the fixed effect model is suitable and the Breusch and Pagan Lagrangian multiplier (LM) showed that the random effect model is suitable. Hausman's test preferred the random effect model to be the most appropriate model for the interpretation of the results as shown in table 4.8 below.

5.3 Random Regression Model Result

Random-effects GLS regression	Number of obs =	210
Group variable: pid	Number of groups =	21
R-sq:	Obs per group:	
within = 0.1050	min =	10
between = 0.0168	avg =	10.0
overall = 0.0483	max =	10
Wald chi2(3) =		21.98
corr(u_i, X) = 0 (assumed)	Prob > chi2 =	0.0001

roe	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
fc	3.584883	1.643207	2.18	0.029	.3642559	6.80551
mc	-.0080878	.1034137	-0.08	0.938	-.210775	.1945994
rg	.1957776	.0481132	4.07	0.000	.1014775	.2900777
_cons	9.636846	6.270221	1.54	0.124	-2.652562	21.92625
sigma_u	18.769405					
sigma_e	15.482859					
rho	.59507586	(fraction of variance due to u_i)				

Source: Author Computation using STATA 16 Version (2022)

The Wald chi-square value of 7.71 and a corresponding Prob.>F of 0.0001 which is below the 5% significant level show that the model is suitable to explain the relationship expressed in the study. The following provides further explanation of the type and degree of the association between both the dependent variable and all the study's independent variables in terms of coefficients, t-values, and p-values:

5.4 Test of Hypotheses

Hypothesis 1 Financial capital has no significant effect on financial performance of listed multinational companies in Nigeria.

The regression results presented in Table 4.8 show that the financial capital of the listed multinational companies in Nigeria, during the study period has a positive and significant effect on financial performance at the 5% level (ceff 3.584883, p=0.029). Therefore, because of the probability of p>z of 0.029, the study rejects the null hypothesis and concludes that financial capital has a significant effect on the financial performance of listed multinational companies in Nigeria. It implies that a unit variation in the financial capital will cause a directly proportional effect of 2.9% in the financial performance of listed multinational companies in Nigeria. This finding is consistent with the study outcome from (Islam, 2020; Owais et al., 2020; Neneh, 2016) that financial capital positively and significantly influenced financial performance. On the other hand, the study outcomes vary with the findings of Shahzad (2015) that financial capital inversely affected financial performance.

Hypothesis 2 Manufactured capital has no significant effect on financial performance of listed multinational companies in Nigeria.

The regression results presented in Table 4.8 show that the manufactured capital of the listed multinational companies in Nigeria, during the study period had no significant effect on financial performance at the 5% level (ceff-0.0080878, p=0.938). Therefore, because of the probability of p>z of 0.938, the study has no reason to reject the null hypothesis; because the p-value of 0.938 is greater than the confidence level of 5% statistical significance, the study rejected the alternate hypothesis, and with no justification to reject the null hypothesis. The study concludes that manufactured capital has no significant effect on the financial performance of listed multinational companies in Nigeria.

6.0 DISCUSSION OF FINDINGS

The study examined the effect of financial and manufactured capital on financial performance: Evidence from listed multinational companies in Nigeria. Total observations of two hundred and ten (210) indicating 21 listed multinational companies in Nigeria for the period of 10 years (2011 to 2020) were analyzed. In arriving at the appropriate regression model for interpretation. A spam test was conducted to choose between pooled OLS and the fixed effect regression model, the test result shows the fixed regression model was preferred over pooled OLS regression model. On the other hand, the Breusch and Pagan Lagrangian multiplier (LM) test was carried out to examine, if any random effect exists in the model and to select between the random effect model and the pooled OLS model. The LM test revealed that the random effect model is suitable for interpretation. Furthermore, the Hausman test was then conducted which model between the fixed effect model and the random effect model, is suitable and fit for the interpretation of the result. The Hausman test specified, the random effect model as the best and most appropriate regression model for the interpretation and decision making. The result shows that financial capital has a positive and significant impact on the financial performance of listed multinational companies in Nigeria. The findings are consistent with the findings of Islam (2020), Owais et al. (2020) and Neneh (2016) found that financial capital has a positive and significant impact on the performance of companies.

The methodology employed in Islam (2020) is like this study, data were sourced from secondary sources. Purposive sampling was used in the determination of the sample for the study, based on meeting the criteria for inclusion. The study sampled companies that remained listed on Exchanges for the period under review; companies that were listed during the period but with incomplete or missing data were excluded from the study. Return on equity (ROE) was used by Islam (2010) to proxy financial performance. In this study also, return on equity was used as a proxy for the financial performance of listed multinational companies in Nigeria. The independent variables used in Islam (2020) were derived from the international integrated reporting framework. Content analysis was used, in our study, and six capitals were adopted as the independent variables adopted from the international integrated reporting framework. Panel regression analysis technique was employed, and the study's outcomes are in agreement with the findings of Islam (2020), that integrated reporting impacted financial performance significantly.

The study outcome differs from Shahzad (2015) established that an inverse relationship exists between financial capital and financial performance. Shahzad (2015) investigated both market and accounting measures used to proxy financial performance as the dependent variable of the study. The introduction of a market-based indicator (Tobin's Q) could be responsible for the result findings inconsistent with the outcome of our research. Because, our study employed accounting measures, the return on equity to proxy financial performance. The policy implication of their study is similar to this study, as the study recommends careful examination of debt both internal and external debt in financing businesses. Furthermore, variables that can increase debt should be closely monitored. However, In the same vein, manufactured capital has a negative but insignificant effect on the financial performance of listed multinational companies in Nigeria. The result is inconsistent with the outcome (Nwauzor & Chukwu, 2018; Gospel & Celestine, 2017) that asset tangibility influenced the financial performance and profitability of companies. In Nwauzor & Chukwu (2018) tangible assets were broken down into land and buildings; computer accessories, furniture and equipment, motor vehicles, and others to ascertain the impact of each component on financial

performance. It would assist the company in the contribution of each component of manufactured capital for purpose of strategic decisions and recommendations. The policy implication of the study is that empirical evidence established that financial capital influenced financial performance positively and significantly; therefore, the Directors and owners of multinational companies should pay attention to the proportion of long-term debt to equity, because it significantly impacted the financial performance of listed multinational companies in Nigeria. However, the companies are encouraged to examine the asset tangibility such as the non-currents, and invest with the prospects of improving the financial performance of companies.

7.0 CONCLUSION AND RECOMMENDATIONS

Integrated reporting is a system of reporting that accounts for all six capitals, namely, financial capital, manufactured capital, intellectual capital, human capital, social and relation capital, and natural capital. It embeds financial and non-financial information communicated to users of the information concisely and coherently. In this study, financial and manufactured capital were examined on the financial performance of listed multinational companies in Nigeria for the period of ten (10) years 2011 to 2020. Since many parties are interested in the company's activities the study was underpinned by stakeholder theory. The theory considers the interest of diverse stakeholders such as shareholders, management, employees, customers, creditors, government, community, and so on. In conclusion, financial capital has a positive and significantly affected financial performance of listed multinational companies in Nigeria. While on the other hand, manufactured capital statistically has no significant effect on financial performance. The study recommends that companies should adopt and continue with the practice of the integrated system of reporting because it creates value for the stakeholders of companies in Nigeria and positively impacted the financial performance of companies.

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Appendix I Pooled OLS Regression Result

```
. regress roe fc mc rg
```

Source	SS	df	MS	Number of obs	=	210
Model	7925.75227	3	2641.91742	F(3, 206)	=	4.96
Residual	109691.483	206	532.482926	Prob > F	=	0.0024
Total	117617.235	209	562.76189	R-squared	=	0.0674
				Adj R-squared	=	0.0538
				Root MSE	=	23.076

roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
fc	1.829254	1.196717	1.53	0.128	-.5301289 4.188636
mc	.1043788	.0658139	1.59	0.114	-.0253765 .234134
rg	.209004	.0678426	3.08	0.002	.075249 .3427589
_cons	6.197364	3.4391	1.80	0.073	-.5829817 12.97771

Source: Authors Compilation using STATA 16 (2022)

Appendix II Fixed-Effects Regression

```
Fixed-effects (within) regression
```

Group variable: pid	Number of obs	=	210
R-sq:	Number of groups	=	21
within = 0.1067	Obs per group:		
between = 0.0061	min =		10
overall = 0.0341	avg =		10.0
	max =		10
corr(u_i, Xb) = -0.1786	F(3,186)	=	7.41
	Prob > F	=	0.0001

roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
fc	4.275732	1.867859	2.29	0.023	.5908183 7.960645
mc	-.0719921	.1248783	-0.58	0.565	-.318352 .1743678
rg	.1940641	.0485133	4.00	0.000	.098357 .2897713
_cons	11.8057	5.650831	2.09	0.038	.6577395 22.95366

sigma_u	18.880923
sigma_e	15.482859
rho	.59792746 (fraction of variance due to u_i)

F test that all u_i=0: F(20, 186) = 13.58 Prob > F = 0.0000

Source: Authors Compilation using STATA 16 (2022)