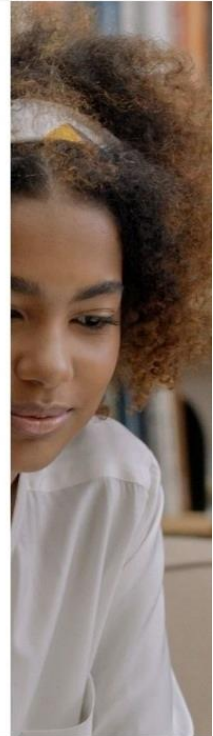




OMANARP INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT



| acadrespub.com



Vol. 1, Issue I, Pp. 13-20; JULY, 2025

RETHINKING INTELLECTUAL CAPITAL: DOES IT TRULY ENHANCE FIRM PERFORMANCE? A LITERATURE REVIEW PERSPECTIVE

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ABSTRACT

ARTICLE INFO

Received Date: 28th May. 2025

Date Revised Received: 30th May 2025

Accepted Date: 27th June, 2025

Published Date: 4th July. 2025

Citation: Otoide, M, O & Bosun-Fakule, Y (2025): Rethinking Intellectual Capital: Does It Truly Enhance Firm Performance? A Literature Review Perspective. OMANARP INTER. J. BUS. MGT Vol.1, Issues I Pp. 13 –20July,.2025.

This study explores the evolving discourse surrounding the role of intellectual capital in enhancing firm performance, emphasizing the shifting dynamics from tangible to intangible resources in the modern knowledge economy. Drawing on a wide array of scholarly literature, this study presents a comprehensive review of theoretical and empirical perspectives to examine whether intellectual capital genuinely contributes to organizational success. The study identifies three key components to include human, structural, and relational capital as central to the intellectual capital construct and critically examines the diversity of frameworks used to measure their impact. While numerous studies highlight a positive relationship between intellectual capital and firm performance, a significant number reveal contradictory findings, including negative correlations, often due to industry-specific variations, measurement methods, and differing performance indicators. By categorizing studies into positive and negative perspectives, the review sheds light on the ongoing debates and the complex interplay of mediating and moderating variables that influence outcomes. Moreover, it addresses methodological inconsistencies such as the widespread use of the Value-Added Intellectual Coefficient (VAIC) and its limitations in capturing the full spectrum of intellectual capital's contribution. This study concludes that although intellectual capital is generally acknowledged as a critical driver of competitive advantage, a universal understanding of its mechanisms and accurate assessment tools remains elusive. Consequently, it calls for future research to refine measurement approaches, broaden performance evaluation metrics beyond financial indicators, and explore strategic-level impacts of intellectual capital. The findings highlight the necessity for dynamic and industry-specific analyses to truly capture the value intellectual capital brings to firms in diverse economic landscapes.

Keywords: Intellectual Capital, Firm Performance, Value-Added Intellectual Coefficient (VAIC), Knowledge Economy, Strategic Assets

Introduction

The industrial revolution of the eighteenth century brought machinery in the production process thus minimized the use of human labour and placed emphasis on productive capital. The twenty-first century is the start of a new phase of development- which is being exploited by globalization and the advancement of technology. This trend has shifted the focus of traditional factors of production to the shortage of knowledge resources, and scholars have begun to study the relationship between knowledge and organizational performance (Wang, Wang, & Liang, 2014; Liao, Wang, Chuang, Shih, & Liu, 2010). Empirical evidence shows that information, knowledge, technology and intellectual resources are all working as key drivers of firm success. As a result, the knowledge economy claims intangible resources, knowledge, talent, and information, as essential aspects that strengthen organizational capacities (Allameh, Hosseini, Samadi, & Darikandeh, 2017).

Over the past few decades, the world economy has become more and more diverse, and corporate entities have recognized intellectual capital as one most important asset in terms of operations and management (Khan, Yang & Waheed, 2019). The modern market competition has expanded beyond the traditional dependence on tangible input, i.e., the natural resources, human labour and fixed production environments to favor intangible aspects like knowledge, intelligence and information (Stipic, Mesic and Mateljak, 2023). In turn, the main drivers of corporate value creation have changed (Zheng & Zhu, 2014), and intellectual capital has taken the lead over material capital. According to Ma and Guo (2023), the success of organizations in modern competitive environments depends on the continuous improvement of the mechanisms of value creation. In order to protect and develop competitive advantage, companies need to understand the strategic value of intellectual capital and realize its potential hidden value through the development of a well-rounded intellectual asset portfolio (Júnior, Rigo, Neu, Machado, Gerhardt & Siluk, 2023). However, the diversity of frameworks used to define and measure intellectual capital brings about a certain level of misunderstanding as to the role it plays in corporate performance and how exactly this role is played. However, to demystify these doubts, this study conducted a comprehensive literature review of the literature on the relationship between intellectual capital and performance measures.

Brief Overview of Corporate Intellectual Capital

The study of intellectual capital management has developed in three distinct phases. The initial phase involved the conceptualization of the field by the scholars who defined the essence of intellectual capital and

described its main components. The evaluation methods for intellectual capital form the basis of the second stage and the third stage investigates the applications of intellectual capital by linking intellectual capital to firm performance in addition to closing the gap between theory and practice (Yang, 2013). The initial two phases establish fundamental intellectual capital principles before the third stage which investigates performance outcomes of intellectual capital.

The Concept of Intellectual Capital

The construct of intellectual capital was first presented by American economist Calbraith in 1969. He theorized intellectual capital as an active form of capital that does not only generate knowledge but also helps organizations to attain their goals (Xu, 2014). Although Calbraith provided a definition of intellectual capital, his empirical study of the construct was not complete. Further, even after many academic definitions, intellectual capital still does not have a single definition. Existing literature defines intellectual capital in three major perspectives, namely, intangible assets and knowledge; ability; and firm value (Andriessen, 2001). This study adopts a broad definition of intellectual capital which includes all knowledge-based assets that organizations control for achieving competitive advantages and creating organizational value. The concept emphasizes value creation as the key factor that distinguishes intellectual capital from other intangible assets. Intellectual capital represents multiple valuable resources that demonstrate potential economic significance (REFERENCES). Notably, the diverse research approaches to intellectual capital result in scholars across different countries developing different conceptualizations of intellectual capital components. The research field contains two fundamental viewpoints which are dualism and trialism (Minbaeva, 2021). According to dualism human capital and structural capital form the core of intellectual capital but trialism defines intellectual capital through human capital and structural capital and relational capital.

Measuring Corporate Intellectual Capital

In the literature that exists on the measurement of intellectual capital, researchers have found 35 different methods of measuring intellectual capital. Due to the non-homogeneous nature of intellectual capital in industries and life-cycle phases, there is no technique that is universally accepted (Gao & Tang, 2012). The 35 techniques are classified into five: the market value and book value difference method, the scorecard method, the economic value-added method, the direct measurement method, and the intellectual capital value-added coefficient method. In particular, the intellectual capital value-added coefficient method is commonly used in the modern intellectual capital studies.

Intellectual Capital Firm Performance Nexus

The evolution of value creation now focuses on intellectual capital which includes knowledge technology and innovation (Bayraktaroglu, Calisir & Baskak, 2019; Hussinki, Ritala, Vanhala & Kianto, 2017). This shift requires a deep understanding of intellectual capital to boost firm performance ultimately generating value (Clarke, Seng & Whiting, 2011). Studies on the relationship between intellectual capital and corporate performance includes theoretical and empirical approaches as scholars have extensively investigated this nexus.

Theoretical Perspective

Scholars who have diverse disciplinary orientations have carried out intensive research on how intellectual capital can influence performance of firms using well-defined theoretical models. Boilton (2000) assumes that intellectual capital is the foundation of competitive advantage and driver of value creation in a continuum of knowledge-intensive organizations. Andriessen (2001) shows that corporate wealth is anchored in three major dimensions which include human capital, structural capital and relational capital. Firer & Stainbank (2003) divided intellectual value-added coefficient into three sub-components, namely material capital value-added coefficient, human capital value-added coefficient and structural capital value-added coefficient. According to Guthrie et al. (2007), it is empirically observed that human capital is a decisive factor in the formation of customer perceptions, but relational capital is a key driver of brand image, strengthening customer relationships, and thus promoting organizational success. Bontis, et al. (2013) outline the dynamic relationship between human capital, organizational capital, and relational capital, highlighting their synergistic effect on corporate success. The study argues that investments in employee knowledge development can greatly improve the quality of organizational products and services. Similarly, Fu (2009) focuses on the relationship between intellectual capital and firm performance, showing that intellectual capital is not only a source of value but also a driver of better business performance. Xu and Zhou (2010) advance the discussion by providing a theoretical analysis. Their study underscores intellectual capital as a fundamental driver of value creation, reinforcing its critical role in sustaining competitive advantage. Wangxi and Peng (2011) investigated the operational aspects of intellectual capital through studies on how human, relational and structural intellectual capital structures help businesses create value. Zhang (2015) examines the knowledge-intensive service enterprises in terms of customer participatory innovation, using the analytic hierarchy process (AHP) to establish the efficacy of

intellectual capital operations. The availability of specialized knowledge and skills, the size of customer information reserves and their renewability potential, and the ability to process the information in an efficient way are some of the major determinants of intellectual capital operational efficiency, thus improving corporate performance.

Further, scholarly consensus acknowledges that intellectual capital exerts a significant influence on corporate performance. However, the precise nature of the relationship between intellectual capital and firm performance remains subject to variation (Adegbayibi, 2021). Consequently, an understanding of mediating and moderating variables is essential when examining complex causal relationships (Kamukama, Ahiauzu, & Ntayi, 2010). Mediating variables play a critical role in elucidating the mechanisms through which independent variables influence dependent variables. Sun and Chen (2009) conducted a comprehensive investigation into the complexities of intellectual capital and its consequential effects on firm performance, delineating three principal mechanisms through which the relationship manifests. First, they identified a direct enhancement of firm performance attributable to intellectual capital. Second, they observed an indirect influence mediated through various intermediary variables. Finally, they highlighted the regulatory capacity of intellectual capital, wherein firms can strategically adjust variables to optimize performance outcomes. In a similar vein, Gao and Tang (2014) extended this line of inquiry by further examining the multifaceted impact of intellectual capital on firm performance. Their study corroborated the existence of direct, indirect, and regulatory effects, reinforcing the notion that intellectual capital serves as a pivotal determinant in shaping organizational success through complex interdependencies within the corporate ecosystem.

Empirical Perspective

Empirical research in this field involves scholars from various backgrounds employing diverse measurement to assess intellectual capital. They also gather data from different countries and industries to examine the correlation between intellectual capital and firm performance. Nevertheless, these studies arrive at different findings which have been categorized based on positive and negative directions.

Intellectual Capital and Firm Performance: Positive Perspective

Empirical studies have repeatedly shown that there is a strong positive relationship between intellectual capital and corporate performance when intellectual capital is considered as a composite construct. Riahi-Belkaoui (2003) used trademark holdings as a proxy variable of

intellectual capital and carried out a detailed analysis of multinational corporations in the service and manufacturing sectors of the United States and concluded that there is a significant, positive relationship between intellectual capital and overall corporate performance. In another equally intensive study, Tovstiga and Tulugurova (2007) explored the impact of intellectual capital on corporate value in small innovative companies in Russia. The authors reached this conclusion through questionnaires that intellectual capital has a significant positive impact on firm value. Bontis et al (2000) carried out a comparative study of intellectual capital and corporate performance in Canada and Malaysia by administering questionnaire. The results revealed that human capital, structural capital and customer capital have positive impact on organizational performance.

Wang et al. (2010) proved that structural capital is the main factor that determines performance in private enterprises. Afterward, Ahangar (2011) used the VAIC (Value Added Intellectual Capital) approach to quantify corporate-level intellectual resources. The regression model determined that intellectual capital has a significant, positive impact on financial performance. Amitava and Santanu (2012) used the same approach to examine the relationship between performance and intellectual capital among 65 Indian banks; the findings show that intellectual capital is essential in the development of competitive advantage among Indian banks. Yang (2013) examined the data of 95 listed companies in the automobile manufacturing industry in China for the period 2008 and 2011. The empirical findings reveal that capital employed, human capital and structural capital have a positive impact on corporate performance. In another similar study, Nan et al. (2015) used A-share-listed companies between 2007 and 2012. Using factor analysis, the researchers examined the link between intellectual capital investment and the efficiency of the operation of enterprises and concluded that intellectual capital investment positively affects the efficiency of the operation of firms. Akorede (2023) suggests that the management of intellectual capital is positively related to financial performance of firms in Nigeria. Uadiale and Uwuigbe (2011) also support this assertion by reporting that intellectual capital has a strong positive relationship with corporate performance by analyzing thirty-two audited financial statements of publicly listed firms in Nigeria.

Intellectual Capital and Firm Performance: Negative Perspective

Empirical studies have continuously found a negative relationship between intellectual capital and corporate performance; Vishnu and Kumar (2014) used VAIC approach to measure the relationship in the Indian pharmaceutical industry and found that there is a

statistically significant negative relationship between relational capital and overall corporate performance. In the same way, Daniel and Eliane (2014) conducted data-driven studies of a Brazilian real estate company for the period 2007 and 2011 using VAIC and found a similar negative correlation between intellectual capital and market value. A cross-sectional study conducted by Li and Li (2004) revealed that three aspects of intellectual capital, capital employed, structural capital, and human capital had a significant negative influence on corporate performance. Further, Wang (2006) carried out an empirical study of the best performing firms in China in 2003 using VAIC, correlation analysis and multiple regression analysis. The findings confirm the findings by Li and Li (2004) and show that there is a strong negative correlation between the elements of intellectual capital and corporate performance. Anifowose, Abdul Rashid, Annuar & Ibrahim (2018) reveal that human capital efficiency has a strong negative correlation with financial performance of listed firms in Nigeria.

Reasons for Variations in Empirical Outcomes

Within the extensive body of literature, an increasing number of scholars have reached the consensus that the correlation between intellectual capital and corporate performance varies. There is a school of thought that argues that the correlation between intellectual capital and firm performance varies across industries. Stevo (2012) conducted an empirical study on 134 companies in Bosnia and Herzegovina using the VAIC method. Through careful analysis, it was discovered that the various components of intellectual capital had a significant positive effect on the growth of exports in industries such as food, beverage, furniture, and woodwork manufacturing. However, no significant relationship was observed in other industries. According to Iuliia and Petr (2013), there exist variations in the relationship between intellectual capital investment activities and firm performance. Within the Russian retail and steel industries, the presence of skilled workers greatly enhances economic efficiency. Yang and Yan (2011) discovered that in the context of the traditional technology industry in Jiangxi Province, the key factor for enhancing performance lies in structural capital, with human capital having minimal impact. On the other hand, for high-tech enterprises, the improvement in performance is primarily driven by capital employed and human capital, with structural capital playing an insignificant role. Wang and Sun (2012) conducted a study using the VAIC method to analyze a sample of 336 enterprises in the bio-pharmaceutical industry and 208 enterprises in the textile and garment industry. Their findings revealed that the various components of intellectual capital have varying effects on the performance of different industries. In a study conducted by Mahesh et al. (2013), the VAIC method was employed

to analyze the data of Australian financial industry for the period 2006 to 2008 with the objective of examining the correlation between intellectual capital and corporate performance. The result show that Australian financial industry's performance is positively impacted by human capital.

However, it becomes apparent that there is a lack of consensus regarding the link between intellectual capital and firm performance. There are several factors that contribute to this: (1) differences in industries and countries under examination. Extant studies are frequently carried out within the framework of geographical area and sectors. Due to variations in sample data across regions and industries, the resulting conclusions may vary. (2) There are varying perspectives on the components that make up intellectual assets. Some studies based on dualism; Yu and Deng (2007), Lu and Huang (2009), Vishnu and Kumar (2014), Zheng and Zhu (2014), Tang and Zhao (2015). Due to the varying categorization of intellectual components, there will inevitably be variations in the assessment of intellectual capital and its constituent elements and interconnections. (3) The methods used to measure intellectual capital vary. For instance, Bontis et al. (2000), Wang et al. (2010) employed a questionnaire to assess intellectual capital. Ahangar (2011), Mahesh et al. (2013), and Wang (2006) also utilized similar methods while Liu (2014) utilized the VAIC method. Ahmed Riahi-Belkaoui (2003) explored trademark holdings as an alternative measure for intellectual capital. (4) The performance indicators of firms are different. Many researchers commonly utilize return on total asset (Lu & Huang, 2009; Liu, 2014) as the key factor for assessing corporate performance. Various indicators, including Tobin Q (Zheng & Zhu, 2014), gross income (Sun, 2014), and combinations of different indicators Tang and Zhao (2015) and Wang et al. (2010), are commonly employed to assess firm performance. Simply put, lack of consensus among scholars in the field of intellectual capital and measurement methods sparks numerous debates surrounding the accurate assessment of firm performance.

Conclusion and Suggestions for Further Studies

This study examines existing studies on the relationship between intellectual capital and firm performance. Extensive review has been conducted by scholars on the correlation between intellectual capital and firm performance which indicate that there is a significant connection between intellectual capital and how well a company performs. Nevertheless, it is evident that variations in industries and economic landscapes can lead to inconsistent conclusions when studying data from different years within the same industry. As a result, a handful of scholars have arrived at contradictory findings. There is still ongoing debate among academics regarding

the influence of human capital, structural capital, and relational capital on performance levels. Additionally, the exact mechanism by which intellectual capital affects firm performance is yet to be agreed upon in scholarly circles.

There are numerous approaches to quantifying intellectual capital, but it is still necessary to conduct further studies on whether the selection of different methodologies can accurately and efficiently assess intellectual capital. Further, the wide range of firm performance indicators presents a lack of comparability in the research findings. Therefore, it is noted that a singular performance index can only provide insight into a specific aspect of an enterprise's operations which falls short of comprehensively evaluating the overall benefits and growth potential of the entire organization.

Further, noting that accounting performance which has been widely employed in prior related literature is susceptible to the influence of accounting manipulation and various other factors, this study posit that such studies provide outcomes that cannot be fully trusted. Hence, with a deep understanding of the shortcomings in the relationship between intellectual capital and corporate performance, this study offers suggestions in the following areas:

1. There is still no consensus regarding the specific mechanism through which intellectual capital impacts corporate performance, be it through direct, intermediary, or moderating effects. Understanding the various factors that influence the link between intellectual capital and firm performance, as well as how the different elements of intellectual capital interact, presents an exciting avenue for further research.
2. There are 35 different methods available for measuring intellectual capital. Many of the previous studies, utilized the VAIC method which provides a partial reflection of the growth of intellectual capital within companies. Therefore, understanding the relationship between the VAIC, the VAIC efficiency of intellectual capital, and the role of intellectual capital is crucial. The results of various methods vary significantly, necessitating further studies to determine the most suitable method for evaluating intellectual capital of a specific industry.
3. Choosing the right indicator for evaluating firm performance is crucial when studying the correlation between intellectual capital and overall business performance. Prior research primarily concentrated on financial indicators, overlooking the crucial role of intellectual capital in the creation of firm value. However, it should be noted that when intellectual capital is combined with research on the correlation of firm

strategic performance evaluation systems, it becomes a more compelling strategic resource.

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