African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)
www.abjournals.org

EFFECT OF INTELLECTUAL CAPITAL ON THE FINANCIAL PERFORMANCE OF LISTED DOWNSTREAM OIL AND GAS FIRMS IN NIGERIA

Sunday Ayogu[1], Adeleke Bolaji Danujuma[2], and Longwal Samuel Dickak[3]

[1]Department of Accounting, Nile University of Nigeria, Abuja, Nigeria.
Email: sunday.ayogu@nileuniversity.edu.ng

[2]Department of Accounting, Nile University of Nigeria, Abuja, Nigeria.
Email: adeleke.bolaji@nileuniversity.edu.ng

[3]Department of Accounting, Nile University of Nigeria, Abuja, Nigeria.
Email: longsamdic@gmail.com

Cite this article:

Ayogu, S., Danjuma, A. B., Dickak, L. S. (2025), Effect of Intellectual Capital on the Financial Performance of Listed Downstream Oil and Gas Firms in Nigeria. African Journal of Accounting and Financial Research 8(2), 98-116. DOI: 10.52589/AJAFR-IRPEBJCQ

Manuscript History

Received: 11 Apr 2025

Accepted: 15 May 2025

Published: 4 Jun 2025

ABSTRACT: *The aim of this research was to explore the effect of intellectual capital on the financial performance of downstream oil and gas companies listed in Nigeria. Intellectual capital, including human, structural, and relational capital, was increasingly seen as crucial for creating organizational value and competitive advantage. This study used a panel data methodology to examine the relationship between different components of intellectual capital and return on assets (ROA), a key financial performance indicator, among Nigerian downstream oil and gas companies listed on the Nigerian Stock Exchange. The study examined the impact of intellectual capital on the financial performance of these firms over five years. The findings revealed that human capital had an insignificant positive effect on financial performance, while structural capital had an insignificantly negative influence. However, relational capital diversity significantly affected financial performance. The study concluded that human and structural capital had no true relationship with financial performance, while relational capital diversity did. Additionally, firm size had a statistically significant effect on the return on assets of the companies studied. The study recommended that listed downstream oil and gas firms in Nigeria should adopt strong intellectual capital to ensure optimal profitability. It suggested that these firms should have boards with directors who possess the knowledge, skills, and experience to contribute positively to the company's overall financial performance. Additionally, the study advised the downstream oil and gas industry to focus on increasing relationships with the outside world.*

KEYWORDS: Intellectual Capital, Firm performance, Downstream oil and gas companies.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

INTRODUCTION

Intangible assets are a type of assets that include the skills of the workforce and its organization, also called scientific capital or intellectual capital (IC). Intellectual capital comprises the intangible assets of a firm that contribute to its value and competitive advantage, Marieke de Goede (2020). Intellectual capital includes the collective intelligence, know-how, creativity, and innovation capabilities of employees; organizational processes and structures; customer relationships; brands; and other valuable intangible assets (Marr, 2020). Choong (2008), divides intellectual capital into three main components: human capital, organizational (structural) capital and relational capital. Aswath Damodaran, a leading authority on corporate finance, defines financial performance as "the ability of a company to generate profits and cash flows from its operations, investments, and financing activities, as measured by its income statement, balance sheet, and cash flow statement." It is a subjective measure of how well a company uses assets and generates revenues. It's also used as a general measure of a firm's overall financial health over a given period, StudySmarter (2019). Assessing a company's financial performance involves thoroughly evaluating its position across various categories such as assets, liabilities, equity, expenses, revenue, and overall profitability. This analysis enables users to determine precise information about a company's potential effectiveness, Team 2023. Financial performance can be measured using various metrics and indicators and one of those is return on assets (ROA). A company's innovative ability and inventiveness as well as the integrated use of financial and natural resources become key factors for the sustainable development and continuation of company activities, which in turn ensures smooth and improved financial performance, Abdulrahman and Abubakar (2023). Gupta (2020), concludes that intellectual capital has a positive and significant impact on firms' profitability, and they recommend that companies include and manage it effectively. Additionally, poor financial management practices and weak intellectual capital may lead to business failure. Therefore, the empirical evidence shows that intellectual capital is a significant factor that has the ability to positively affects an organization's financial performance. The oil and gas industry is at the middle of the Nigerian economic landscape and downstream companies play a key role in the value chain. The Oil and Gas sector has been the main stay of the Nigerian economy since independence in 1960. It is one of the choice sectors in Nigeria, unfortunately a review of financials of firms in that sector does not show significant growth in profitability over the years, Emeakponuzo (2019). As a major oil producing country, Nigeria places great emphasis on the downstream sector of refining and distribution of petroleum products. Companies in this sector are no less in the race for competitive advantage, and since the sector is rich in intellectual capital thanks to qualified and talented employees, significant investments in research and development, and the possession of various inventions and scientific discoveries, the question arises: what is the effect of intellectual capital on the financial performances of listed downstream oil and gas companies in Nigeria? This study aims to establishing the effect of intellectual capital on financial performance of listed downstream firms in Nigeria. This study is limited to the listed downstream firms in Nigeria. This study will make use of the financial statements of these listed downstream firms for a period of five (5) years; 2018-2022 financial years. The rationale behind the choice of companies, sample size and time frame are the ability to assess comprehensive qualitative and quantitative data in that regard.

The assessment of the effect of intellectual capital on the financial performance of listed downstream oil and gas firms in Nigeria faces several challenges. Existing studies have predominantly focused on deposit money banks, with limited research specifically targeting oil

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

and gas companies in Nigeria. The lack of industry-specific data constrains the comprehensive analysis of the effect of intellectual capital on the financial performance of oil and gas companies. Recent research has highlighted the diverse methodologies and contextual variables used to study the relationship between intellectual capital and financial performance. These differences may hinder the generalization and comparability of results, making it difficult to draw clear conclusions for the Nigerian downstream oil and gas sector. Intellectual capital encompasses several dimensions, including human capital, structural capital, and efficiency in capital deployment. The absence of standardized definitions and measures across studies may impede a coherent understanding of its implications for financial performance. Although some research has been conducted, there have been few extensive longitudinal studies carried out over long time periods to establish robust trends and patterns regarding the relationship between intellectual capital and financial performance within the Nigerian oil and gas industry.

The examination of intellectual capital is guided by various theories, including the resource-based theory and the knowledge-based theory.

The resource-based theory, developed by authors such as Edith Penrose, Birger Wernerfelt, Jay Barney, Robert M. Grant, and David Teece, underscores the importance of human resources, particularly management, in establishing a sustainable competitive advantage. This theory stresses the value of investing in human capital, such as employee training and development, to build a strong foundation of intellectual capital. The knowledge-based theory, pioneered by Wright and McMahan, gives emphasis to the vital role of knowledge creation and sharing in stimulating innovation and enhancing performance. This theory proposes that companies can develop new products, services, and processes by harnessing their intellectual capital. It also underscores the significance of information technologies in managing knowledge within and between firms. Therefore, this study suggests that the knowledge-based theory is the most effective in explaining the relationship between intellectual capital and a firm's financial performance. This theory highlights the significance of intellectual capital in gaining competitive advantage through innovation, skill acquisition, managerial competencies, and industry-specific know-how. Unlike physical capital, intellectual capital is difficult to imitate and substitute, making it a strategic resource that adds substantial value to a firm.

The study of the effect of intellectual capital on the financial performance of listed downstream oil and gas firms in Nigeria has the potential to benefit various stakeholders by providing insight for: investors to help them make better investment decisions, managers to determine areas of intellectual capital that have the greatest effect on financial performance, helping them make strategic decisions, policymakers and regulators to formulate rules and regulations in Nigeria's downstream oil and gas sector to create a more conducive environment for the development and application of intellectual capital, researchers and academics by adding to the current knowledge about intellectual capital and its effect on financial performance in Nigerian downstream oil and gas firms, informing future research and academic literature.

The main objective of this study is to investigate the effect of intellectual capital on the financial performance of listed downstream oil and gas firms in Nigeria. The specific objectives are to: examine the effect of human capital on the ROA of listed downstream firms in Nigeria, examine the effect of structural capital on the ROA of listed downstream firms in Nigeria, and examine the effect of relational capital on the ROA of listed downstream firms in Nigeria.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

www.abjournals.org

CONCEPTUAL REVIEW

Financial Performance

Financial performance refers to how effectively and efficiently a company uses its financial resources to generate profits and create value for shareholders.

Human Capital

The most significant factor influencing a company's long-term performance is widely acknowledged to be human capital, as highlighted by Kristensen (2020). Intellectual capital, as defined by Saravanan (2022), encompasses human capital, structural capital, and relational capital. Additionally, Oyedokun and Saidu (2019) categorize human capital as one of the primary components of intellectual capital. Human capital, as defined by Cabello-Medina (2011), encompasses the collective skills, knowledge, expertise, creativity, dedication, mindset, and insight of the employees within a given organization. It forms the foundation of the workforce, representing the abilities and proficiencies of all employees and managers. The human capital is instrumental in the creation of products or services that meet customer needs and in providing innovative solutions to their challenges. Therefore, it reflects the organization's capacity for innovation and its resourcefulness, Ahangar (2011). The 2016 Human Capital Report stresses the significance of a nation's human capital in driving the long-term success of an economy or organization. It underscores the essentiality for businesses to not only invest in their human capital but also to effectively leverage it to achieve greater returns. Recognizing and understanding the current state and potential of human capital holds immense value for a diverse set of stakeholders, given its pivotal role in societal productivity and the proper functioning of political and social institutions. As emphasized by Pulic (2004), employees represent valuable assets and should be acknowledged as a fundamental resource in any organization. Human capital accounting is a process that involves quantifying the collective knowledge and skills that employees contribute to the progress and success of an organization. According to Dunka (2018), human capital encompasses the intangible assets of skills, effort, and time that employees dedicate to fulfilling their responsibilities. Additionally, Bontis and Fitzenz (2002) suggest that human capital accounting entails measuring the expertise, knowledge, and skills of employees that are utilized for the development and advancement of an organization. It is important to note that human capital, as a critical component of intellectual capital, plays a significant role in the creation and delivery of goods and services, Saleim and Ashour (2006)..

Structural Capital

Structural capital is a crucial component of intellectual capital (IC) alongside human capital. IC measures a firm's intangible value in a knowledge-based economy, Ogbo, Ezeobi, and Ituma (2013). As described by Kleynhans and Sekhobela (2015), structural capital (SC) represents the intangible structures established by firms to facilitate the effective functioning of human capital. It is owned by the organization and remains even after employees depart, encompassing competences, routines, processes, procedures, and methodologies entrenched in the organization. SC embodies the knowledge captured and retained in an organization’s systems and structures. It encompasses the supportive infrastructure, processes, and databases that enable human capital to function, including buildings, hardware, software processes, patents, trademarks, the organization’s image, information system, and proprietary databases.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

Organization capital includes the organization's philosophy and systems for leveraging its capability. Intellectual properties are protected commercial rights such as copyrights and trademarks. Structural capital represents the valuable intangible resources that employees cannot take away when leaving the organization, Edvinsson & Malone (1997). This includes company information systems, hardware, software, databases, company images, patents, copyrights, trademarks, organizational capabilities, culture, routines, procedures, and so on, Karagiannis (2008); Aramburu and Saenz (2011). Intangible structures (structural capital) should receive equal attention as physical structures and equipment, Tarigan, Listijabudhi, Hatane, and Widjaja (2019), especially due to their significant contribution to a firm's financial performance, as suggested by Xu and Wang (2019).

Relational Capital

Relational capital is the value that comes from relationships, networks, and interactions with external stakeholders, including customers, suppliers, partners, and communities Relational capital is part of intellectual capital and was previously categorized as structural capital. It is now recognized as a distinct form of capital that focuses on relationships with customers and is classified as client capital, Yasir and Alameen (2021). The concept was later expanded to encompass all external communications of organizations and was renamed Relational Capital, now including resources and activities mobilized and implemented by organizations when dealing with entities outside their borders, Babai (2016). Relational capital relies on the relationships established with customers and stakeholders from suppliers. It is an important component of intellectual capital as it contributes to customer satisfaction and loyalty, Khalique (2011). Kim, Yoo, and Lee (2010) demonstrate that relational capital (RC) encompasses the knowledge embedded in an organization's marketing channels and customer relationships developed over time through its business operations. Customer loyalty, order levels, and market share are essential components of relational capital. Relational capital encompasses all human and structural resources related to external relationships, such as those with customers, suppliers, and other stakeholders. This also includes perceptions about the company, connections with customers, relationships with suppliers, interactions with financial institutions, government, research and development, and partners (Ali, 2015). The relationships that a company builds over time with suppliers, customers, partners, competitors, and government agencies that add value to the company are considered as relational intangible capital. This is consistent with El-Bannany's (2012) claim that the usefulness of relational capital and its value-creation capability come from positive relationships between the company and external parties. In conclusion, external intangible structures such as customer loyalty, customer satisfaction, suppliers' trust, and positive relationships with financial institutions support human capital and contribute to increased value creation and a competitive advantage.

Return on Assets (ROA)

Measuring Return on Assets (ROA) is important as it helps to determine how efficiently a company is using its assets to generate profits. A higher ROA indicates that a company is making more profit per dollar/naira of its assets, which is an encouraging sign for investors. According to Investopedia, both ROA and return on equity (ROE) are important fundamental ratios that investors use to assess a company's performance. While ROE focuses on how effectively a company's management uses investors' money, ROA provides a different perspective on management's effectiveness by revealing how much profit a company earns for every dollar of its assets and as such it is a popular metric for measuring the effects of intangible

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

assets like IC on profitability. The higher the ROA value, the better the financial performance. This indicates an increased rate of return and profitability for the company. Edem and Agbi, (2019), they measured the efficiency of structural capital and financial performance of listed oil and gas firms in Nigeria. They used ROA as a metric and concluded that structural capital does indeed have an effect on the performance of oil and gas firms in Nigeria.

Theoretical Review

Several theories have influenced the study of intellectual capital, and the following theories will be reviewed:

Resource-based Theory

It is uncertain who exactly came up with the resource-based view theory, but two notable authors are widely credited for creating and popularizing it: Edith Penrose and Birger Wernerfelt. Later, Jay Barney, Robert M. Grant, and David Teece developed and refined the theory in 1991. In 1959, "The Theory of the Growth of the Firm" (TGF) was published by Edith Penrose. This marked the first instance of an economist delving into the inner workings of firms in order to elucidate the organic development of knowledge, innovation, and firm expansion. Penrose posited that the external environment was a mental construct for management and proposed a dynamic interplay between internal and external environments, which she referred to as firms' "productive opportunity." She emphasized the significance of human resources, particularly management, and viewed managerial constraints as restricting the pace of firm growth, rather than their size per se. In Penrose's framework, managers were the principal agents whose "preferences" were somewhat internally driven, influenced by the broader environment (capitalism) and the internal structure and dynamics of firms, their perception of this external (and internal) "reality," and their own motivations, including profits, power, and the love of the game. Penrose's analysis focused on real-life organizations, human resources, intra-firm learning, endogenous knowledge, innovation, and growth, and the interaction of exogenous and endogenous factors to include noneconomic factors in determining managerial motivations and firms' growth. (Pitelis,2004). Birger Wernerfelt is a renowned scholar recognized for his work on the resource-based view of the firm. In his 1984 paper titled "A Resource-based View of the Firm," Wernerfelt introduced a new approach to analysing firms. He suggested that instead of focusing on the products they offer, firms should be evaluated based on their resources. Wernerfelt emphasized that understanding and analysing a firm's resources is crucial in formulating its strategy. His work provided a conceptual framework that enables the assessment of the strategic fit of resources within an organization. Wernerfelt's research has significantly influenced how firms achieve and maintain a competitive advantage by leveraging their unique resources and capabilities. Barney proposed the resource-based theory in 1991, stating that for resources to create a lasting competitive advantage, they must be unique, valuable, scarce, inimitable, and hard to substitute. When such resources achieve sustained competitive advantage, they result in economic rent, leading to superior performance. According to the resource-based view theory, a firm's intellectual capital is a crucial source of competitive advantage due to its uniqueness and difficulty for competitors to imitate. This concept highlights the significance of investing in human capital, such as employee training and development, to establish a strong base of intellectual capital. Companies that invest in their employees and improve their skills and experience can create a workforce that is better equipped to innovate, adapt to changing market conditions and drive business growth.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

Knowledge-Based Theory

According to Marial Dongrin Ater, (2023) The Knowledge-based theory was first originated by Wright and McMahan (1992) to support the arguments of the Resource-based View by Teeceet. (1997) that leaders have the ability and capacity to redirect, reconfigure, transform, integrate and shape central knowledge as a key resource to organizational success.

According to Tavanaet, (2020), the creation and transformation of knowledge into a competitive advantage is a priority for businesses, and those resources, especially knowledge, are crucial to ensuring that the advantage of the business is increased because it is difficult to imitate certain types of knowledge. The knowledge-based perspective highlights the crucial role of knowledge creation and sharing in driving innovation and improving performance. This concept suggests that companies can produce new goods, services, and processes by leveraging their intellectual capital. Organizations that foster a culture of collaboration and information exchange can tap into their employees' collective skills to create a more inventive and dynamic working environment. The perspective of the resource-based view emphasizes the significance of knowledge, in companies that achieve an edge. However, proponents of the knowledge-based view argue that the RBV falls short in aspects. Specifically, the RBV treats knowledge as a resource. Overlooks its distinctive characteristics. Consequently, it fails to distinguish between types of knowledge-based capabilities. In the knowledge-based view information technologies play a role as they enable companies to combine, enhance and expedite scale intra and inter firm management of knowledge (Alavi and Leidner 2001).

Theoretical Framework

Based on the reviews, this study concludes that the knowledge-based theory best explains its core aspects. The study examines the importance of intellectual capital and effect on a firm's financial performance, which is essential for gaining a competitive edge through innovation, skill acquisition, and industry-specific expertise. Unlike physical capital, which can be easily copied and traded, intellectual capital is hard to imitate or replace. This makes it crucial for improving the financial performance of downstream oil and gas companies

Empirical Review

Wasiu (2023) conducted a study on the impact of intellectual capital on the financial performance of the oil and gas industry in Nigeria. The study found that while human capital had a positive effect on financial performance, structural capital had a negative impact. The study suggests that companies in the industry prioritize human capital development but overlook relational and structural capital. Effective management of these capital components is crucial for better financial performance.

Edem (2022) examined the impact of intellectual capital efficiency on the market value of oil and gas companies listed in Nigeria. Covering the period from 2006 to 2018, the study measured intellectual capital efficiency using Human Capital Efficiency (HCE), while market value was assessed by earnings per share (EPS). The results revealed that both HCE and VAIC had a significant positive effect on the EPS of the sector under examination. Consequently, the study concludes that intellectual capital is a crucial factor in enhancing the market value of listed oil and gas companies in Nigeria. A major recommendation of the study is that the management of oil and gas companies should implement strategies that promote effective

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

employee engagement by placing workers in their areas of expertise and avoiding frequent staff turnover. Such actions could lead to increased productivity, ultimately boosting the firm's market value.

Reena (2020) conducted a survey to explore the impact of Intellectual Capital (IC) on the financial performance (FP) of hotels in Mauritius over a 10-year period, from 2007 to 2017. The study utilized a dynamic panel data framework to accommodate the dynamic nature of the hypothesized link and potential indirect and endogenous effects. The findings indicated a positive influence of IC on corporate FP, with a stronger effect observed in the long run compared to the short run. Additionally, the study identified asset turnover and size as crucial determinants of FP, while leverage had a negative impact on FP. The results also suggested a significant relationship between FP and intellectual capital, indicating the presence of reverse causality. Lastly, the study highlighted that size positively influences intellectual capital.

Soewarno and Tjahjadi (2020) investigated the relationship between intellectual capital and financial performance in the Indonesian banking industry. They employed the Value-Added Intellectual Coefficient (VAIC) model and the adjusted Value-Added Intellectual Coefficient (A-VAIC) model. Analyzing 114 data points from publicly listed banks on the Indonesia Stock Exchange from 2012 to 2017, their study showed that intellectual capital affects financial performance. However, not all hypotheses were supported by the models. The study emphasized the need for improved methods to measure intellectual capital in the future.

Lambe, Orbunde, and Ojeh (2021) discovered that training and development costs have a significantly positive effect on the financial performance of oil and gas companies listed in Nigeria. The study utilized secondary data from the annual reports of 12 out of 14 selected companies for the financial years 2011-2021. The research design was ex-post facto, and the analysis was conducted using E-Views 10. The results suggest that investing in training and development can help improve financial performance and reduce inefficiencies in productivity among listed oil and gas companies in Nigeria.

Nwauzor (2021) examined human capital's impact on corporate profitability and performance in the Nigerian oil and gas sector. The research focused on nine oil and gas companies listed on the Nigerian Exchange Group in 2018. The findings revealed a positive relationship between compensation cost and market share, while the effect of training costs was not statistically significant. The study recommended reorienting, retooling, and relearning to enhance human resources in Nigerian oil and gas companies for increased profitability, as well as aligning human capital with technology for remote work.

Susanti (2021) found that intellectual capital significantly impacts financial performance in the goods and consumption sector from 2013 to 2017. The research used a quantitative approach with the Partial Least Square (PLS) method and Smart PLS 3.0 application. The results showed a positive effect of financial performance on firm value, but no significant positive effect between intellectual capital and firm value. Therefore, the study concluded that financial performance, influenced by intellectual capital, plays a role in determining the value of companies in this sector.

Yahaya (2021) investigated the impact of intellectual capital management on the financial competitiveness of oil and gas firms listed on the Nigerian Stock Exchange from 2006 to 2018. The study used return on assets, return on equity, and asset turnover as proxies for financial

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

competitiveness and evaluated intellectual capital management using various efficiency measures. The findings suggest that capital employed and human capital have a positive effect on return on assets, while structural capital has a negative effect. The study recommended that oil and gas firms focus on increasing investment in capital employed and human capital while reducing investment in structural capital.

Gupta (2020) conducted a study on how intellectual capital affects the profitability of Indian pharmaceutical companies listed on the National Stock Exchange (NSE-500) from 2009 to 2018. The study used M-VAIC to assess intellectual capital and measured firm profitability using ROA, ROE, and EBITDA. The results showed a significant link between intellectual capital and firm profitability, emphasizing the importance of human, relational, and physical capital. This study provides valuable insights for pharmaceutical company management and stakeholders in optimizing intellectual capital efficiency.

Isola, Adeleye, and Olohunlana (2020) examined the influence of female participation in corporate boards on the management of intellectual capital in Nigerian commercial banks. Their analysis revealed that while female board participation alone had no significant effect on bank performance, the interaction between female board participation and intellectual capital efficiency had a positive effect on bank performance. The study recommended increased female board participation to maximize intellectual capital efficiencies for firm performance.

Kasoga (2020) conducted a study exploring the relationship between intellectual capital and firm performance in Tanzania's service and manufacturing sectors. Using panel regression analysis over a ten-year period (2010 to 2019), the research found a positive effect of intellectual capital on financial performance. The study recommended incentive programs to promote investment in innovation and development for improved firm efficiency.

Akintimehin (2019) examined the impacts of internal and external social capital on the financial and non-financial performance of businesses within Nigeria's informal sector. A survey encompassing 650 informal business owners in Lagos state was performed using the partial least square method of the structural equation model (SEM). The results demonstrated that social capital significantly affected business performance, particularly when accounting for the controlling variable of firm age. Internal social capital had a notable influence on both financial and non-financial performance, whereas external social capital did not significantly affect these outcomes. The study suggested that informal entrepreneurs should utilize their internal social capital resources and strive to enhance their external social capital to achieve business success.

Edem and Agbi (2019) assessed the relationship between the efficiency of structural capital (SCE) and the financial performance of listed oil and gas companies in Nigeria from 2006 to 2018. The findings indicated that both internal and external capital efficiency had a positive effect on the profitability of these companies. Additionally, the study highlighted the importance of establishing and maintaining relationships with other relevant entities to ensure smooth operations and the achievement of company objectives. Lastly, the study recommended implementing appropriate training programs to enhance employees' interpersonal and customer relationship skills.

Dhar (2019) explored how intellectual capital impacts organizational performance within the Bangladesh banking sector. The study revealed that knowledge management significantly

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

mediated the relationship between intellectual capital and organizational performance. Additionally, environmental turbulence and motivation had a significant moderating effect on this relationship. The research contributes to the development of the theory of intellectual capital, the resource-based view, and contingency theory.

Xu (2019) conducted a study comparing intellectual capital (IC) levels in high-tech, non-high-tech, and medium-sized enterprises (SMEs) in China's manufacturing sector. The study used data from 116 high-tech SMEs and 380 non-high-tech SMEs listed on the Shenzhen Stock Exchange from 2012 to 2016. The research revealed a significant difference in IC between high-tech and non-high-tech SMEs and a positive relationship between IC and financial performance in both types of SMEs.

Emmanuel and Saidu (2018) examined the impact of intellectual capital on the financial performance of listed Nigerian oil marketing companies over a 10-year period from 2007 to 2016. Intellectual capital was evaluated using the market-to-book value ratio (MB), Value Added Intellectual Coefficient (VAIC), and the Monetary Model of Tobin's Q (MMQR), while financial performance was assessed via return on assets (ROA). The findings indicated that the market-to-book value ratio had a significantly negative effect on return on assets. The Monetary Model of Tobin's Q had an insignificant effect on return on assets, as did the Value-Added Intellectual Coefficient. The study recommended that listed Nigerian oil marketing companies enhance the value of their intellectual assets to positively impact ROA by maximizing their market value, optimizing intellectual capital return, and investing more in intellectual capital components, particularly human, structural, and relational capital. Additionally, it suggested that greater attention be given to the human aspect of intellectual capital, rather than solely focusing on numerical evaluation and improvement. The study also advocated for the issuance of standards on intellectual capital accounting by the International Financial Reporting Committee (IFRC) to enable firms to measure and report their intellectual capital values in their income statements, thereby improving company performance.

Filipe, Serrasqueiro, and Alves (2018) investigated the impact of intellectual capital on the financial performance of small and medium-sized hotels from 2007 to 2015. Analyzing data from 934 Portuguese hotels, they found that human capital, structural capital, and relational capital positively affect hotel financial performance. Human and relational capital were identified as crucial for service quality, and the study emphasized the importance of intellectual capital in small and medium-sized hotel financial performance.

Mutalib, Hafiz, Hairul, and Hassan (2018) studied the relationship between intellectual capital efficiency (ICE) and the corporate book value of firms listed on the main board of the Nigeria Stock Exchange. The study found a significant positive relationship between ICE and corporate book value, specifically focusing on cash flow from operations and economic value added (EVA). The research recommends prioritizing investment in and management of intellectual capital to enhance economic value and operating cash flow.

Smriti and Das (2018) analyzed how intellectual capital (IC) affects the financial performance (FP) of Indian firms that are part of the Centre for Monitoring Indian Economy Overall Share Price Index (COSPI) from 2001 to 2016. The research revealed that human capital significantly influences firm productivity, and the efficiency of structural capital and capital employed plays a crucial role in a firm's sales growth and market value. These findings carry implications for

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

stakeholders and policymakers who seek to redistribute intellectual resources in emerging economies.

METHODOLOGY

In this study, the ex-post facto research design was employed to examine the relationship between intellectual capital and the financial performance of downstream oil and gas firms listed on the Nigerian Exchange Group (NGX). The requisite variables have been sourced from the annual reports and financial statements of these firms. The research took a correlational approach to ascertain the association between intellectual capital and financial performance.

The chosen research design was deemed appropriate for evaluating the impact of intellectual capital on the financial performance of listed downstream oil and gas firms in Nigeria. The study encompassed all 10 listed downstream oil and gas firms on the Nigerian Exchange Group (NGX). A census sampling technique was utilized, and the sample size was determined based on specific criteria, including the company's status as a publicly listed oil and gas company registered in Nigeria before 2018, and having at least a 5-year annual financial report covering the study period from 2018 to 2022.

The study collected both quantitative and qualitative data to comprehensively understand the effect of intellectual capital on the selected companies. Secondary data was obtained from annual reports, financial reports, and other relevant sources of companies meeting the selection criteria. The components of intellectual capital (human capital, structural capital, and relational capital) served as independent variables, while the Return on Assets (ROA) the dependent variable. The study's hypothesis was tested using multiple regression analysis with the following econometric model: $ROA = ß_0 + ß_1 (HCE) + ß_2 (SCE) + ß_3 (RCE) + \mu$.

Panel regression analysis was utilized as the data analysis methodology to investigate the effect of intellectual capital on the financial performance of listed Nigerian downstream oil and gas firms. Descriptive statistics summarized the data obtained on intellectual capital variables, while inferential statistics, such as correlation and regression analysis, was used to determine the strength and direction of the relationship between intellectual capital and financial performance.

RESULTS AND DISCUSSION

Data analysis was carried out to test the effect of intellectual capital and financial performance of listed downstream oil and gas firms in Nigeria. Intellectual capital was the independent variable (proxied by human capital, structural capital and relational capital diversity) were regressed against the dependent variable which was proxied by ROA (Return on assets) covering a period of 2018-2022 (5 years).

Descriptive Statistics

This shows the nature of each variable in this study. The results of the descriptive analysis for the variables employed are presented in table1

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

www.abjournals.org

Table 1: Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	110	.2073845	.224322	-.5636	1.0484
HC	110	9.954545	1.814247	7	15
SC	110	9.518182	1.975686	5	15
RC	110	2.263636	1.38785	0	5
FIRMSIZE	110	1.21	1.21	9.40	6.21

Source: *Stata Output (2025)*

From table 1, it can be seen that the mean average of ROA is 20.7% which shows that on average, the management of downstream oil and gas firms in Nigeria are not efficient in profit generation from their capital employed. However, the dispersion, that is the standard deviation around the mean stood at 22.4%. The minimum and maximum values of ROA are -56.4% and -1.05% respectively. This means that some downstream oil and gas firms have more capital involved in generating profits while others have fewer capital employed in generating their profits.

Correlation Matrix

Correlation is a bivariate analysis that is used to quantify the linear relationship between two distributions or variables in a single matric. To establish the relationship between the variables, the pairwise correlation matrix was carried out between the variables. The pairwise correlation values range from -1 to 1, -1 being a perfect negative correlation and 1 being a perfect positive correlation. Table 2 shows the summary of the results.

Table 2: Correlation Matrix

	ROA	Human capital	Sc	rc	Firm size
ROA	1.0000				
Human capital	-0.3238	1.0000			
Sc	-0.2957	0.9153	1.0000		
Rc	-0.2473	0.2767	0.2812	1.0000	
Firm size	0.0971	0.2203	0.2684	0.1115	1.0000

Source: *STATA Output (2025)*

The results from table 2 indicate that there is a negative relationship between financial performance (ROA) and human capital of listed downstream oil and gas firms in Nigeria. The relationship between structural capital and return on assets was found to be negative. Also, the relationship between ROA and relational capital diversity is statistically negative. The relationship between firm size and return on assets was found to be positive.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

www.abjournals.org

Multicollinearity test

The variance inflation factor (VIF) test for multicollinearity was carried out to check the presence of multicollinearity. Multicollinearity is a near perfect/high correlation between variables. The correlation coefficient results show that none of the variables are strongly correlated and this indicates that the problem of multicollinearity is unlikely and hence the variables are suitable for conducting regression analysis.

Table 3: Variance Inflation Factor (VIF)

Variable	VIF	1/VIF
Sc	6.28	0.159211
Hc	6.18	0.151885
Rc	1.09	0.918596
Log fs	1.08	0.926611
Mean vif	3.66	

Source: *STATA Output (2025)*

The variance inflation factor measures how much the variance of an independent variable is influenced or inflated by its correlation with the other independent variables. The mean VIF in table 3, revealed a value of 3.66 and this is less than 5. This means that the values are moderately correlated. This implies there is no multicollinearity problem on the explanatory variables. Here no two explanatory variables are perfectly correlated. This means that there is no multicollinearity problem in the given model.

Heteroscedasticity Test

Table 4 below present the results of the heteroskedasticity tests for the model using the fitted value for ROA. The test was carried out using the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity. It tests whether the variance errors from a regression is dependent on the values of the independent variables. The decision rule is that any model with a p-value lower than or equals to 0.05 has no constant residual variance (heteroskedal), while a model with a p-value higher than 0.05 has constant residual variance (homoskedal).

Table 4: Test for Heteroscedasticity

Chi 2 (1)	1.70
Prob > chi2	0.1925

Source*:* *STATA Output (2025)*

Results from Table 4.4 above show that the model has a p-value of 0.1925 which is higher than 0.05 indicating that the residual has constant variance and therefore homoskedal. This implies that results obtained in this study have high predictive powers on future outputs.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

www.abjournals.org

Hausman Test

The study used the traditional panel estimation techniques, namely fixed effects and random effect to investigate the influence of Human capital (BS), Structural capital (SC) and Relational capital diversity (RC) on Return on assets (ROA). Because it considers both individual and time-specific effects across individual variables, the Fixed effect is employed. While being applied, the random effect captures both the time-variant and time-invariant properties of the explanatory variable by allowing the individual or times-specific effects, or both of them, to be random.

Table 5: Hausman Test Results

	(b)	*(B)*	*(b-B)*	*Sqrt(diagV_B-V-b)*
	Fixed	Random	Difference	S.E.
Hc	0.142637	.0080504	.0062134	.0044248
Sc	-.0165495	-.0166379	.0000884	.0036808
Rc	-.0771798	-.0701504	-.0070295	.0060806
ROA	5.31e-13	4.42e-13	8.86e-14	1.08e-13

Source: *STATA Output (2025)*

In relation to selecting a panel estimation method between fixed and random effects that is more effective and acceptable, the Hausman Test reported in table 5 shows that Chi-square=2.33 and Prob. = 0.5263, It is conceivable to reject the common intercept as the null hypothesis and come to the conclusion that the random effect considerably outperforms the fixed effect. This indicates that when compared to the fixed effect, the random effect estimator is more reliable.

Test for Fixed Effect (FE)

We presume that something within the cross sections may influence or bias the predictor or outcome variables when using the FE estimator, thus we must control this. The presumption that an entity's error term and predictor factors are correlated is based on this rationale. In order to determine the predictors' net impact, FE takes these time-invariant qualities out of the predictor variables' effects. The FE model also makes the crucial assumption that those time-invariant qualities are particular to the cross sections and should not correlate with other individual characteristics. Since each entity is distinct, its error term and constant (which encapsulates its individual qualities) shouldn't be correlated with those of the other entities.

Random Effect Regression Estimates

The Hausman test results indicate that the random effect model is more robust than the fixed effect model. Therefore, as shown in table 6 below, the robust random effect is estimated to determine the effect of the independent factors against the dependent variable. Random effects model is used because, unlike fixed effect model, it presumes that variation among entities is random and uncorrelated to any predictors or independent factors.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

African Journal of Accounting and Financial Research
ISSN: 2682-6690
Volume 8, Issue 2, 2025 (pp. 98-116)

www.abjournals.org

Table 6: Random Effect Regression Estimates

Roa	Coef.	Std. Err.	Z	p> |z|	[95% conf.	Interval]
Hc	.0080504	.0224256	0.36	0.720	-.035903	.0520037
Sc	-.0166379	.0206163	-0.81	0.420	-.0570451	.0237692
Rc	-.0701503	.0177446	-3.95	0.000	-.1049292	-.0353714
Firmsize	4.42e-13	2.16e-13	2.05	0.041	1.84e-14	8.66e-13
_cons	.390743	.1340597	2.91	0.004	.1279908	.6534951
Sigma_u	.17334047					
Sigma_e	.14909913					
Rho	.57475848					

Source: *STATA Output (202)*

(Fraction of variance due to u_i) R-Square: 0.1739

Table 6 shows an R-Square value of 0.1739. The implication is that the model explains about 1.0% of the total variation in Return on assets (ROA) (dependent variable) as explained by the independent variables. According to the null hypothesis, the model is statistically significant if the P-value is higher than 0.05.

From the table above, the P-value for human capital (HC) is 0.72, implying that at the 5% level of significance, it is statistically insignificant, implying that there is no true relationship between the independent variables and the dependent variables.

The P-value for Structural capital (SC) is 0.420, implying that at the 5% level of significance, it is statistically insignificant, implying that there is no true relationship between the independent variables and the dependent variables.

The P-value for Relational capital diversity (RC) is 0.000, implying that at the 5% level of significance, it is statistically significant, implying that there is a true relationship between the independent variables and the dependent variables.

The coefficients of independent variables, together with probability values, are also shown in the table above to help determine the level and significance of the influence of the independent variables on the dependent variable. The results show that Human capital (HC) has a positively insignificant effect on Return on assets (ROA) with a p-value of 0.720 and a coefficient value of 0.008; this implies that an increase in HC by 1% will lead to will lead to an increase in ROA by 0.01% when other variables are held constant. The effect of HC is found to be statistically insignificant at 5% and has no significant effect on the ROA of the downstream oil and gas firms selected over the time period of study. The results also show that structural capital (SC) has a negatively insignificant effect on return on assets (ROA) with a p-value of 0.420 and a coefficient value of -0.0166; this implies that an increase in SC by 1% will lead to a decrease in ROA by 0.0166 when other variables are held constant. The effect of SC is found to be statistically insignificant at 5% and has no significant effect on the ROA of the downstream oil and gas firms selected over the time period of study. Furthermore, the results show that Relational capital diversity (RC) has a negatively significant effect on return on assets (ROA) with a p-value of 0.000 and a coefficient value of -0.0702; this implies that an increase in RC by 1% will lead to a decrease in ROA by -0.0702% when other variables are held constant. The

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

effect of RC is found to be statistically significant at 5% and has no significant effect on the ROA of the downstream oil and gas firms selected over the time period of study.

DISCUSSION OF FINDINGS

The data analysis presented findings on the effect of human capital, structural capital, and relational capital on the return on assets of listed downstream oil and gas firms in Nigeria from 2018-2022.

H_{O1}: Human capital was found to have no significant effect on return on assets, as the P-Value was 0.720 (>0.05), indicating a statistically insignificant relationship.

H_{O2}: Similarly, structural capital was found to have no significant effect on return on assets, with a P-Value of 0.420 (>0.05), suggesting a statistically insignificant relationship.

H_{O3}: In contrast, relational capital was found to have a significant effect on the financial performance of the listed firms, with a P-Value of 0.000 (<0.05), indicating a statistically significant relationship.

The results of the study align with some previous research but also differ from others, highlighting the complexity and varied findings in this area.

CONCLUSION AND RECOMMENDATIONS

In line with facts presented in the findings, the following conclusion is made: The human capital has an insignificant effect on financial performance of listed downstream oil and gas firms in Nigeria and that effect is positive. Human capital was statistically insignificant, implying that there is no true relationship between human capital and financial performance, structural capital has an insignificantly negative influence on financial performance. Structural capital was also statistically insignificant, implying that there is no true relationship between structural capital and financial performance and relational capital diversity significantly affects the financial performance. Relational capital diversity was found to be statistically significant, implying that there is a true relationship between relational capital diversity and financial performance. Firm size was seen to be statistically significant on the performance measure of return on assets of the companies studied.

Following the conclusion, this study therefore recommends the following: Downstream oil and gas firms in Nigeria should put in place boards that have a substantial number of directors, sufficient enough to carry out the oversight responsibility effectively for enhanced financial performance, companies should ensure that the members of the board have the knowledge, skills and experience to make a positive contribution to the board and the company in general for their overall financial performance, and the downstream oil and gas industry should concentrate more on increasing relationships between them and the outside world.

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

REFERENCES

Abdulaali, A. R. (2018). The Impact of intellectual capital on business organization. academy of accounting and financial studies. https://www.abacademies.org/articles/the-impact-of-intellectual-capital-on-business-organisation-7630.html

Abiodun Popoola, D. A. (2022). Structural capital efficiency and financial performance of listed oil and gas firms in Nigeria. *Amity Journal of Management Research, 13-20*. https://www.researchgate.net/publication/362413732

Abubakar, S. B. (2023). Impact of intellectual capital on financial performance of listed oil and gas firms in Nigeria. *FUDMA Journal Of Accounting and Finance Research, 13-20*. https://doi.org/10.33003/fujafr-2023.v1i2.43.88-101

Alameen, M. H.-A. (2021). The effect of relational capital efficiency on the receivable turnover ratio in Iraqi industrial companies: An empirical study. *Palarch's Journal of Archaeology, 13-20*. https://archives.palarch.nl/index.php/jae/article/view/7858

Andy Lockett, R. P. (2016). the development of the resource-based view: Reflections from Birgerwernerfelt. https://journals.sagepub.com/doi/abs/10.1177/0170840608094773?journalCode=ossa

Bingham, Lambe, I., Orbunde, Bemshima, & Ojeh. (n.d.). Effect of human capital resource on financial performance of listed oil and gas firms in Nigeria. *International Journal of Accounting and Finance (BIJAF), 2*(1), 2735–9476. Retrieved from http://34.29.95.55:8080/jspui/bitstream/123456789/545/1/Effect%20of%20Human%20Capital%20Resource%20on%20Financial%20Performance%20of%20Listed%20Oil%20and%20Gas%20Firms%20in%20Nigeria.pdf

Daferighe, E. E. (2019). Empirical investigation of determinants of financial performance of listed oil and gas companies in Nigeria. *East African Scholars*. https://www.easpublisher.com/media/features_articles/EASJEBM_212_714-729_c.pdf

Dhar, B. K. (2019). The impact of intellectual capital on organizational performance in the banking sector of Bangladesh. *Researchgate, 13-20*. https://d1wqtxts1xzle7.cloudfront.net/80766406/415009125pages.pdf?1644812048=&response-content-

Dorothy Aje Patrick Edem, P. A. (2022). Intellectual capital and market value of listed oil and gas firms in nigeria. *Uniben Journal of Accounting, 13-20*. https://www.researchgate.net/publication/362413680

Emmanuel Oyedokun, G. &. (2018). Impact of intellectual capital on financial performance of listed nigerian oil marketing companies. *Journal of Information and Knowledge Management*. www.iiste.org

Fathi, S. &. (2013). Impact of intellectual capital on financial performance. https://www.researchgate.net/publication/331687713

Huynh, N. Q. (2024). Firm-level political risk and intellectual capital investment: Does managerial ability matter. *International Review of Financial Analysis*. https://doi.org/10.1016/j.irfa.2023.103020

Isanzu, J. (2015). The impact of ownership structure on financial performance; A comparison study of two chinese banks. *International Journal of Management Science and Business Administration*. http://researchleap.com/wp-content/uploads/2015/12/3.-The-Impact-of-Ownership-Structure-on-Financial-Performance.pdf

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

Isola, W. A. (2023). Determinants of firms' performance in the nigerian. *Journal of Management Studies, 13-20*. http://usr.unilag.edu.ng/index.php/LJBFEI/article/view/1882

Kasoga, P. S. (2020). Does investing in intellectual capital improve financial performance. *Cogent Economics & Finance, 13-20*. https://doi.org/10.1080/23322039.2020.1802815

Khavandkar, E. T. (2015). Diffusion of intellectual capital management practices in science parks. Knowledge-based theory of the firm. (2020). https://www.researchgate.net/publication/322696326_Leading_the_Diffusion_of_Intellectual_Capital_Management_Practices_in_Science_Parks

Krstic, T. R. (2017). Intellectual capital in the theory of the firm. *ЕКОНОМИКА, 13-20*. https://www.easpublisher.com/media/features_articles/EASJEBM_212_714-729_c.pdf

Li, J. X. (2019). The impact of intellectual capital on SMEs' performance in China. *Journal of Intellectual Capital, 13-20*. https://doi.org/10.1108/JIC-04-2018-0074

Longjohn, C. O. (2021). Human capital accounting and firm performance: A study of oil and gas firms in nigeria. *Researchgate, 13-20*. https://www.researchgate.net/publication/350640802

Martí, J. M. (2007). In search of an intellectual capital comprehensive theory. *Electronic Journal of Knowledge Management, 13-20*. www.ejkm.com

Mohammad, H. S. (2018). Measuring intellectual capital using vaic calculator. International journal of academic research in business and social sciences. https://doi.org/10.6007/ijarbss/v8-i9/4607

Mutalib Anifowose, Rashid, A., Hairul Azlan Annuar, & Ibrahim, H. (2018). Intellectual capital efficiency and corporate book value: Evidence from Nigerian economy. *ResearchGate; Emerald*. https://www.researchgate.net/publication/324230052_Intellectual_capital_efficiency_and_corporate_book_value_evidence_from_Nigerian_economy

Neneng Susanti, V. W. (2020). Implications of intellectual capital financial performance and corporate values. *International Journal of Psychosocial Rehabilitation, 13-20*. https://www.researchgate.net/publication/348429381

Olamide Oluwabusola Akintimehin, A. A. (2019). Social capital and its effect on business performance in the Nigeria informal sector. *Heliyon 5*. https://doi.org/10.1016/j.heliyon.2019.e02024

Parham, S. a. (2015). The relationship between human capital efficiency and financial performance of dutch production companies. *Research Journal of Finance and Accounting*. https://pure.hva.nl/ws/files/4220544/The_Relationship_between_Human_Capital_Efficiency_and_Financial_Performance_of_Dutch_Production_Companies.pdf

Pitelis, C. (n.d.). Edith Penrose's organizational theory of the firm: contract,conflict, knowledge and management. *Palgrave Macmillan*. https://www.researchgate.net/publication/304694592_Edith_Penrose's_Organizational_Theory_of_the_Firm_Contract_Conflict_Knowledge_and_Management

Reena Bhattu Babajee, B. S. (2020). The determinant of hotel performance: An intellectual capital perspective. *Journal of Hospitality, Marketing and Management*. https://doi.org/10.1080/19368623.2020.1703870

Sardo, F., Serrasqueiro, Z., & Alves, H. (2018). On the relationship between intellectual capital and financial performance: A panel data analysis on SME hotels. *International Journal of Hospitality Management, 75, 67–74*. https://doi.org/10.1016/j.ijhm.2018.03.001

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ

Smriti, N., & Das, N. (2018). Antecedents and consequences of intellectual capital: The role of social capital, knowledge sharing and innovation. *Journal of Intellectual Capital, 19(5), 858–874*. https://fardapaper.ir/mohavaha/uploads/2019/07/Fardapaper-The-impact-of-intellectual-capital-on-firm-performance-a-study-of-Indian-firms-listed-in-COSPI.pdf

Theorizeit. (2020). Knowledge-based theory of the firm. https://is.theorizeit.org/wiki/Knowledge-based_theory_of_the_firm

Tjahjadi, N. S. (2020). Measures that matter: An empirical investigation of intellectual capital and financial performance of banking firms in Indonesia. *Journal of Intellectual Capital*. https://doi.org/10.1108/JIC-09-2019-0225

Wakeel Atanda Isola, B. N. (2019). Boardroom female participation, intellectual capital efficiency and firm performance in developing countries: Evidence from Nigeria. *Journal of Economics, Finance and Science*. https://doi.org/10.1108/JEFAS-03-2019-0034

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*. https://web.mit.edu/bwerner/www/papers/AResource-BasedViewoftheFirm.pdf

Yahaya, O. A. (2021). Intellectual capital management and financial. *Journal of Management Sciences*. https://www.researchgate.net/publication/351251138

Zuriawati Zakariaa, N. P. (2020). Does intellectual capital influence a firm's financial health. *International Journal of Innovation, Creativity and Change*. www.ijicc.net

Article DOI: 10.52589/AJAFR-IRPEBJCQ
DOI URL: https://doi.org/10.52589/AJAFR-IRPEBJCQ