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The Evaluation of Intellectual Capital and Relationship with Firm Performance: A Systematic Review and Future Research Agenda

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Abstract

Theoretically, the goal of this publication is to assess the progress of research on intellectual capital and firm performance in order to identify prospects for future research agendas. The final selection of 29 publications published between 2001 and 2020 was made using a comprehensive literature review process. Emerald, ScienceDirect, and Harzing's Publish or Perish with API Key were utilized as the database sources in this study, with a set of inclusion/exclusion criteria for analysis to fulfill the paper's aim. The majority of studies have found that intellectual capital has a beneficial impact on business success. The concept has undergone extensive testing in both developed and underdeveloped nations. In the field of intellectual capital research, measuring and evaluating intellectual capital remains a difficult task. It has been measured using a variety of ways. Intellectual capital should be drawn from company strategy and related to the logic of value generation, with intellectual capital metrics being developed for individual sectors. Both financial and non-financial aspects of the firm's performance were employed to create a more realistic and holictic assessment. The importance of intellectual capital as an intangible resource for businesses in producing something and attaining success is revealed in this study.

Keywords
Intellectual capital; firm performance; systematic literature review

I. Introduction

In the current era of technology, businesses must compete internationally, and intellectual capital is recognized as a crucial source of competitive advantage, while financial capital is insufficient for strategic growth and long-term competitive advantage (Babajee et al., 2020; Kianto et al., 2010). As more companies see their core expertise as invisible assets rather than visible assets, intellectual capital is becoming a critical determinant for a firm's long-term profit and profitability in the knowledge-based economy (Itami & Roehl, 1987). The relevance of organizational learning capabilities, as well as how to produce, manage, and assess intellectual capital, is highlighted in this trend. In this era of globalised competition, there is widespread recognition that intellectual capital is a potent weapon for achieving and maintaining economic progress. Despite the fact that there are several classifications for intellectual capital, it is commonly defined as the combination of human capital, structural capital, and relational capital (Abdullah & Sofian, 2012; Ling, 2013; J. Mouritsen et al., 2001; Stewart, 1997).

After the world's apparent preoccupation with the information economy, intellectual capital has been one of the hottest study areas in the field of accounting and finance in recent years. Intellectual capital has long been seen as a vital resource for improving business performance and preserving a competitive edge in a rising economy (Jardon &

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Martos, 2012). As a result, in order to provide high-value products and services, businesses need invest in intellectual capital and make effective use of it. Researchers challenged the usefulness of traditional accounting-based performance measurements to describe a firm's actual performance and its relationship to intellectual capital. Because each of the measurement models established has benefits and limitations, picking the best suited model to employ is an ineffective activity because measurement is merely a tool that can be applied to unique corporate settings and conditions (Sawarjuwono, 2003).

Intellectual capital is defined as a company's capacity to produce value in a constantly changing global market. Human capital, relational capital, and structural capital are all part of it. This segment serves as the foundation for creating and measuring models (Hussinki et al., 2017; Inkinen, 2015). The financial and non-financial performance of a company is referred to as firm performance. Financial performance considers achieving specific goals and targets proposed by firm managers and owners, such as customer satisfaction and market growth. Nonfinancial performance considers achieving specific goals and targets, such as customer satisfaction and market growth, proposed by firm managers and owners (Smith, 1976).

The company cannot always determine the selling price of the product as desired, because several competitors offer a certain price. To produce products that have competitive prices and maintain good product quality to earn a profit, they must be able to sort out, workaround, or even reduce costs or activities that are not needed in the production process so that the profits to be obtained are more optimal. Therefore, a target costing. (Palulun, Y. et al. 2021)

Intellectual capital is a multi-dimensional notion that encompasses assets such as knowledge, experience, and practical talents that may be used to produce value (Campbell & Abdul Rahman, 2010; Dumay, 2016). Scientists generally agree that intellectual capital contributes to the creation and extraction of value for companies as a non-physical and non-monetary resource. Many scholars have looked at the issue of intellectual capital and its consequences in the past. Intellectual capital may boost a corporation's competitive advantage, according to empirical research, and it is also linked to high-level firm performance (Bontis et al., 2015; Handzic et al., 2016; Jain et al., 2017; Kujansivu & Lonnqvist, 2008; Maditinos et al., 2011; Massaro et al., 2015; Obeidat et al., 2017; Xu et al., 2019; Zéghal & Maaloul, 2010). However, Firer & Stainbank (2003) Human capital has a considerable negative association with corporate performance, according to the findings. Moreover, (Babajee et al., 2020) There is no link between intellectual capital and corporate success, according to experts.

The purpose of this article is to look at the intellectual capital stream. Theoretically, the goal of this publication is to assess the progress of research on intellectual capital and firm performance in order to identify prospects for future research agendas. The importance of intellectual capital as an intangible resource for businesses in attaining success is revealed in this study.

Therefore, the research question of this article as:

RQ1. How is the development of the literature discussing the intellectual capital and firm performance since 2001-2020?

RQ2. What theory can be developed to address the research gap in the intellectual capital and firm performance?

RQ3. What the future research direction regarding intellectual capital and firm performance?

The following is the structure of this article: The authors give the current conceptual framework on intellectual capital and firm performance after providing the motivation for

researching this issue. The authors will then describe the study methodology and the data collection resource. Then proceed to the analytical results and discussion of this research to demonstrate the outcomes of this investigation. Finally, the authors will discuss the study's key findings, limitations, and future research directions.

II. Research Method

Through a systematic literature review (SLR), a process of identifying, assessing, and synthesizing material, this research draws on theoretical evidence published in academic publications concerning the link between intellectual capital and firm performance (Denyer & Tranfield, 2009). The systematic literature review (SLR) was employed because it permitted a systematic examination of a sample of articles. The goal to enhance information on the studied issues in the academic sector drove the usage of the systematic literature review (SLR) approach. The significance of this research approach is that it allows for the expansion of existing information in the literature and, as a result, the achievement of a good in-depth study through a rigorous, organized, and repeatable research pattern (Booth et al., 2012; Denyer & Tranfield, 2009; Tranfield et al., 2003).

The literature review process is carried out in five stages, consist of (Denyer & Tranfield, 2009):

(1) *Step 1*: Structure the formulation of the question
(2) *Step 2*: Determine the location/ place
(3) *Step 3*: Study selection and evaluation (inclusion and exclusion filters)
(4) *Step 4*: Analysis
(5) *Step 5*: Reporting and using the result.

The first is to formulate questions to fulfill the objectives and to analyze publications on intellectual capital and firm performance from 2001 to 2020. The second step is to locate the study in the journal database. Identifying the database, defining the search engine, and picking the literature search terms are all tasks conducted at this stage (Denyer & Tranfield, 2009). In this study, literature on intellectual capital and firm performance was taken from publishers Emerald, Science Direct and used the search engine Harzing's Publish or Perish combined with the Scopus API Key. The third is determining the selected journals for articles that meet the criteria according to the inclusion and exclusion criteria, the articles that meet the criteria are separated for re-sorting (Figure 1) and the criteria used in the study can be seen in Table 1. Some articles were found from the specified source after entering the search strings "Intellectual Capital" AND "Firm Performance" in the keywords and titles. In this study, the authors did not include the conference proceedings and excluded some identified papers if they did not meet the predetermined criteria.

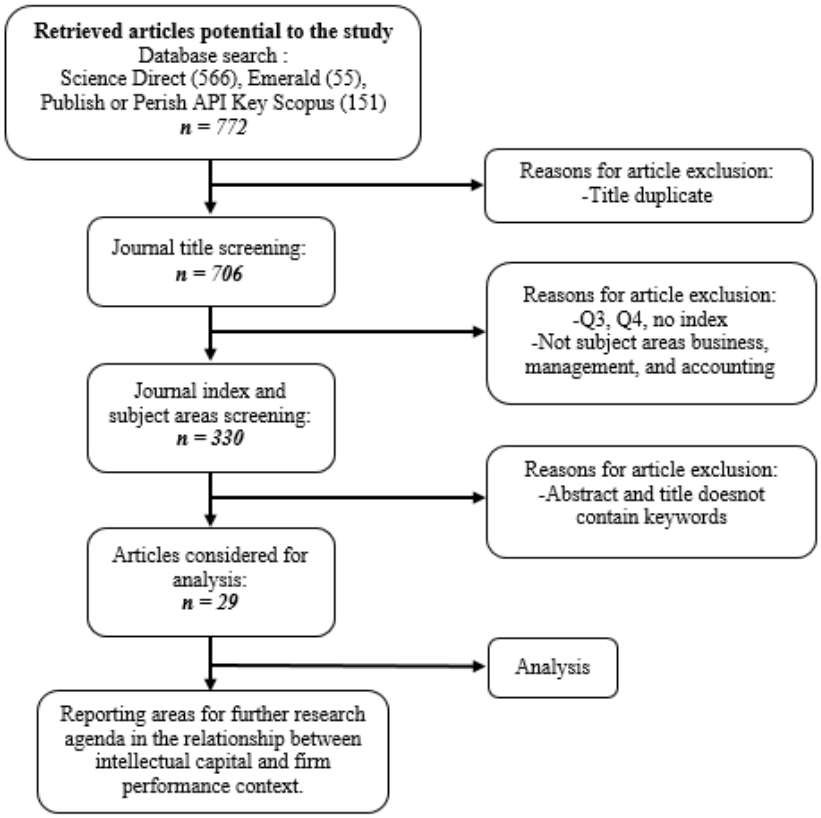


Figure 1. *Step-by-step articles selection process, analysis, and reporting*

Table 1. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Articles published during 2001-2020	All articles published before 2003
Title screening	Duplicate
Academic journals ranked Q1 and Q2	Journal ranked below Q2
Journals are selected according to the subject area (business, management, and accouting) and only discussing the IC and firm performance	Subject areas does not contain business, management, and accounting
Abstract and tittle containing keywords "Intellectual Capital" AND "Firm Performance Full text and snowballing from the refrence lists	Abstract and title does not contain keywords

The fourth is conducting analysis selection to describe a study conducted by an individual and identifies the relationship between these parts (Denyer & Tranfield, 2009). The final goal is to find research gaps as a basis for further research agenda. Last, the fifth stage of the report on the results of the study that will be used as material for further research. At this stage, the last step in the literature review process is reporting the stages of how the review process was carried out and reporting the results of the study as a whole (Denyer & Tranfield, 2009). The report discusses the development of research in the context of intellectual capital and firm performance which can then be used as a reference in the next research agenda direction.

III. Result and Discussion

In the literature review, one main classifications of articles were found, namely only empirical paper and by different measurement methods, to discuss developing literature of intellectual capital and firm performance. Based on Table 2, although only there are one in research approach, the researcher's main objective is to review the relationship between intellectual capital and firm performance, and provide opportunities for the following research agenda direction. Current research relied intellectual capital and resource-based view theory as guidance to solve the research problems. Resource-based view theory is the supporting theory that elucidates managing intellectual capital is strategic resources and capabilities for gaining competitive advantage (Barney, 1997).

The development of RBT is quite rapid, especially in proving its consistency by using empirical studies in various fields of science. The area that first developed it was strategic management (Moran & Meso, 2011; Ray et al., 2004; Spanos & Lioukas, 2001) which later developed into other disciplines, such as Accounting (Henri, 2006; Tom, 2010). Based on this theory, these results imply that a combination of the right type of knowledge management strategy with the right form of intellectual capital will enhance a firm's performance, although neither the technology-centered nor the people-centered approach should be overused. It can be concluded that the resources owned by the company affect the company's performance which in turn will increase the value of the company.

The difficulty in standardizing the measurement of intellectual capital or global performance in any meaningful way (Ling, 2013). Intellectual Capital measurement methods are grouped into two groups, namely: non-monetary measurements and monetary measurements. One method of measuring intellectual capital with a non-monetary assessment is the Balanced Scorecard by Kaplan and Norton, while the intellectual capital measurement method with a monetary assessment, one of which is the Pulic model known as VAICTM. Researchers should use more comprehensive measurement, both qualitative and quantitative. Hence, future research will produce more comprehensive results (Ekaningrum, 2021).

The final sample is made up of 29 articles drawn from 15 different journals. Table 3 summarizes the distribution of articles in each journal, highlighting the journal's disciplinary area as defined by the Scimago Journal and Rank (SJR) (SJR, 2020).

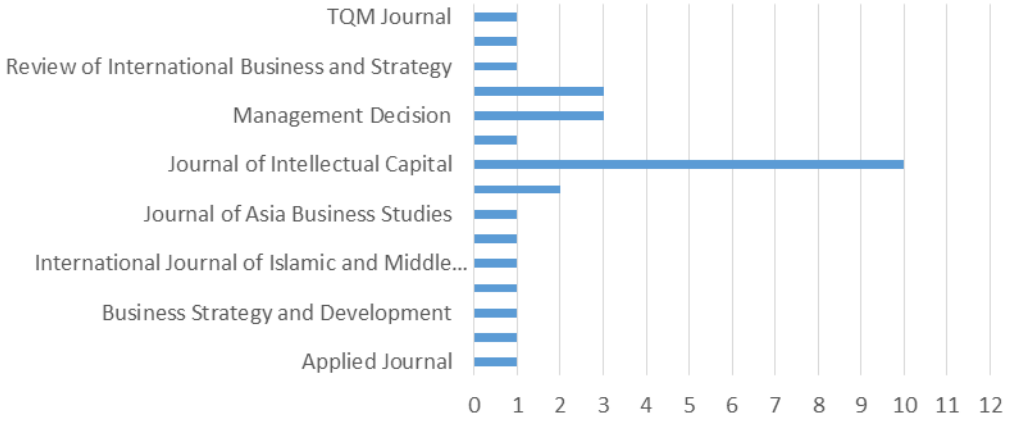
Table 2. Distribution of article

Journal	SJR (2020)	IF (SJR)	References
Applied Journal	0,57	Q2	*Mohapatra et al. (2019)*
Asia Pacific Journal of Management	1,07	Q1	*Ling (2013)*
Business Strategy and Development	0,49	Q1	*Khattak & Shah (2020)*
European Management Journal	1,37	Q1	*Sydler et al. (2014)*
International Journal of Islamic and Middle Eastern Finance and	0,49	Q2	*Hamdan (2018)*

Management			
Journal of Accounting in Emerging Economies	0,44	Q2	*Kaawaase et al. (2020)*
Journal of Asia Business Studies	0,61	Q1	*Soetanto (2018)*
Journal of Business Research	2,05	Q1	*McDowell et al. (2018); Wang et al. (2016)*
Journal of Intellectual Capital	1,26	Q1	*Ahmed et al. (2020; Bayraktaroglu et al. (2019); Belkaoui (2003); Clarke et al. (2011); Hussinki et al. (2017); Jardon & Martos (2012); Scafarto et al. (2016); Smriti & Das (2018); Wang & Chang (2005); Xu & Li (2020)*
Journal of Management and Governance	0,47	Q2	*(Pucci et al., 2015)*
Management Decision	0.92	Q1	*(Bollen et al., 2005; Z. Wang et al. 2014; Wang, et al. 2016)*
Measuring Business Excellence	0,34	Q2	*(Alipour, 2012; Kehelwalatenna, 2016; Nadeem et al., 2017)*
Review of International Business and Strategy	0,56	Q2	*(Maji & Goswami, 2016)*
Sustainability	0,61	Q1	*(Xu et al., 2019)*
TQM Journal	0,54	Q2	*(Torre et al., 2020)*

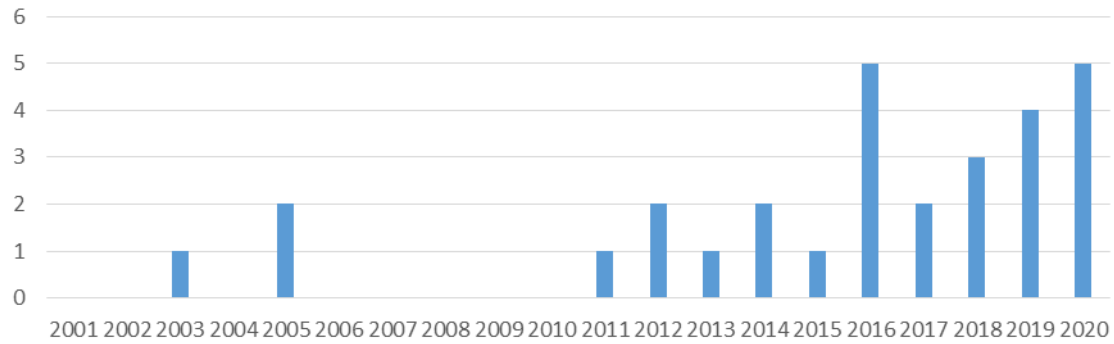
The journal of Intellectual Capital has the most papers (10), accounting for 34% of the sample. This journal focuses on high-quality research articles as well as authoritative commentary on intellectual capital and firm performance. Overall, 69% of publications appear in the top journals (Q1) and 31% in (Q2). The articles are scattered in several research journals with varying amounts. The most frequently found articles were those published in the Journal of Intellectual Capital with a total of ten, there were three articles published in the Management Decision and Measuring Business Excellence journals, two articles in the Journal of Business Research, and one each article was published in the Applied Journal, Asia Pasific Journal of Management, Businesss Strategy and Development, European Management Journal, International Journal of Islamic and Middle Eastern Finance and Management, Journal of Accounting in emerging Economies, Journal of Asia Business Studies, Journal of Management and Governance, Review of International Business and Strategy, Sustainability, and TQM Journal (Figure 2).

Figure 2. Journal distribution according to journal name



Research on intellectual capital and firm performance to grow from year to year since 2001 until now. The highest number of articles containing intellectual capital and firm performance is in 2020, which is six articles. This shows that research interest in the context of intellectual capital and firm performance is still wide open. Of the 29 articles that meet the criteria for a systematic literature review published between 2001-2020, this shows an increase from previous years (Figure 3).

Figure 3. Documents Published in intellectual capital by year 2001-2020



3.1 Discussion

Intellectual capital is one of the areas that scholars are interested in studying as part of the growing literature on intellectual capital and corporate performance. Intellectual capital has long been recognized as one of the most important aspects of a firm (Serenko & Bontis, 2013). Table 2 the research on the link between intellectual capital and corporate performance is summarized. A large number of studies have found that intellectual capital has a favorable impact on corporate performance. This concept has been explored extensively in both developed and underdeveloped nations. Where the corporate environment is rapidly changing, intellectual capital is particularly dynamic. Ståhle & Hong (2002), because dynamic intellectual capital has a much to do with a firm's strategy and business environment, the term "dynamic intellectual capital" is used here. In dynamic

multinational corporate situations, it is also an ideal notion to express the inventive character of information.

Intellectual capital dimension. There has been a lot of research on intellectual capital and company performance, and it adds to development science. Intellectual capital has been divided into distinct dimensions and metrics based on the 29 articles chosen as the sample. Depending on the standpoint from which it is regarded, intellectual capital has three aspects. People capital, which is based on human resources, structural capital, which is based on organizations, and lastly relational capital, which is based on managing the organization's relationship with its surroundings (Hamdan, 2018; Carlos Maria Jardon & Dasilva, 2017; Ling, 2013; Sydler et al., 2014; Xu & Li, 2020).

Intellectual capital measurement. There are numerous notions of intellectual capital measurement proposed by scholars nowadays in terms of measurement. However, the methodologies established may be divided into two categories: non-monetary (non-financial) measures and monetary (financial) measurements. The Skandia Navigator, the balanced scorecard approach, the market capitalization technique, the VAIC model, and the MVAIC model are just a few of the methodologies that have been created to quantify intellectual capital. The VAIC model is one of them, and it is generally acknowledged in academia (Belkaoui, 2003; Hamdan, 2018; Mohapatra et al., 2019; Pulic, 2000; Sydler et al., 2014). Each model established has benefits and disadvantages, therefore choosing which model is the most suited to use, according to the author, is an improper activity, because measurement is simply a tool that can be used to a scenario and condition with certain criteria. While intellectual capital reporting is done using non-financial metrics and publishing it as a supplement to the annual report.

Firm performance measurement. Although research has looked at the link between intellectual capital and organizational performance, organizational performance measurements may not always represent a firm's global competitiveness or ability to compete in the global market. Some studies have simply looked at financial components of a company's success, such as equity, assets, or other market-based indicators (Clarke et al., 2011; Hamdan, 2018; Kehelwalatenna, 2016; Mohapatra et al., 2019; Smriti & Das, 2018; Sydler et al., 2014). Other research has solely looked at non-financial components of organizational success, such as innovation (Jardon & Martos, 2012; Kaawaase et al., 2020; Khattak & Shah, 2020; Wang, et al., 2016) or exporting trends. (Mavridis, 2005).

In this context, a generic model to quantify intellectual capital is needed; it may not fit all firm demands, but it will serve as a better reference idea in the intellectual capital literature. The logic of value creation should be related to intellectual capital, which should be generated from company strategy (Kannan & Aulbur, 2004; Stewart, 1997). It's tough to compare organizations' intellectual capital indicators since they're so distinctive. Developing accounting systems and methods that can handle the changing nature of intellectual capital is a difficult task. Examining the Historical Concept is one option. Using the narratives and experiences of organizational workers to characterize social interactions, knowledge amongst individuals, collective knowledge, and grasp the environment is a viable way for incorporating a collective view in intellectual capital evaluation (Dumay & Roslender, 2013; Mouritsen et al., 2001; Mouritsen, 2006). The mechanism for measuring intellectual capital must be inextricably linked to the company's strategy.

Differences in performance across organizations induced by differences in the company's internal features, according to the resource-based strategy approach, are more crucial than the size of the market position. As a result, rather of just reacting to the market, strategic decision-making necessitates an assessment of the firm's resources and

skills (Helfat & Peteraf, 2009). This means that indicators should be chosen based on the firm's strategy rather than external expectations in order to facilitate learning and development.

To address the challenge of evaluating intellectual capital, it is preferable to utilize a set of numbers, but story and visualization must also be included as a method of assessing intellectual capital in organizations, even those that are not numerical. The use of statistics to categorize and characterize the interrelationships in intellectual capital as well as corporate performance is possible with such a complete examination. It also makes sense of context through narrative and other forms of social construction. This strategy has been utilized by a number of people Dumay & Roslender (2013); This shows that intellectual capital research incorporates not just quantitative but also qualitative elements, and Mouritsen (2006) Future study should include both qualitative and observational features, according to the authors. Concentrating on specific acts that can be used to generate intellectual capital instruments.

Resource-Based Theory approach, it can be concluded that the resources owned by the company affect the company's performance which in turn will increase the value of the company. These theory can be used to develop new propositions for measuring intellectual capital and firm performance, as shown below:

Proposition 1. To enable learning and development, intellectual capital dimention should be selected based on firm strategy and not external demands.

Proposition 2. To overcome the difficulty of measuring intellectual capital, it is better if the measurement uses a set of numbers and must also include narrative and visualization as an approach to assessing intellectual capital in firms, including non-numeric ones it also uses narrative and other means of social construction to make sense of context.

Proposition 3. To provide a more realistic and holistic view, both financial and non-financial aspects (global initiatives) were used to measure a firm performance.

IV. Conclusion

The systematic review of intellectual capital and business performance aims to offer an overview of the topic's evolution over the previous two decades, following the world's apparent interest with the knowledge economy. After that, you'll need to analyze the articles you've chosen and then critically analyze them to see how they vary. Intellectual capital is defined in this research as an organization's ability to produce value in a global market that is always changing. Human capital, relational capital, and structural capital are all part of it. The majority of studies have found that intellectual capital has a beneficial impact on business success. The concept has undergone extensive testing in both developed and underdeveloped nations. In the field of intellectual capital research, measuring and evaluating intellectual capital remains a difficult task. To assess intellectual capital, a variety of methodologies have been developed.

Indeed, assembling a collection of intellectual capital performance metrics that are capable and acceptable for increasing organizational performance through knowledge-based creation is still difficult. The majority of performance criteria are concerned with the quality of output rather than the quantity. It is well acknowledged that "quality" is difficult to describe in broad terms and much more difficult to quantify. Output is a frequent criterion for evaluating quality (eg, customer satisfaction and peer review). Because

information is transformed, reinterpreted, and updated according to its application, the dynamic nature of knowledge influencing performance makes it even more difficult to describe. Standard standards for evaluating the link between intellectual capital and performance are difficult to come by.

Although several typologies and taxonomies seek to quantify intellectual capital in a universal manner, it is important to understand that knowledge is always a contextual phenomena with significant local and institutional components. Institutions vary in terms of regulative, normative, and cultural-cognitive dimensions across organizational and social settings. Institutions impact the relative worth and usefulness of information by influencing how human agency and decision-making are valued and presented.

First, establish measurement of intellectual capital in certain industries, which is a future study strategy that we may suggest (eg hotel industry, banking, and non-profit industry sectors). Second, new ways of looking at how different components of intellectual capital interact. Lastly, the importance of intellectual capital in innovative business models (for example, start-ups), as well as decision-making in intellectual capital disclosure (ICD). One of the planned future research advancements is the incorporation of resource-based theory.

Finally, the findings are confined by the research criteria utilized, notwithstanding the rigor. Nonetheless, the study's findings may be useful to scholars and practitioners interested in the area, particularly in terms of giving an overview of the present state of the art and implications for future research, intellectual capital, and business performance evaluation. The suggested paradigm may be useful to researchers and practitioners seeking for a comprehensive method to measuring intellectual capital and firm performance.

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