

Research Paper

A Decade of Research on Intellectual Capital in Indonesia: Systematic Literature Review

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ABSTRACT

The present study aims to scrutinize empirical evidence related to the study of intellectual capital in Indonesia. The study conducts an analysis of 60 articles from Scopus-indexed and SINTA-indexed journals over the observational period spanning from 2012 to 2023. The methodology employed in this study is the charting field method. Notably, the findings reveal that financial performance serves as the predominant metric in the exploration of intellectual capital in Indonesia over the course of a decade. Nevertheless, our mapping results unveil a critical gap in the research landscape, specifically, the inconsistency in the relationship between intellectual capital and financial performance proxies such as Return on Assets (ROA), Return on Equity (ROE), Price-to-Book Value (PBV), and Debt-to-Equity Ratio (DER). It is our aspiration that future research concerning the subject of intellectual capital will extend their scope to non-financial performance dimensions and incorporate qualitative data analysis, surveys, interviews, or the incorporation of Environmental, Social, and Governance (ESG) indicators within the context of intellectual capital exploration in Indonesia.

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Introduction

Intellectual capital represents intangible assets that can create value for a company, encompassing patents and copyrights (Van Nguyen et al., 2022). According to Wahyudi and Puspita (2015), efficient management of intellectual capital results in enhanced economic growth and sustainable competitive advantages for a company. Furthermore, Susanti et al. (2020) delineate several components of intellectual capital, comprising: a) Human Capital, associated with employee skills, intelligence, attitude, commitment, creativity, and learning ability. b) Employed Capital, which pertains to the knowledge held by a company for transforming human capital into added value. c) Structural Capital, encompassing information systems, technology, organizational structure, and production systems within the company. d) Customer Capital or relational capital represents a company's ability to interact with external stakeholders, such as customers and suppliers. Establishing these business relationships is crucial for future company sustainability (Cahyaningrum & Atahau, 2021).

Intellectual capital can be in the form of informational resources and knowledge that serve to enhance competitiveness. As per Widowati and Hutami (2017), intellectual capital is defined as intangible assets such as knowledge and experience, which can be harnessed to generate intellectual wealth, such as creating value for a company. The success of a business relies on the company's policies in utilizing various forms of capital, encompassing financial, physical, and intellectual capital. Consequently, this can augment the financial performance of the company (Augustinah et al., 2022). Efficient and effective management of intellectual capital can lead to improved economic growth and the attainment of a competitive advantage for the company (Aska & Kurniasih, 2022).

Prior research has explored the relationship between intellectual capital and a company's financial factors, as evidenced by Firmansyah and Fajarini (2012) and Nandaria and Kusuma (2014). Their studies indicate that intellectual capital has a positive influence on financial performance, measured through metrics such as return on assets, return on equity, price to book value, asset turnover ratio, net profit margin, and gear ratio. It is evident that effectively managed intellectual capital can create value-added, driving a company's performance. These findings align with research by Simarmata et al. (2016), Appah et al. (2016), Marcelia and Purnomo (2016), and Murinda et al. (2021), which assert that intellectual capital has a positive impact on financial performance, measured using return on assets and Tobin Q. In essence, when a company optimally manages its resources, it can generate added value, enhance its competitive advantage, and boost its financial performance. However, research by Widhiastuti and Ipwija (2016) and Nandaria and Kusuma (2014) suggests that intellectual capital has a non-significant negative impact on market performance, proxied by Tobin Q. This implies that investors tend to prioritize short-term gains in financial returns and often overlook the human resource aspect when making investment decisions.

Research into intellectual capital, represented by its components like human capital, structural capital, employed capital, and relational capital, when connected to a company's financial performance, has yielded diverse results. For example, Simarmata et al. (2016) found that structural capital has no influence on financial performance, measured through price to book value and return on assets. Still, human capital and employed capital have a positive impact on financial performance, proxied by return on assets. However, when financial performance is proxied by price to book value, only human capital has a positive

effect, while employed capital does not influence it. These results differ from [Surjandari and Minanari's \(2019\)](#) research, which suggests that structural capital has a positive impact on financial performance, proxied by return on assets, while human capital and employed capital have no influence on financial performance proxied by return on assets.

Previous researchers have also conducted studies related to intellectual capital in the context of non-financial performance. For instance, [Andraeny and Diana \(2017\)](#) found that employed capital has a significant positive impact on the performance index related to zakat performance, suggesting that intellectual capital can enhance the success of Islamic banks in paying zakat. When a Sharia bank's net assets are higher, it is required to pay a larger zakat. In this regard, the management's ability to efficiently handle its physical assets has the potential to increase the net assets of a Sharia bank. Furthermore, research by [Gantino et al. \(2019\)](#) and [Patrisia et al. \(2022\)](#) states that intellectual capital has a positive influence on competitive advantage, emphasizing that maximizing the use of a company's intellectual capital can drive the creation of competitive advantages.

Based on the previous research, studies on intellectual capital have been conducted, but the focus has been mainly on financial and non-financial performance indicators. Future research on the topic of intellectual capital should be more comprehensive, not limited to financial and non-financial aspects alone but should encompass a broader perspective. Effective optimization of intellectual capital can lead to a competitive advantage. Literature reviews related to intellectual capital are still relatively rare in Indonesia. Therefore, the author is motivated to conduct this literature review with the aim of identifying relevant indicators related to intellectual capital based on previous research conducted in Indonesia from 2012 to 2023. The results of this research can provide new insights and serve as a reference for future researchers in expanding and broadening the knowledge of intellectual capital in various sectors.

Method

This study adopts the Systematic Literature Review (SLR) method, which is a component of qualitative research. The primary aim of SLR is to explore the development of a specific research topic and ultimately identify research gaps ([Villas et al., 2008](#)). This kind of research is conducted by mapping a topic from various perspectives using published articles, books, and other sources as analytical material. Therefore, it is crucial to seek high-quality sources such as articles published in reputable journals. According to [Faraji et al. \(2022\)](#), there are three steps in conducting a literature review: data collection, data compilation, and data analysis. An example of a study that employs the SLR method is the one conducted by [Hesford et al. \(2006\)](#) on management accounting. This study is bibliographic research in the field of management accounting, using a sample of 916 articles from ten journals published from 1981 to 2000, employing both mapping and community analysis approaches. In Indonesia, systematic literature reviews have been carried out by [Ernawati and Aryani \(2019\)](#) on the implementation of IFRS, reviewing 30 articles indexed in SINTA 2, [Muslim and Setiawan \(2020\)](#) on tax avoidance, reviewing 77 articles indexed in SINTA 2, [Herawati and Bandi \(2017\)](#) on the development of taxation in Indonesia over 20 years, reviewing 83 nationally accredited articles, [Amri and Aryani \(2021\)](#) on financial distress, reviewing 28 articles indexed in SINTA 2, and [Nursulistyo et](#)

al. (2022) on carbon emission disclosure in Indonesia, reviewing 30 articles indexed in SINTA 2.

In this study, the researchers employ the charting field method, as outlined by Hesford et al. (2006). The Charting the Field method involves the classification of articles and journals based on their topics and research methodologies. The classification based on research topics is divided into consequence and antecedent variables. Consequence variables pertain to those discussing factors leading to a particular occurrence, with intellectual capital being the focus in this study. Conversely, antecedent variables are those influenced by or influencing intellectual capital. This study analyzes articles on intellectual capital in Indonesia, collected from Scopus-indexed journals and SINTA 1 and 2 accredited journals registered from 2012 to 2023. The reason for selecting Scopus-indexed articles is their high reputation, strict review processes, and adherence to high-quality standards. Furthermore, the choice of SINTA 1 and 2 indexed journals is grounded in the fact that these articles represent high-quality national publications.

To access Scopus-indexed articles, the researchers conducted online searches on the website www.scopus.com. The search was performed using the keyword "intellectual capital data in Indonesia," followed by the selection of relevant articles. On the other hand, to access SINTA-indexed articles, the researchers conducted online searches on the website <https://sinta.kemdikbud.go.id/>, limiting the search to the fields of accounting, management, business, and economics. The search focused on the topic of intellectual capital within the scope of Indonesian data. This search yielded 10 articles from 7 Scopus-indexed journals, as shown in Table 1. However, when searching SINTA 1 journals, the researchers did not find the required articles, while a search in SINTA 2 journals yielded 50 articles from 26 journals. In the subsequent stage, the researchers categorized the articles based on their titles, authors, publication years, samples, data, and findings, following the methodology presented by Okoli and Schabram (2012).

Results

Research on Intellectual Capital

The exploration process yielded 60 articles available online, indexed in Scopus, and accredited by SINTA 2. The researchers extracted bibliographic information from these articles, including the article title, journal name, volume and issue number, publication year, page numbers, author names, and affiliated research institutions. Table 1 presents information on journals that have published research on intellectual capital in Indonesia. The majority of these studies were published in the Journal of Accounting Dynamics, which accounts for 7 articles, or 12% of the total. The second-most prolific journal is the Accounting Analysis Journal, which published 6 articles, comprising 10%. The third-most active journals, with 5% each, include the Journal of Accounting and Auditing, Asset, Journal of Accounting and Education, the Journal of Economics, Business, & Accountancy Ventura, Shirkah: Journal of Economics and Business, Media Riset Akuntansi, Auditing & Informasi, and the Journal of Intellectual Capital, together publishing 18 articles. The fourth group includes journals such as the Journal of Accounting and Finance Review, the Asset Accounting Research Journal, the Scientific Journal of Accounting (JIA), the International Journal of Law and Management, Social and Behavioral Sciences, accounting for 3% each, and collectively publishing 10 articles. The fifth group, with a 2%

representation, includes journals such as the Accrual Journal of Accounting, Asset Accounting Research Journal, Media Economics and Management, the EJA Accounting Journal, the E-Journal of Accounting, the Journal of Accounting and Finance, the Journal of Economics and Islamic Finance, the Journal of Accounting and Management, the Business Strategy Journal, the *Economica: Journal of Islamic Economics*, the Journal of Management and Entrepreneurship, *Minds: Management of Ideas and Inspiration Journal*, the Organization and Management Journal, the International Journal of Islamic Business and Economics, the Modernization Economics Journal, the International Journal of Productivity and Performance Management, the Journal of Asia Business Studies, the Review of International Business and Strategy, the Journal of Economics and Business, collectively contributing 19 articles.

Table 1. Article Classification about Intellectual Capital

No	Journal	Abbreviation	Number of Article	Percentage
1.	Accounting Analysis Journal	AJJ	6	10%
2.	Akrual Jurnal Akuntansi	AKRUAL	1	2%
3.	Jurnal Aset Akuntansi Riset	JURNAL ASET	1	2%
4.	Jurnal Akuntansi dan Auditing	JAA	3	5%
5.	Jurnal Dinamika Akuntansi	JDA	7	12%
6.	Media Ekonomi dan Manajemen	DINAMIKA	1	2%
7.	EJA- Jurnal Akuntansi	EJA	1	2%
8.	Jurnal Review Akuntansi dan Keuangan	JRAK	2	3%
9.	Asset, Jurnal Akuntansi dan Pendidikan	ASSET	3	5%
10.	E- Jurnal Akuntansi	EJA	1	2%
11.	Journal of Economics, Business, & Accountancy Ventura	VENTURA	3	5%
12.	Shirkah: Journal of Economics and Business	SHIRKAH	3	5%
13.	Jurnal Aset (Akuntansi Riset)	AKUNTANSI Riset	2	3%
14.	Jurnal Akuntansi dan Keuangan	JAK	1	2%
15.	Media Riset Akuntansi, Auditing & Informasi	MRAAI	3	5%
16.	Jurnal Ekonomi & Keuangan Islam	JEKI	1	2%

No	Journal	Abbreviation	Number of Article	Percentage
17.	Jurnal Akuntansi dan Manajemen	JAM	1	2%
18.	Jurnal Siasat Bisnis	JURNAL SIASAT	1	2%
19.	Economica: Jurnal Ekonomi Islam	ECONOMIKA	1	2%
20.	Jurnal Manajemen dan Kewirausahaan	JMK	1	2%
21.	Jurnal Minds: Manajemen Ide dan Inspirasi	JURNAL MINDS	1	2%
22.	Jurnal Organisasi dan Manajemen	JOM	1	2%
23.	International Journal of Islamic Business and Economics	IJEBEC	1	2%
24.	Jurnal Ekonomi Mordenisasi	JEM	1	2%
25.	JIA (Jurnal Ilmiah Akuntansi)	JIA	2	3%
26.	International Journal of Law and Management	IJLM	2	3%
27.	Social and Behavioral Sciences	PROCEDIA	2	3%
28.	Journal of Intellectual Capital	JIC	3	5%
29.	International Journal of Productivity and Performance Management	IJPPM	1	2%
30.	Journal of Asia Business Studies	JABS	1	2%
31.	Review of International Business and Strategy	RIBS	1	2%
32.	Jurnal Ekonomi dan Bisnis	JEB	1	2%
Total			6	100%

Classification of Articles based on the Research Method

Table 2 presents information regarding the research methods utilized by these articles. The data analysis results indicate that 90% of the research on Intellectual Capital employ secondary data analysis, obtained from financial reports and sustainability reports. The analytical tools commonly used include multiple linear regression, Smart Partial Least Squares (PLS), and panel regression. Several studies employ these analytical

tools (Soetanto & Liem, 2019; Sujati & Januarti, 2021; Appah et al., 2023; Yustyarani & Yuliana, 2020; Lestari & Suryani, 2020). Furthermore, the survey method, utilizing questionnaires and interviews, constitutes 10% of the research. In this study, six articles employ the survey method.

Table 2. Classification of Articles based on the Research Method

No	Method	Number of Article	Percentage
1.	Secondary data analysis	54	90 %
2.	Survey	6	10 %
	Total	60	100%

Article Distribution based on Financial and Non-Financial Factors

The researchers classified the topics of the articles based on Hesford et al.'s (2006) methodology. Intellectual capital articles were categorized as a consequence variable affecting financial and non-financial performance. Financial performance indicators include Return on Assets (ROA), Return on Equity (ROE), Asset Turnover (ATO), Price-to-Book Value (PBV), Total Asset Turnover (TAT), Debt-to-Equity Ratio (DER), Net Profit Margin (NPM), Price Earnings Ratio (PER), Tobin's Q (Tobin Q), Earnings per Share (EPS), Corporate Social Responsibility (CSR), Price-to-Sales Ratio (PSR), and Financial Distress. Non-financial performance indicators encompass CSR, Strategy Innovation, Competitive Advantage, ZAKAT, Good Corporate Governance (GCG), and ISO 21001. Table 3 presents the distribution of articles concerning the relationship between financial and non-financial performance influenced by intellectual capital as a consequence variable.

Table 3 informs that Return on Assets (ROA) is the most frequently used indicator by Indonesian researchers in the development of the intellectual capital topic over the course of a decade, with ROA processing results accounting for 27%, while PBV accounts for 18%, and ROE accounts for 14%. Conversely, financial performance indicators less commonly utilized by Indonesian researchers include Asset Turnover (ATO), Net Profit Margin (NPM), Tobin's Q, and Earnings per Share (EPS), each with a percentage of 4%. Total Asset Turnover (TAT), Debt-to-Equity Ratio (DER), Price Earnings Ratio (PER), and Price-to-Sales Ratio (PSR) each have a percentage of only 2%. Furthermore, non-financial performance indicators such as Good Corporate Governance (GCG) and Competitive Advantage account for 6%, while the ZAKAT indicator comprises 4%. Lastly, Corporate Social Responsibility (CSR) and ISO 21001 each have a percentage of 2%.

Table 3. Article Distribution with Intellectual Capital as Consequence Variable

Dependent Variable	Frequency	Percentage
ROA	15	27%
ROE	8	14%
ATO	2	4%
PBV	10	18%
TAT	1	2%
DER	1	2%

Dependent Variable	Frequency	Percentage
NPM	2	4%
PER	1	2%
TOBIN Q	2	4%
EPS	2	4%
CSR	1	2%
PSR	1	2%
ZAKAT	2	4%
Financial Distress	1	2%
GCG	3	5%
Competitive Advantage	3	5%
ISO 21001	1	2%
Total	60 Artikel	100%

Moreover, Table 4 contains information regarding the classification of articles based on the components of each intellectual capital element. These components include human capital, employed capital, structural capital, and relational capital as consequence variables affecting both financial and non-financial performance. Table 4 also demonstrates that the ROA variable exhibits a 35% percentage as a financial performance influenced by human capital, 40% as a financial performance influenced by employed capital, 20% as a financial performance influenced by structural capital, and 25% as a financial performance influenced by relational capital.

Table 4. Article Distribution based on the Component of Intellectual Capital

Human Capital			Employed Capital			Structural Capital			Rational Capital		
Indicator	2012-2023		Indicator	2012-2023		Indicator	2012-2023		Indicator	2012-2023	
ROA	6	35%	ROA	4	40%	ROA	2	20%	ROA	1	25%
ROE	3	18%	ROE	1	10%	ROE	2	20%	PBV	1	25%
PBV	2	12%	PBV	2	20%	PBV	2	20%	NPM	1	25%
NPM	1	6%	TOBIN Q	1	10%	NPM	1	10%	Competitive Advantage	1	25%
Stock Price	1	6%	Stock Price	1	10%	Stock Price	1	10%			
TOBIN Q	1	6%				TOBIN Q	1	10%			
ICD	1	6%	ICD	1	10%	ICD	1	10%			
Inovation	1	6%									
Organisasi on Culture	1	6%									
Total	17	100%		10	100%		4	100%			

Furthermore, the researchers classified intellectual capital articles as antecedent variables influenced by both financial and non-financial performance. Table 5 presents the distribution of articles on financial and non-financial performance affecting

intellectual capital variables. In the analysis presented in Table 5, the Return on Asset (ROA) indicator holds a percentage of 26%. Furthermore, the Price-to-Book Value (PBV) indicator has a percentage of 11%. The Debt-to-Equity Ratio (DER) and Net Profit Margin (NPM) indicators each have a percentage of 7%. Price Earnings Ratio (PER), Tobin's Q, and Market-to-Book Ratio (MB) each have a percentage of 4%. Meanwhile, non-financial indicators such as foreign ownership have a percentage of 11%, managerial ownership has a percentage of 7%, and industry type, audit quality, Good Corporate Governance (GCG), and Innovation each have a percentage of 4%.

Table 5. Article Distribution based on Intellectual Capital as Antecedent Variable

Independent Variable	Frequency	Percentage
ROA	7	26%
ATO	1	4%
PBV	3	11%
DER	2	7%
NPM	2	7%
PER	1	4%
Tobin Q	1	4%
MB	1	4%
Type of Industry	1	4%
Managerial Ownership	2	7%
Foreign Ownership	3	11%
Audit Quality	1	4%
GCG	1	4%
Innovation	1	4%
Total	27	100%

Mapping the Cause-Effect Relationship

From the 60 articles on intellectual capital, the researchers establish cause-and-effect relationships based on factors that influence or are influenced by intellectual capital. Subsequently, these 60 articles are classified into two groups, namely financial and non-financial performance. [Luft and Shields \(2006\)](#) assert that causal relationships can be categorized into six models, including the additive model, intervening variables, moderating variables, independent variable interactions, recursive cycles, and non-recursive reciprocity. The researcher identified several articles that elucidate cause-and-effect relationships, with two articles employing intervening variables ([Patrisia et al., 2022](#); [Hariyati et al., 2019](#)), and one article using moderating variables ([Faeni et al., 2023](#)). From the analysis of these cause-and-effect relationships, the researcher constructs a map of intellectual capital research conducted in Indonesia.

Based on Figure 1, the researchers concludes that research on intellectual capital as a consequence variable still requires further examination. This is evident from the inconsistent results regarding the relationship between intellectual capital and both financial and non-financial performance. The inconsistency in this research can be attributed to various factors such as the research period and the sample used in the

studies. Table 6 shows list of articles with intellectual capital as a consequence variable.

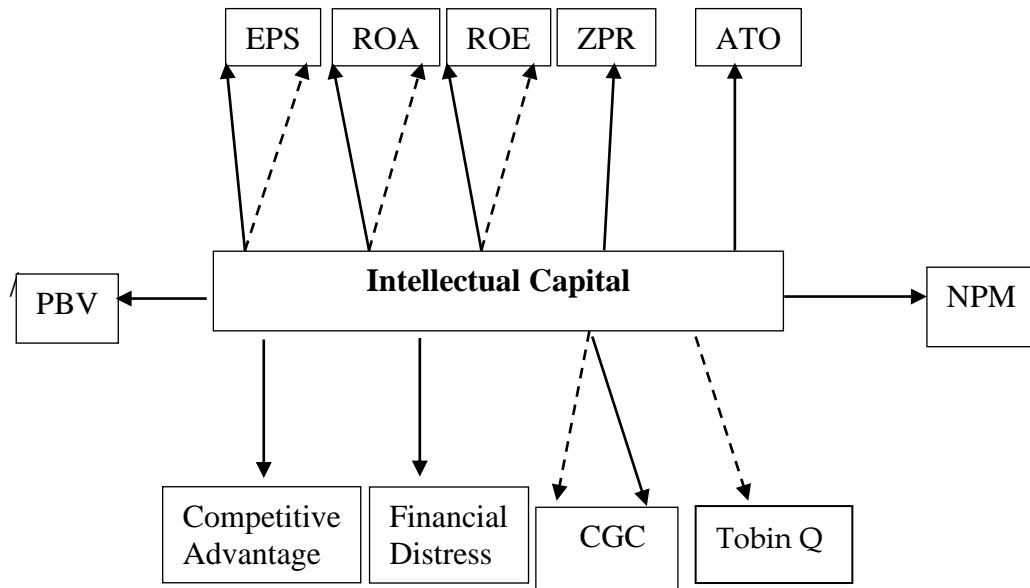


Figure 1. Intellectual Capital as Consequence Variable

Table 6. List of Articles with Intellectual Capital as Consequence Variable

No.	Journal	Author	Result
1.	Accounting analysis journal	Sara Monica Simarmata & Badingatus Sholikah (2015)	Intellectual Capital berpengaruh has positive influence on financial performance measured using ROA and ATO.
2.	Akrual jurnal akuntansi	Achmad Syaiful Nizar & Moch. Khoirul Anwar (2015)	Intellectual Capital has positive influence on financial performance (ROA) of Islamic banks.
3.	Jurnal asset akuntansi riset	Erlita Marcelia & Budi S. Purnomo (2016)	Intellectual Capital has positive influence on company value proxied by PBV.
4.	Jurnal akuntansidan auditing	Desnoni Nandaria & Hadri Kusuma (2014)	Intellectual Capital affects ROA ,ROE and ATO.
5.	Jurnal Akuntansi dan Auditing	Linda Kusumaning Wedari (2016)	Intellectual Capital has positive influence on market value proxied by Tobin Q.
6.	Jurnal dinamika akuntansi	Indah Fajarini S.W & Riza Firmansyah (2012)	Intellectual Capital has positive influence on DER, ROA, TAT, and ROE.
7.	Jurnal dinamika akuntansi	I Gusty Ayu Nyoman Budiarsih (2015)	Intellectual capital has positive influence on financial performance (ROA).
8.	Jurnal dinamika akuntansi	Elizabet Hutami Widowati, Nurmadi	Intellectual Capital has positive influence on financial

No.	Journal	Author	Result
		Harsa Sumatra, Noel Singgih Haryo Pradono (2016)	performance (ROA).
9.	Jurnal dinamika akuntansi	Beti Dwi Lestari & Ani Wilujeng Suryani (2020)	Intellectual Capital affects company value proxied by Tobin Q.
10.	Jurnal dinamika akuntansi	Windie Yustyarani dan Indah Yuliana (2020)	Intellectual Capital has significant positive influence on ROA, PBV but does not have influence on ROE.
11.	Dinamika akuntansi	Niswah Baroroh (2013)	Intellectual Capital has positive on ROA, ROE, and DER.
12.	Eja -jurnal akuntansi	Rilla Gantin, Endang Ruswanti, Agung Mulyo Widodo (2023)	Intellectual Capital has positive influence on company value proxied by PBV and business strategy.
13.	ASSETS Jurnal Akuntansi dan Pendidikan	Amrie Firmansyah & Yusuf (2020)	Intellectual capital does not have influence on EPS.
14.	E-jurnal akuntansi universitas udayana	Ike Faradina & Gayatri (2016)	Intellectual capital has positive influence on ROA.
15.	ASSETS Jurnal Akuntansi dan Pendidikan	Cindy Calista Gunawan & Fidiana Fidiana (2021)	Intellectual capital has positive influence on ROE.
16.	Jurnal aset (akuntansi riset)	Ahmad Waluya Jati, Aviani Widyastuti, & Wardatul Jannah (2023)	Intellectual capital has positive influence on company's financial performance proxied by ROA and also has positive influence on GCG.
17.	Jurnal akuntansi dan keuangan	Setyarini Santoso (2012)	Intellectual Capital does not have influence on financial performance proxied by ROA, MB, and ATO.
18.	Jurnal Reviu Akuntansi dan Keuangan	Cut Sri Murinda, Islahuddin, & Nuraini A (2020)	Intellectual Capital memiliki pengaruh positive pada nilai perusahaan yang diprosikan dengan Tobin Q.
19.	Media riset akuntansi, auditing & informasi	Susanti Widhiastuti (2016)	Intellectual Capital has influence on financial performance proxied by ERM.
20.	Jurnal ekonomi & keuangan islam	Tri Wahyudi, Gita Puspita (2022)	Intellectual Capital has positive influence on zakat performance and good corporate governance.
21.	Jurnal Akuntansi dan Manajemen	Josofiene Johan Marzoeki (2018)	Intellectual capital has positive and significant influence on financial company proxied by ROA.
22.	Media riset akuntansi, auditing & informasi	Dwi Fitri Puspa & Arie Frinola Minovia, Zaitul	Intellectual Capital has positive influence on value

No.	Journal	Author	Result
23.	Jurnal siasat bisnis	(2022) Dina Patrisia, Muthia Roza Linda, Abror (2020)	relevance. Intellectual Capital has positive influence on competitive advantage.
24.	Journal of Economics, Business, and Accountancy Ventura	Dri Asmawanti S, Indah Oktari Wijayanti (2017)	Intellectual Capital has positive influence on CSR.
25.	Jurnal manajemen dan kewirausahaan	Anastasia Dian Cahyaningrum & Apriani Dorkas Rambu Atahau (2020)	Intellectual Capital does not have influence on market risk capital but has positive influence on banking performance proxied by ROA.
26.	Shirkah: Journal of Economics and Business	Dita Andraeny & Dessy Diana Putri (2017)	Intellectual capital has positive influence on ZPR, PSR, and DER.
27.	Shirkah: Journal of Economics and Business	Bima Cinintya Pratama, Karin Maharani Sasongko, Maulida Nurul Innayah (2019)	Intellectual capital has positive influence on company value proxied by PBV.
28.	JIA (jurnal ilmiah akuntansi)	Muhamad Muslih & Wima Rizky Aqmalia (2020)	Intellectual capital has significant and positive influence on financial performance proxied by ROA.
29.	JIA (jurnal ilmiah akuntansi)	Jana Susila, I. B. Anom Purbawangsa, Henny Rahyuda, & Luh Gede Sri Artini (2023)	Intellectual capital has positive influence on good corporate governance and company value proxied by PBV.
30.	Social and Behavioral Sciences	Isfenti Sadalia & Arlina Nurbaity Lubis (2015)	Intellectual capital has positive influence on good corporate governance.
31.	Journal of Intellectual Capital	Noorlailie Soewarno & Bambang Tjahjadi (2020)	Intellectual capital has positive and significant influence on financial performance proxied by ROA and ROE.

Moreover, based on Figure 2, Figure 3, Figure 4, and Figure 5, the researcher finds that financial performance proxied by ROA, ROE, PBV, and NPM still warrants further examination, as the research outcomes continue to exhibit inconsistency. Furthermore, it is not solely the financial performance but also the inconsistency in intellectual capital's impact on non-financial performance. Intellectual capital represents knowledge that can provide benefits to a company and contribute to its added value.

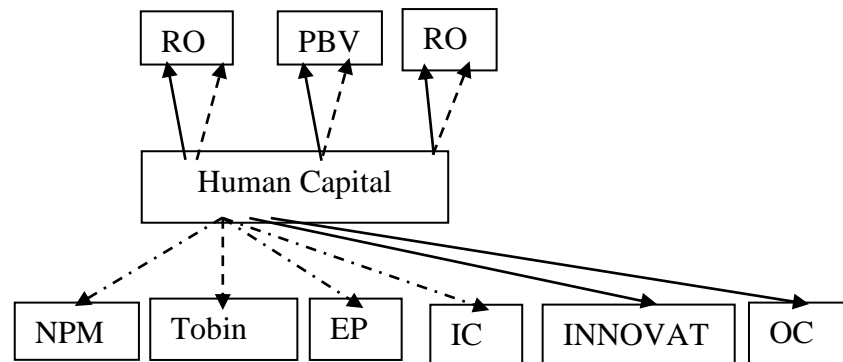


Figure 2. Intellectual Capital as Consequence Variable of Human Capital

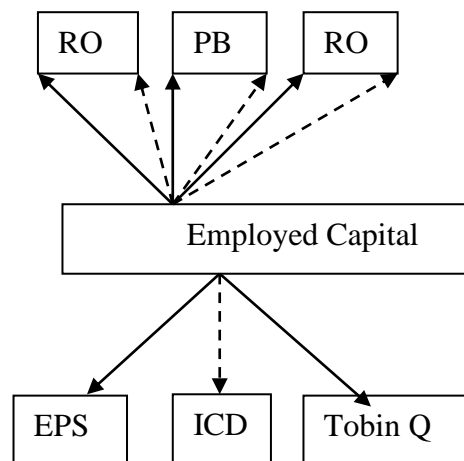


Figure 3. Intellectual Capital as Consequence Variable of Employed Capital

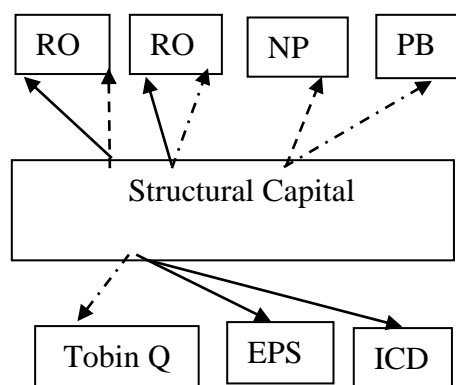


Figure 4. Intellectual Capital as Consequence Variable of Structural Capital

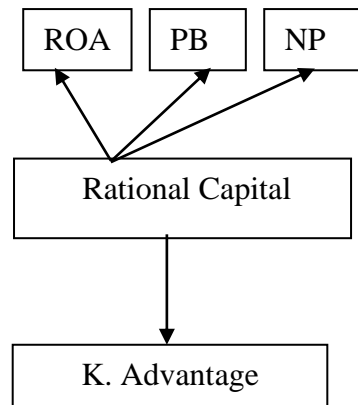


Figure 5. Intellectual Capital as Consequence Variable of Rational Capital

Table 7. List of Articles Mapping Components of IC as Consequence variable

No.	Journal	Author	Result
1.	Accounting Analysis Journal	Rhoma Simarmata & Subowo 2016	Human capital has influence on ROA & PBV. Employed capital has influence on ROA but does not have influence on PBV, while structural capital does not have influence on ROA & PBV.
2.	Jurnal Dinamika Akuntansi	Dwi Asih Surjandari (2019)	The three components of IC (Employed capital, human capital and structural capital) do not have influence on financial performance (ROA).
3.	Media Ekonomi dan Manajemen	Thapenes Roy Appah (2023)	All components of IC have influence on ROA. Employed capital and structural capital has influence on company value proxied by Tobin Q, but human capital does not have influence on Tobin Q.
4.	Jurnal Reviu Akuntansi dan Keuangan	Nur Fadjrih Asyik (2019)	All components of IC (human capital, structural capital, and employed capital) has positive influence on financial performance proxied by ROE.
5.	Jurnal Reviu Akuntansi dan Keuangan	Khrisna Adisatya Sujati, Indira Januarti (2019)	Structural capital and human capital have influence on ROE, while employed capital does not.
6.	ASSETS Jurnal Akuntansi dan Pendidikan	Febrianty & Jovan (2018)	All components of IC have influence on NPM, but only structural capital and human capital have influence on ROE.

No.	Journal	Author	Result
7.	Jurnal Minds: Manajemen Ide dan Inspirasi	Renea Shinta Aminda et al. (2020)	All components of intellectual capital (human capital, structural capital, and employed capital) have significant influence on PBV and ROA
8.	Jurnal Organisasi dan Manajemen	Fedianty Augustinah et al. (2022)	All components of intellectual capital such as VAHU, VACA, STVA have significant influence on business performance.
9.	Jurnal Ekonomi Mordenisasi	Nindia Destiani Aska & Augustina Kurniasih (2022)	Human capital has influence on stock price, while employed capital and structural capital do not have any influence on stock price.
10.	Accounting Analysis Journal	Tia Pipit Naovila & Agus Wahyudin (2015)	All components of intellectual capital (employed capital, human capital, and structural capital) do not have influence on intellectual capital disclosure.
11.	Journal Of Asia Business Studies	Tessa Soetanto and Pei Fun Liem (2018)	Human capital, structural capital, and employed capital have influence on firm performance proxied by ROA and MBV, but Rational Capital do not.
12.	Review of International Business	Dewi Puspaningtyas Faeni et al. (2023)	Human capital and rational capital have influence on business performance moderated by innovation.
13.	International Journal of Law and Management	Nirwana Nirwana (2018)	Human capital has influence on company culture, but does not have any influence on organizational financial performance.

Furthermore, based on Figure 6, the researcher discerns that the ROA and DER indicators as financial performance variables influencing intellectual capital still yield inconsistent results. This inconsistency in the research may be attributed to various factors, including differences in the research period, the sample employed, and variations in the analytical tools used.

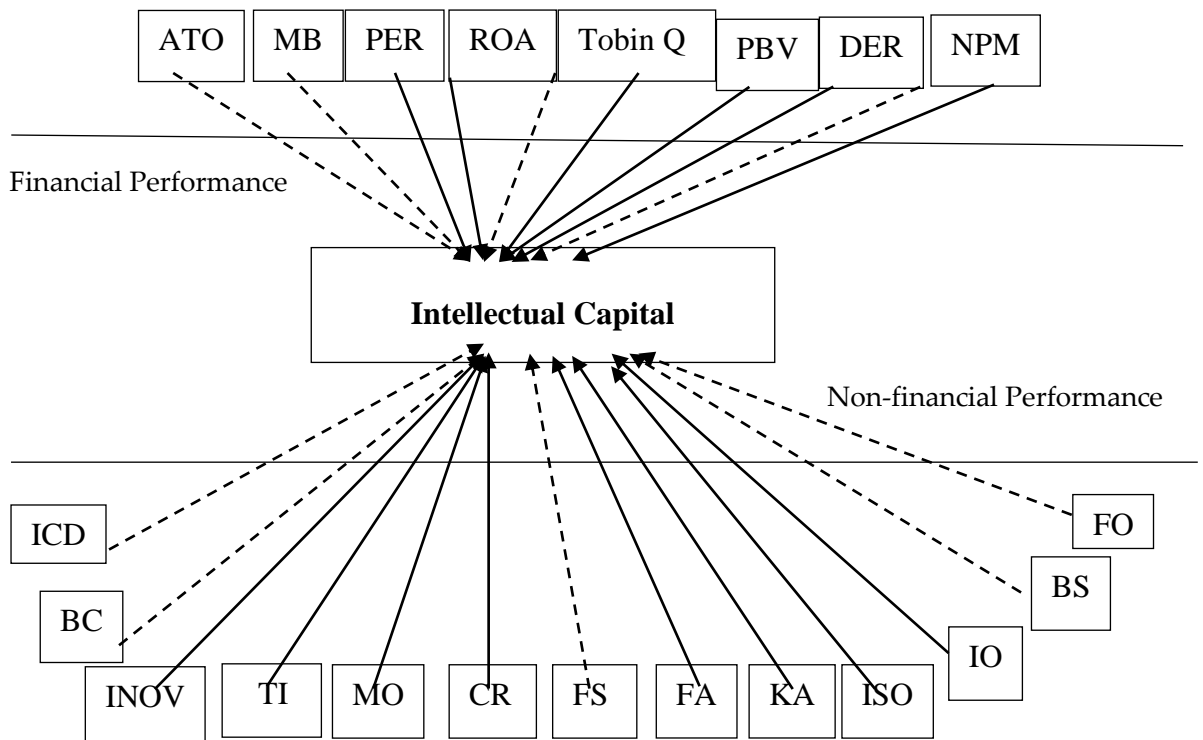


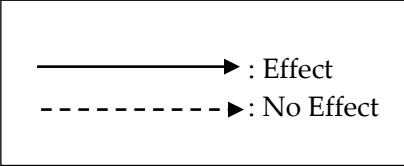
Figure 6. Intellectual Capital as Antecedent Variable

Table 8. List of Articles with Intellectual Capital as Antecedent Variable

No.	Journal	Author	Result
1	Accounting Analysis Journal	Intan Ika Pradita & Adingatus Solikhah (2017)	Type of Industry, Manager Ownership, and Company Risk have influence on Intellectual Capital, but Institutional Ownership and Foreign ownership do not.
2	Accounting Analysis Journal	Achmad Syaiful Nizar & Moch. Khoirul Anwar (2015)	Financial performance measured by ROA has positive influence on Intellectual Capital
3	Jurnal Akuntansi Dan Keuangan	Saorce Elsy Hatane, Nadya Gomes, Waisiyana Sastrawati (2017)	Noar Size and Board Compotion has no influence on Intellectual Capital, while Board Meeting, and Firm Size has an influence on Intellectual capital, and Leverage has a negative influence on the Intellectual capital.
4	Journal of Economics, Business, & Accountancy Ventura	Rosanda Asmara Hakiki & Erida Herlina (2022)	Foreign Ownership and Institutional Ownership has no influence on Intellectual Capital Performance.
5	Shirkah: Journal of Economics and Business	Andi Surya (2023)	Firm Value measured by PBV has a positive influence on intellectual capital and financial performance measured by

No.	Journal	Author	Result
6	Jurnal Aset (Akuntansi Riset)	Indri Kartika, Maya Indriastuti, & Sutapa (2021)	ROA has a positive influence on Intellectual Capital. Intellectual Capital has a positive influence on financial performance measured by NPM.
7	Economica: Jurnal Ekonomi Islam	Setyo Budi Hartono (2017)	Audit quality has a positive influence on intellectual capital.
8	International Journal of Islamic Business and Economics	Karimatul Hidayah & Ade Adityawarman (2017)	Market conservation has a positive influence on intellectual capital, while barriers to entry and bank size has no influence on intellectual capital
9	Accounting Analysis Journal	Eloking Surya Sekar Mahardika, Muhammad Khafid, & Linda Agustina (2014)	Managerial ownership, institutional ownership, foreign ownership, and firm size has a significant influence on intellectual capital performance.
10	Journal of Intellectual Capital	Bambang Tjahjadi, Noorlailie Soewarno & Elga Astri (2021)	Management system-organizational (ISO) performance has a positive influence on intellectual capital
11	International Journal of Productivity and Performance Management	Noorlaili Suwarno & Bambang Tjahjadi (2018)	Strategic innovation has a positive influence on intellectual modal and financial performance proxied by ROA has a positive influence on intellectual modal.

Notes and Abbreviation

EPS	: Earning per Share	KA	: Quality of Audit Intellectual capital
ROA	: Return on Asset	ICD	: Disclosure Market to book
ROE	: Return on Equity	MB	: Ratio
ZPR	: Zakat Performance Ratio	TI	: Type of Industrial Material
ATO	: Total Asset Turnover	MO	: Ownership
PBV	: Price to book value	CR	: Company Risk
NPM	: Net Performance margin	FS	: Firm Size
CA	: Competitive Advantage	FA	: Firm Age
GCG	: Good Corporate Governance	KA	: Audit Quality
ISO	: ISO 21001	INNOV	: Innovation
FD	: Financial Distress	IO	: Ownership
TAT	: Total asset turnover	FO	: Foreign Ownership
DER	: Dept Equity Ratio	BS	: Board Size
PER	: Price Earning Ratio	BC	: Board Composition
TOBIN Q	: Tobin Q		
CSR	: Corporate Social Responsibility		
PSR	: Price Sales Ratio		
NPL	: Non Performing Loan		
BOPO	: <i>Beban Operasional terhadap Pendapatan Operasional</i>		
LDR	: Loan to Deposit		

Discussion

Based on the analysis of 60 articles related to the intellectual capital topic during the period 2012-2023, it is evident that researchers in Indonesia have been more inclined to select internal factors of companies, namely financial performance, as the indicator of choice for intellectual capital research over the past decade. As indicated in Tables 3, 4, and 5, financial performance proxied by ROA, ROE, and PBV has been the favored choice among Indonesian researchers. However, the mapping results in Figures 1, 2, 3, 4, 5, and 6 reveal that financial factors such as ROA, ROE, DER, and PBV still exhibit inconsistent results. This inconsistency can be attributed to various factors, including differences in the research period, samples used, and different analytical tools. According to [Febrianty and Febriantoko \(2019\)](#), financial performance reflects the extent to which a company can manage its intellectual capital. If a company can maximize the management of its intellectual capital, thereby enabling its human resources to consistently and skilfully innovate, it can be ensured that the company's revenue will increase. Therefore, the better the intellectual capital of a company, the higher its profitability ([Wahyudi & Puspita, 2022](#)).

According to [Muhammad et al. \(2021\)](#), a high Price-to-Book Value (PBV) can indicate that the market highly values a company's assets and intellectual capital. Conversely, a low PBV indicates that the market has concerns about the company's future performance. This can be due to internal company issues, industry pressures, or other external factors. Debt-to-Equity Ratio represents a company's ability to settle debts, both short-term and long-term, with funds derived from the company's capital. Strong intellectual capital can help a company gain easier access to debt or equity financing, and strong intellectual capital in a company can manage debt wisely, thus reducing the risk of using debt ([Ika Pradita & Solikhah, 2017](#)).

Non-financial performance indicators, such as good corporate governance and innovation strategy in achieving competitive advantage, are indicators that should not be overlooked. This is because non-financial performance indicators in measuring IC not only help organizations manage their intellectual assets better but also enable them to make better strategic decisions that can influence their growth and business sustainability in the future. Intellectual capital is a long-term investment that may not yield immediate financial returns. Therefore, non-financial performance indicators can assist organizations in measuring long-term achievements and identifying potential risks or opportunities in the future ([Hakiki & Herlina, 2022](#)).

In the era of advancing technology, the challenges associated with intellectual capital research are becoming more relevant and promising for future development, especially when integrating intellectual capital into the digitalization strategy of information systems in both the industrial and educational sectors. This approach is crucial for business players to maintain their existence and enhance their competitiveness in the face of rapid changes, particularly in a country like Indonesia, where conventional business practices are still prevalent. While conventional methods have their advantages, such as stability and general reliability, their operational outputs have been suboptimal due to technological limitations, rendering them less competitive compared to their counterparts ([Mahardika & Agustina, 2014](#)).

In the industrial sector, digitalization effectively transforms task-oriented practices related to organizational processes, as it enhances the accessibility and availability of information-sharing systems. Furthermore, digitalization streamlines communication between managers and the external environment, making it more efficient and convenient (Supriyanto et al., 2023). Meanwhile, in the field of education, the importance of educational digitalization has grown significantly in the past decade, especially with the advent of Industry 4.0, which emphasizes technology and cyber aspects and necessitates various adjustments and responsive changes in education. This transformation is necessary to ensure that the learning process can meet the uncertain demands of the future. The benefits of educational digitalization are manifold, including the flexibility of learning schedules, unlimited capacity, and the ability to learn anytime and anywhere. Moreover, digital archiving offers various advantages for organizations and companies when compared to conventional methods. It provides easy access to digital data from various devices with permission-based access, and it is not confined to working hours (Victor, 2021).

Conclusion

This study provides empirical evidence regarding the topic of intellectual capital in Indonesia over a decade by analyzing 60 articles from Scopus-indexed and SINTA 2 journals from 2012 to 2023. The research method employed is the "charting field" method. Charting the field method involves classifying articles and journals based on their topics and research methods. The classification is divided into consequence and antecedent variables. A dominant 90% of the analytical methods in this research focused on secondary data, while the remaining 10% employed survey methods. Based on the analysis of 60 articles regarding the topic of intellectual capital over a decade, it is apparent that researchers in Indonesia have shown a greater interest in selecting financial factors as indicators for studying the components of intellectual capital, compared to non-financial factors. However, non-financial indicators in measuring IC not only aid organizations in better managing their intellectual assets but also enable them to make better strategic decisions that can influence future growth and business sustainability.

Future research is recommended to focus more on studying intellectual capital within the context of university governance. Research on intellectual capital within university systems can help improve the efficiency, quality, and positive impact of these institutions in supporting the development of the country, particularly in Indonesia. Additionally, this can contribute to making higher education in Indonesia more globally relevant and highly competitive.

Authors' Declaration

The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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