

## Current Trend and Development on Intellectual Capital and Performance: A Bibliometric Analysis

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### Abstract

For both society and organizations, intellectual capital is critical. It could be a source of competitive business advantage that leads to the generation of wealth. This study aims to conduct a bibliometric review on current trend and development of 'Intellectual Capital' and 'Performance' over 63 years (1956-2020) on topics related to business, economics and accounting. By adopting bibliometric analysis, we derived data from Scopus online database as of December 12, 2020. Based on the 'keywords' search results, our study finalized 1,621 valid documents for further assessments. We utilised Harzing's Publish and Perish to analyse basic evaluations before proceeding with VOSviewer for data visualization purposes. The findings highlight the trend of literature on 'Intellectual Capital' and 'Performance' since its inception in 1956. The number of publications achieved 100 publications since 2013 and keep increasing each year. Most previous publications were in English, with more than 178 authors from more than 97 different countries. Using specific keywords of 'Intellectual Capital' and 'Performance', the results were derived based on the titles and keywords of the documents. Thus, the results of the search query for other fields such as abstracts, and different keywords are excluded. This paper offers an overview and better understanding of the current trends and development of the topic since its inception in 1956, and also serve as a valuable reference and direction for future research.

**Keywords:** Intellectual Capital, Performance, Bibliometric Analysis.

## Introduction

At the beginning of knowledge-based era, intellectual capital was viewed as a root of knowledge or knowledge collection, but the real value was not recognized (Lentjušenkova & Lapina, 2016). Scholars engaging in knowledge (e.g. Stewart, 1997) describe intellectual capital as intellectual content comprising knowledge, data, intellectual property, expertise which can be used to accumulate wealth. Meanwhile, the economists describe intellectual capital as assets with a non-physical presence to create future economic benefits (Abhayawansa & Guthrie, 2014). In relation to this, studies dealing with intangible resources have one fundamental issue that is the lack of common terminology (Kristandl & Bontis, 2007). Terms such as intellectual property, intangible assets, knowledge-based assets, knowledge assets, intellectual asset, and intellectual capital have been used in the literature to describe intangible resources. Despite the various terms used, they refer essentially to the same thing that is a non-physical claim to future benefit (Lev, 2001). In view of this, intellectual capital relates to firms' competitive intangible resources and is an essential source of creativity and innovation strategies (Rauch, Frese & Utsch, 2005). In addition, the resource-based view asserts that firms' intangible resources are more likely to lead to firm performance (Hsu & Wang, 2012; Bendickson & Chandler, 2017). Over time, intellectual capital begins to be accepted as the key factor in granting firms a competitive advantage over their competitors. This has triggered a change in scholars' methodology from treating intellectual capital as a knowledge collection to firms' value-creating framework (Lentjusenkova & Lapina, 2016). Further, Hsu and Wang (2012) argue that firms operating in a competitive and volatile climate, the strategy should be broadened and adapt their capital to survive and succeed in these demanding circumstances.

The extant literature has revealed nine dimensions of intellectual capital namely, human capital, structural capital, relational capital, organisational capital, social capital, customer capital, innovation capital, information capital and technology capital (Inkinen, 2015). Human capital is the employees' intelligence, values, attitudes, skills, capabilities, experience. Structural capital is information system, databases, routines, procedures, processes, business development plan. Relational capital is the knowledge embedded in the firms' external relations such as customers, suppliers, competitors, society, and government. Organizational capital is organizational culture, databases, information system, processes, manuals, routines and structures. Organizational capital and structural capital address the same phenomena of intellectual capital and have been used as interchangeable terms. Social capital is the value of the firms' social relations which deals with tacit knowledge. Customer capital is the valuable knowledge embedded in customer relationships and marketing channels. Innovation capital is the firms' ability to utilize the existing knowledge to create new knowledge, ideas, products and technologies. Information capital is the quality of the firms' information system. Technological capital is the level of utilization of technological knowledge and efforts put into research and innovation. However, the majority of the reviewed studies utilized the three-dimensional intellectual capital comprising human capital, structural capital and relational capital.

The analysis is, therefore, very much aware of the comprehensive advancement of intellectual capital and performance in the field of research and practise that motivate us to conduct the bibliometric analysis. Therefore, this study intends to review intellectual capital and performance studies by utilising the Scopus database over the last 63 years and how this bibliometric analysis can impact future research. The following research questions will be addressed in this review:

1. What is the current trend in intellectual capital and performance?
2. Which are the most influential articles on intellectual capital and performance?
3. Which are the most popular themes of intellectual capital and performance among scholars?
4. Who are the most influential authors of intellectual capital and performance?
5. What is the current state of collaboration involving intellectual capital and performance?
6. What is the intellectual structure of current research on intellectual capital and performance?

There are five key sections of the organization of this study: Introduction, Review of Literature, Data and Methods, Results and Discussion, and Conclusion and Limitation. A detailed descriptive analysis assists the Results and Discussion section by analysing the types of documents and sources, the year of publication, the languages used in publications, the sources of publication, the geographical and institutional distribution, the subject area and the trend of the fundamental intellectual structure of the publication. Finally, we illustrate the findings, limitations, and suggest which areas should be investigated by future researchers.

### Literature Review

The nexus between intellectual capital and firm performance has been investigated since early 2000s and has developed into a globally renowned active field of research (Inkinen, 2015). However, the findings documented inconsistent empirical results. Even though, the majority of studies have proved that intellectual capital has a significant impact on firm performance, however they are studies that show little or no relationship. Scholars attributed the inconclusive findings to variation in the conceptualisation of intellectual capital, methodologies employed, country differences, industry differences and different measurement models of intellectual capital. Thus, the answer to the research question “Does Intellectual Capital influence firm performance?” is more complex than a plain yes or no (Inkinen, 2015). Nevertheless, it is observed, through literature review undertaken that intellectual capital influences firm performance mainly through combinations, interactions and mediations. The impact of intellectual capital on firm performance is summarized and presented in table 1.

Table 1

*The impact of Intellectual capital on Firm Performance using VAIC / MVAIC / A-VAIC / E-VAIC models*

No.	Authors	Year	Country/Region	Research Sample	Observation	Year of Observation	Research Focus	Impact (+ or -)
1	Al-Musali <i>et al.</i>	2016	Gulf Countries	Listed commercial banks	214	2008-2010	Profitability	+
2	Dženopoljac <i>et al.</i>	2020	Serbia	ICT sector	13,989	2009-2013	Profitability and productivity	-

		1 6						
3	Gogan <i>et al.</i>	2 0 1 6	Romania	Drinking water distribution companies	20	2010-2014	Profitability, productivity and market value	+
4	Kehelwa latenna	2 0 1 6	United States	Listed banking firms	2,101	2000-2011	Productivity, profitability and revenue growth	-
5	Maji and Goswami	2 0 1 6	India	Engineering sector and steel sector	1,400	1999-2013	Profitability	+
6	Meles <i>et al.</i>	2 0 1 6	United States	Commercial banks	40,000	2005-2012	Profitability	+
7	Singh <i>et al.</i>	2 0 1 6	India	Public and private sector banks	100	2007-2011	Profitability	+
8	Alipour and Gorgizadeh	2 0 1 7	Iran	Automobile and parts manufacturing	92	2011-2014	Profit efficiency	+
9	Asare <i>et al.</i>	2 0 1 7	Ghana	Life and non-life insurance companies	135	2007-2011	Profitability	+
10	Dženopoljac <i>et al.</i>	2 0 1 7	Gulf Countries	Listed firms	498	2011-2015	Earnings, profitability and efficiency	+
11	Irsyahma and Nikmah	2 0 1 7	Indonesia	Banking sector	60	2011-2014	Profitability and market value	+
12	Nadeem <i>et al.</i>	2 0 1 7	Brazil, Russia, India, China and South Africa	Publicly listed firms	6,045	2005-2014	Profitability and market value	+
13	Nawaz and Haniffa	2 0 1 7	Asia, Europe and Middle-East	Islamic financial institutions (IFIs)	320	2007-2011	Profitability	+
14	Ozkan <i>et al.</i>	2 0 1 7	Turkey	Banking sector	440	2005-2014	Profitability	+

15	Sardo and Serrasquero	2017	Western Europe	Non-financial listed firms	2,090	2004-2015	Profitability and market value	+
16	Suherman	2017	Indonesia	Retail companies	40	2013-2016	Profitability and market value	+
17	Ulum <i>et al.</i>	2017	Indonesia	Biggest market capitalisation companies	400	2007-2014	Profitability, market value and growth	+
18	Chowdhury <i>et al.</i>	2018	Bangladesh	Textile sector	170	2013-2017	Profitability	+
19	Ginesti <i>et al.</i>	2018	Italy	Non-listed firms	452	2016	Reputation and profitability	+
20	Murugesan <i>et al.</i>	2018	India	Private sector banks	210	2007-2017	Revenue growth and profitability	+
21	Sardo and Serrasquero	2018	European	Low-, medium- and high-tech firms	2,044	2004-2015	Profitability and growth opportunities	+
22	Smriti and Das	2018	India	Publicly listed firms	7,676	2001-2016	Productivity, profitability, growth and market value	+
23	Tiwari and Vidyarthi	2018	India	Public and private sector banks	663	1999-2015	Profitability	+
24	Tran and Vo	2018	Thailand	Listed banks	320	1997-2016	Profitability	+
25	Yilmaz and Acar	2018	Turkey	Production companies	196	2011-2014	Profitability and market value	+
26	Bayraktaroglu <i>et al.</i>	2019	Turkey	Manufacturing sector	400	2003-2013	Profitability and productivity	+
27	Buallay <i>et al.</i>	2020	Gulf Countries	Banking sector	295	2012-2016	Profitability and market value	+

		19						
28	Chowdhury <i>et al.</i>	2019	Bangladesh	Pharmaceutical industry	115	2013-2017	Productivity, profitability and efficiency	+
29	Diyanty <i>et al.</i>	2019	Southeast Asian	Knowledge-based industry	242	2015-2016	Profitability and market value	+
31	Ousama <i>et al.</i>	2019	Gulf Countries	Islamic banking industry	93	2011-2013	Profitability	+
32	Soetanto and Liem	2019	Indonesia	Non-financial listed firms	1,016	2010-2017	Profitability and market value	+
33	Xu and Wang	2019	China and South Korea	Textile industry	174	2012-2017	Earnings, profitability and productivity	+
34	Singla	2020	India	Real estate and infra firms sector	630	2008-2017	Profitability and market value	+
35	Ting <i>et al.</i>	2020	Taiwan	Listed electronic companies	6,408	2006-2017	Firm efficiency and sales growth	-
36	Soewarno <i>et al.</i>	2020	Indonesia	Banking sector	114	2012-2017	Profitability, productivity and market value	+

Source: This study for the content, format is adapted from Xu and Li (2019). Methods

As one of the methods used to reveal the study trend (Ahmi & Mohammad, 2019), bibliometric analysis is gaining popularity. It has been commonly used in recent years in the field of Business Management and Accounting (Asiaei et al., 2020). It's an alternative to a conventional literature review. Bibliometrics is a comparative analysis of reported physical units, bibliographic units, or surrogates of each (Broadus, 1987). Moreover, a methodological approach to performing a bibliometric analysis can discover more detailed publication-related data, including authors, keyword frequency and citations (Rusly et al., 2019). The bibliometric analysis could provide descriptive publishing patterns based on a domain, area, country, and period. In bibliographic research, various metrics such as publishing outlet, publishing types, authorship, affiliations, country, h-index, and g-index were among the most frequently examined aspects (Ahmi & Mohammad, 2019).

Scopus is the largest archive of scholarly works (Burnham, 2006) and the most comprehensive searchable citation and abstract search literature source (Chadegani, 2013). This database was used as the platform for extracting previous web accessibility works. The

database provides details of the publication that include the type of access, year, author name, area topic, type of text, the title of the source, keyword, affiliation, country, type of source and language.

We narrowed the search of web accessibility studies based on titles to specify further critical academic works on the research domain examined. Due to a large number of studies on conservation, this review concentrated only on documents relevant to intellectual capital and performance based on the title of the articles (McGowan et al., 2016). As such, the following questionnaire was carried out: TITLE-ABS-KEY ("intellectual capital" AND "performance").

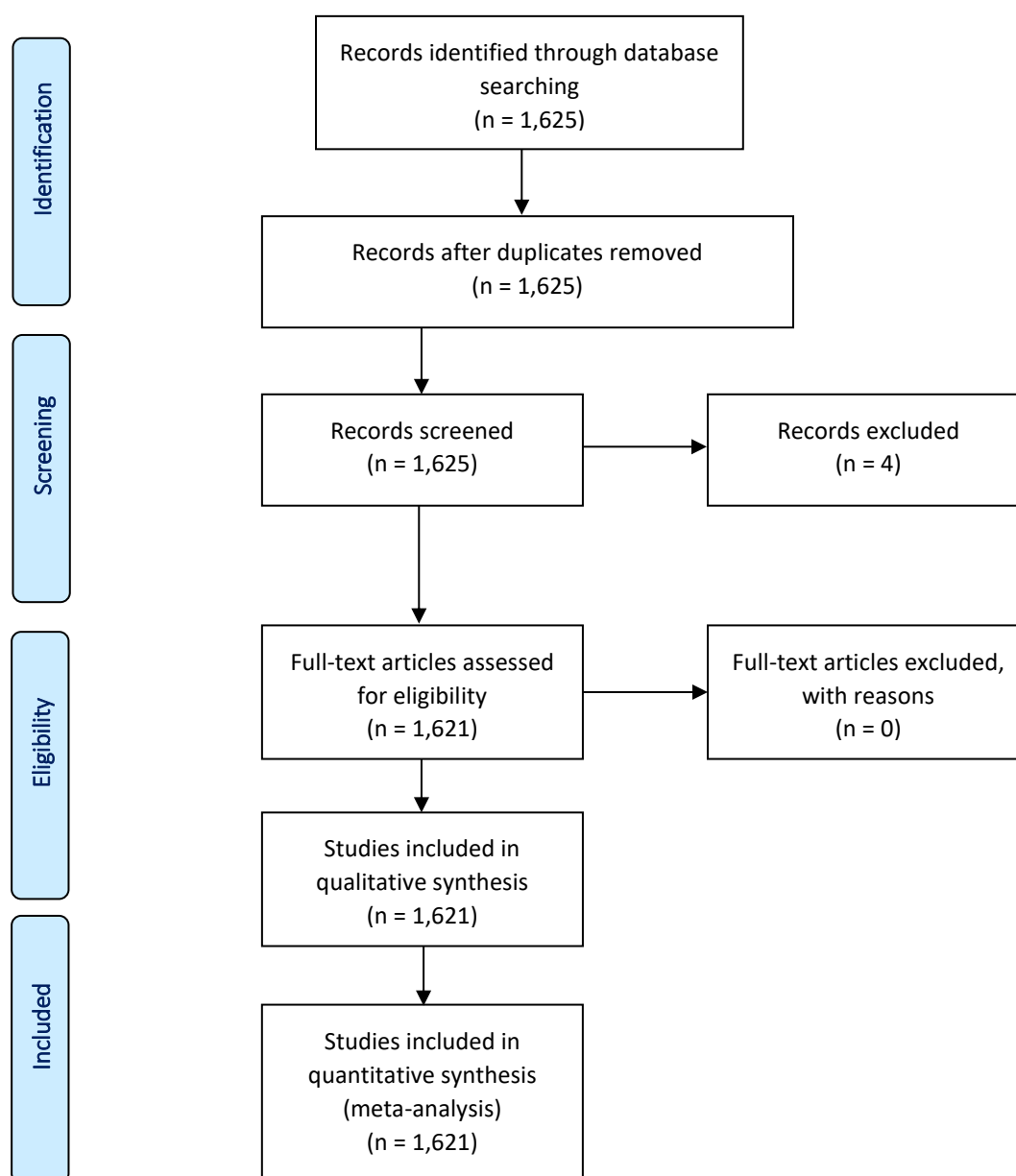


Figure 1. PRISMA Flow Diagram

Source: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097

## Results

The analysis of the extracted scholarly works covers document types and source types, annual growth, document language, subject area, analysis of keywords, the productivity of the country, analysis of authorship and citation. The results are interpreted in terms of frequency and percentage. Meanwhile, as some retrieved documents per year, we present the annual growth data, including their frequency, percentage and cumulative percentage until December 12, 2020. As citation metrics, we publish citation analysis and reveal 9 of the most cited authors in web accessibility.

### *Evolution of Publication*

The growth of intellectual capital and performance publications subsequently increased gradually, especially in 2007. We are confident that the number of publications will rise progressively in the future as more and more research will be performed on intellectual capital and performance issues. In 2013, the number of publications hit 3-digit with 108, 115, 111, 109, 126, 129, 164 and 147 of total publications respectively from 2013-2020. Four publications have already been scheduled and indexed in the Scopus database in the year 2021. Bonn  (1956) conducted the first study on intellectual capital and performance issues in 1968. with "Towards a Theory of Implanted Development in Underdeveloped Countries". Though the publications of topic related to intellectual capital and performance keep increasing each year, only a handful of studies have been conducted of intellectual capital on SMEs Performance, especially in Sabah and Sarawak (Borneo States of Malaysia).

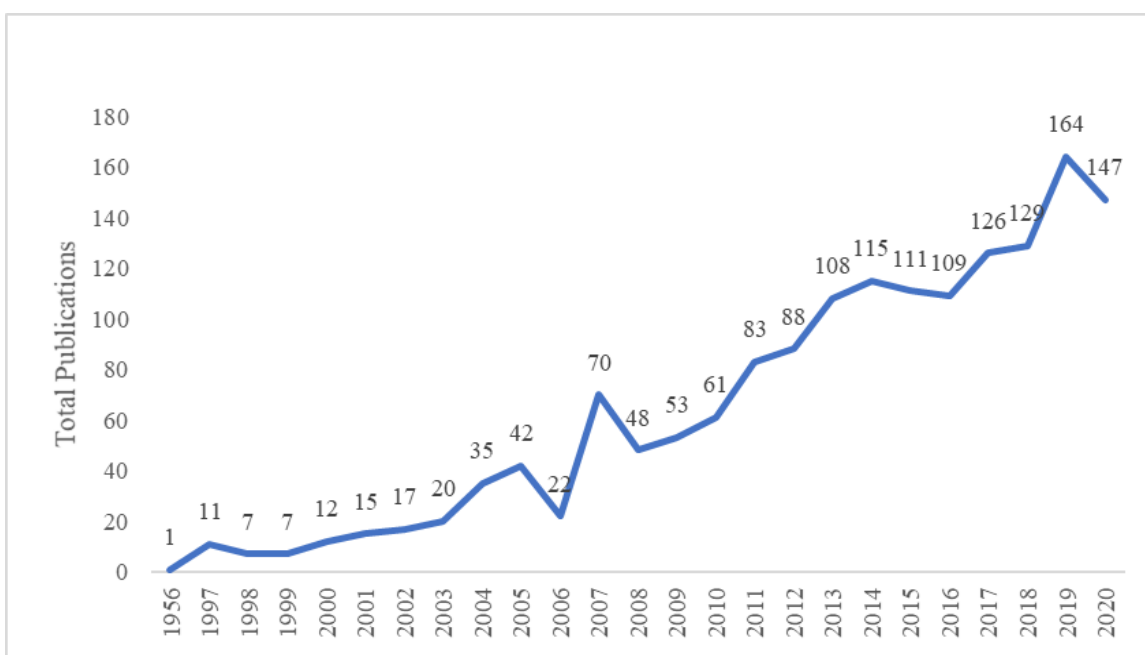


Figure 1: Intellectual and Performance Publications, 1968-2020 (n=1,910)

### *4.2 Document and Source Types*

This study found 11 types of published documents related to intellectual capital and performance, namely article, conference paper, book chapter, conference review, review, to name a few. As exhibits in Table 1, most publications were articles, which accounted for around 73.7%, followed by conference papers, 16.3%, and reviews 5%. Collectively, other



types of documents made up about 5%, with each type being less than 3.5% of the total documents. Furthermore, four source types are also presented in Table 1. Journals (78.5%) are the highest category, followed by conference proceedings (16.0%) and book (3.3%). The number of other documents accounted for 1.9%, 0.2, and 0.1% respectively represents book series, trade journal, and undefined. Meanwhile, only 11.9% were published in an open-access platform. The majority were published through other platforms (88.1%).

Table 1  
*Document, Source and Access Types*

Document Type	NP	%	Source Type	NP	%	Access Type	NP	%
Article	1183	73.7	Journal	1260	78.5	Open Access	191	11.9
Conference Paper	262	16.3	Conference Proceeding	256	16.0	Other	1414	88.1
Review	80	5.0	Book	53	3.3			
Book Chapter	54	3.4	Book Series	31	1.9			
Conference Review	10	0.6	Trade Journal	3	0.2			
Book	8	0.5	Undefined	2	0.1			
Editorial	3	0.2						
Erratum	2	0.1						
Short Survey	1	0.1						
Retracted	1	0.1						
Undefined	1	0.1						

Note: NP = No. of Publications

#### *Languages of Documents*

Since English is the universally recognised scholarly language, almost all papers are written in English. Table 2 reveals that most of the documents obtained were published in English (95.5%). Spanish, Portuguese, Chinese, Ukrainian, and Russian accounted about 1.4%, 0.8%, 0.6%, 0.5%, and 0.4% respectively. French and Persian only accounted for 0.2% of the total publications, while other languages only accounted for 0.1%, which include Slovak, Arabic, Bosnian, Dutch, Hungarian, Italian, and Lithuanian.

Table 2  
*Languages*

Language	NP	%
English	1546	95.5
Spanish	22	1.4
Portuguese	13	0.8
Chinese	10	0.6
Ukrainian	8	0.5
Russian	6	0.4
French	3	0.2
Persian	3	0.2
Slovak	2	0.1
Arabic	1	0.1
Bosnian	1	0.1
Dutch	1	0.1
Hungarian	1	0.1
Italian	1	0.1

Note: NP = No. of Publications

### *Subject Area*

Over 63 years, the studies of intellectual capital and performance have had stretch from Business, Management and Accounting to Psychology. Thus, this research also addressed written articles based on the subject areas. Majority of the intellectual capital and performance studies are in business, management and accounting (39.4 percent) followed by social sciences (18.9 percent), economics, econometrics and finance (9.0 percent), computer science (8.8 percent), decision sciences (8.3 percent), engineering (7.4 percent), environmental science (2.3 percent), arts and humanities and energy 1.7 percent respectively, mathematics (1.4 percent), and psychology (1.2 percent). Table 3 shows the number of publications and percentages of subject areas covered in intellectual capital and performance studies.

Table 3

### *Subject Area*

	Subject Area	NP	%
1	Business, Management and Accounting	1049	39.4
2	Social Sciences	502	18.9
3	Economics, Econometrics and Finance	241	9.0
4	Computer Science	235	8.8
5	Decision Sciences	220	8.3
6	Engineering	196	7.4
7	Environmental Science	61	2.3
8	Arts and Humanities	44	1.7
9	Energy	44	1.7
10	Mathematics	38	1.4
11	Psychology	33	1.2

Note: NP = No. of Publications

### *4.5 Geographic Distribution of Publication and Affiliation*

Researchers from 97 various countries contributed to the release of the extracted documents. Table 4 lists the top 13 countries subscribing to intellectual capital and performance publications. A total of 1621 publications were published as on December 12, 2020, with 151 documents were released in Italy, followed by United States (136), Taiwan (129), Malaysia (123), United Kingdom (116), China (115), Spain (104), India (74), Iran (69), Indonesia (67), Australia (58), Canada (54), and Portugal (55). The US was ranked first with a total of 6,350 citations in terms of the number of total citations by country followed by Canada (5,550), Taiwan (3,855), and United Kingdom (3,822).

Table 4

*Top 13 Countries Contributed to the Publications*

	Country	TP	NCP	TC	CP	C/CP	h-Index	g-Index
1	Italy	151	115	2733	18.1	23.8	30	48
2	United States	136	123	6350	46.7	51.6	41	78
3	Taiwan	129	111	3855	29.9	34.7	31	60
4	Malaysia	123	88	2230	18.1	25.3	18	46
5	United Kingdom	116	101	3822	32.9	37.8	35	60
6	China	115	75	1217	10.6	16.2	16	33
7	Spain	104	80	1731	16.6	21.6	21	39
8	India	74	55	1066	14.4	19.4	15	31
9	Iran	69	42	559	8.1	13.3	12	22
10	Indonesia	67	29	149	2.2	5.1	7	11
11	Australia	58	51	2487	42.9	48.8	23	49
12	Canada	54	51	5550	102.8	108.8	29	54
13	Portugal	55	36	603	11.0	16.8	13	24

Notes: TP=Total number of publications; NCP=Number of Cited Publications; TC=Total Citations; C/P=Average

Citations per Publication; C/CP=Average Citations per Cited Publication; h = h-index; and g = g-index

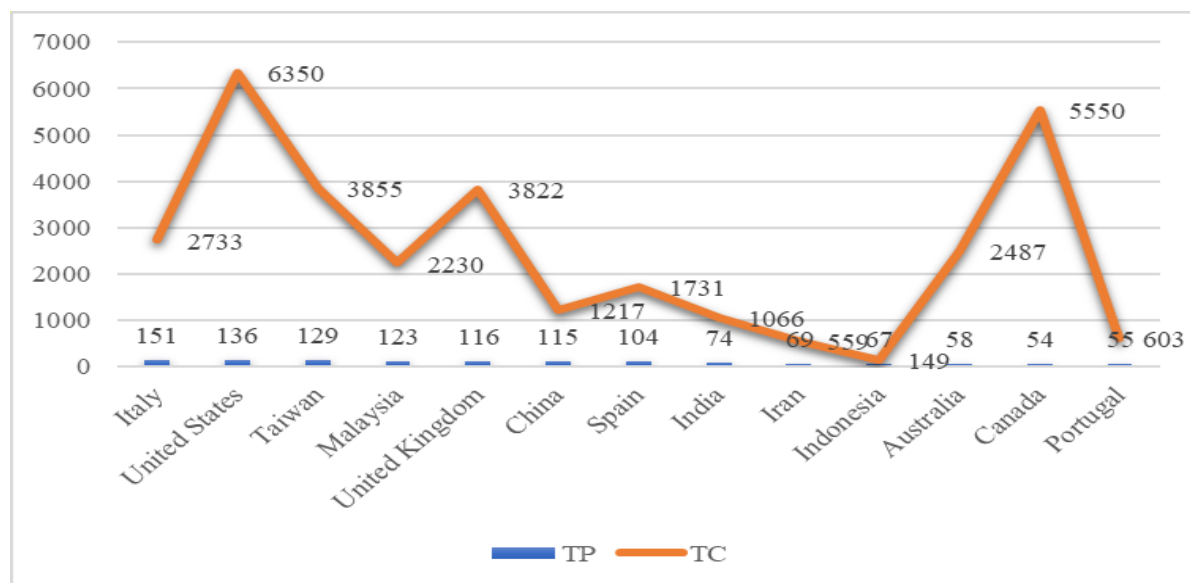


Figure 2: Total Publications and Citations by Countries

#### 4.6 Authorship Analysis

The most prominent authors conducting studies on intellectual capital and performance publications are also analysed in this report. The writers were listed in Table 5 with at least ten publications. Bontis (Canadian), Kianto (Finnish), Lu (Taiwanese), Roos (Swedish), Khalique (Pakistani), Marr (German), Grimaldi (Italian), Schiuma (Italian), and Cricelli (Italian) are among the top scholars in this field with at least ten publications on intellectual capital and performance studies. The cumulative citation displays the proportion of times the intellectual capital and performance researches has been cited by other journals listed in Scopus

database. Most articles were contributed by Bontis and his work is the top cited article on intellectual capital and performance followed by Roos and Marr with 1025 total citations.

Table 5

*Top 9 Productive Authors*

	<b>Author</b>	<b>TP</b>	<b>NCP</b>	<b>TC</b>	<b>CP</b>	<b>C/CP</b>	<b>h-Index</b>	<b>g-Index</b>
1	Bontis, N.	30	29	3832	127.7	132.1	23	30
2	Kianto, A.	16	16	500	31.3	31.3	8	16
3	Lu, W.M.	13	12	336	25.8	28.0	10	13
4	Roos, G.	13	12	1025	78.8	85.4	9	13
5	Khalique, M.	12	9	154	12.8	17.1	5	12
6	Marr, B.	12	11	1025	85.4	93.2	10	12
7	Grimaldi, M.	11	10	213	19.4	21.3	7	11
8	Schiama, G.	11	11	761	69.2	69.2	8	11
9	Cricelli, L.	10	9	199	19.9	22.1	6	10

Notes: TP=Total number of publications; NCP=Number of Cited Publications; TC=Total Citations; C/P=Average Citations per Publication; C/CP=Average Citations per Cited Publication; h = h-index; and g = g-index

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*Citation Analysis*

We used Harzing's Publish or Perish software to obtain the citation metrics for the retrieved data. Data gathered from the Scopus database has been imported into this software to generate the citation metrics. Table 6 summarizes the citation metrics for the retrieved documents, as of December 12, 2020. The summary includes the total number of citations with their citation per year, citations per paper, and citations per author, h-index, and g-index.

For the last 63 year (1956-2020), 1621 papers were published with a total of 178 authors and 34,691 total citations. On average, citation per years, per paper and per author are 542.05, 21.61 and 194.89 respectively. Paper per author accounted about 9.02 with author per paper at 0.11. The h-index and g-index were 88 and 151 as on December 12, 2020.

Table 6

*Citations Metrics*

<b>Metrics</b>	<b>Data</b>
Publication years	1956-2020
Citation years	63 (1956-2020)
Papers	1605
Authors	178
Citations	34691
Citations/year	542.05
Citations/paper	21.61
Citations/author	194.89
Papers/author	9.02
Authors/paper	0.11
h-Index	88
g-index	151

Keywords Analysis

The authors' keywords were mapped with VOSviewer, a software tool for creating and visualizing bibliometric networks. Figure 3 presents a network visualization of the authors' keywords, whereby colour, frame size, font size, and thickness of connecting lines were used to indicate the relationships among the keywords. For example, keywords with the same colour were commonly listed together. Thus, in this analysis, for instance, innovation, financial performance, and intangible assets have similar colour (green) or knowledge management, competition, information management that have similar red colour or human capital, structural capital or relational capital that have similar blue colour after excluding the main search query keyword intellectual capital and performance, suggesting these keywords are closely linked and usually co-occurred.

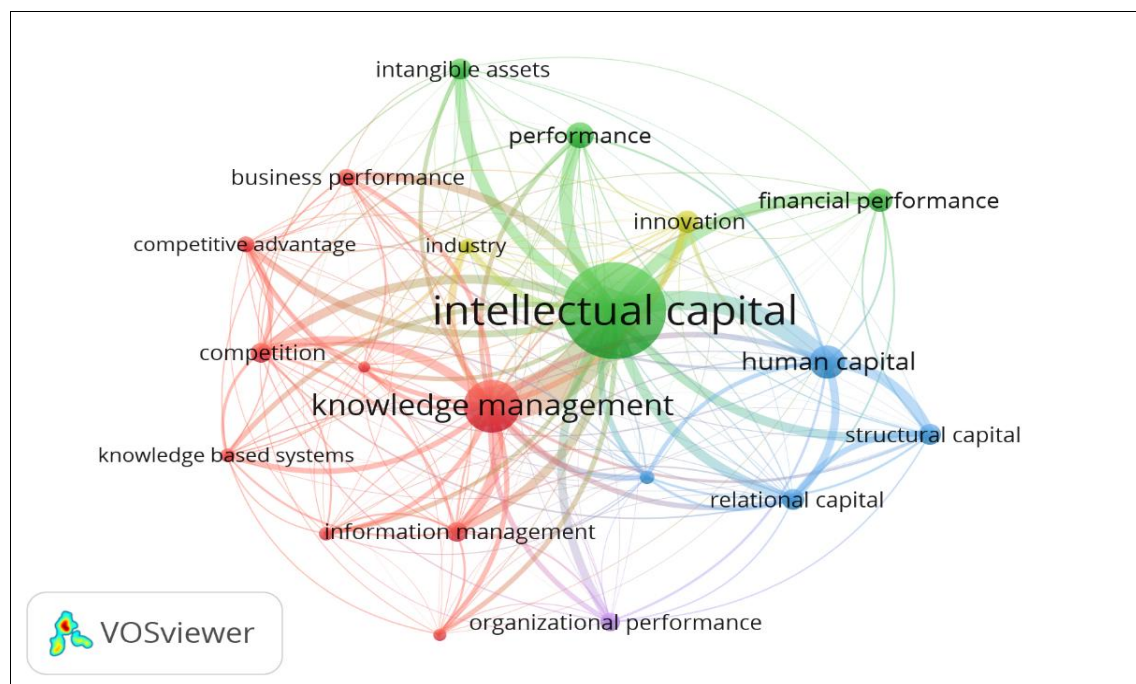


Figure 3: Network visualisation map of the author keywords

Meanwhile, after excluding core keywords listed in the search query: TITLE-ABS-KEY ("intellectual capital" AND "performance") among 6 keywords with the highest occurrences are knowledge management, human capital, financial performance, innovation, intangible assets, and relational capital. Meanwhile, firm performance, competitive advantage, and industry are among bottom 3 keywords on search query for intellectual capital and performance. Table 7 displays the top 16 keywords used in intellectual capital and performance studies.

Table 7

Top 16 Keywords

	Keyword	Total Publications (TP)	%
1	Intellectual Capital	1170	39.7
2	Knowledge Management	434	14.7
3	Human Capital	205	7.0
4	Performance	129	4.4
5	Financial Performance	113	3.8

6	Innovation	99	3.4
7	Intangible Assets	98	3.3
8	Relational Capital	96	3.3
9	Structural Capital	96	3.3
10	Competition	88	3.0
11	Information Management	86	2.9
12	Organizational Performance	75	2.5
13	Business Performance	72	2.4
14	Firm Performance	66	2.2
15	Competitive Advantage	62	2.1
16	Industry	57	1.9

### Discussion

This research analysed important trends in global intellectual capital and performance studies between 1956 and 2020, from the first article on this subject to December 12, 2020. A bibliometric review of 1956-2020 articles from Scopus was created. Thus, the evolution of publication, document and source types, languages of documents, subject area, the most productive countries, most productive authors, citations metrics analysis, and thematic areas were identified in the publications on this research topic. Therefore, in this study, bibliometric review of intellectual capital and performance was examined to explore what have been known so far and what directions other researchers could seek in future on this topic. Our study revealed English (95.5%) remained language commonly used in almost all written article since it is the universally recognised as scholarly language. Only 4.5% written in other languages.

Most publications were released in the Italy (151), followed by by United States (136), Taiwan (129), Malaysia (123), United Kingdom (116), China (115), Spain (104). Overall, the US was ranked number one country with a total of 6,350 citations in terms of the number of total citations by region, followed by the Canada (5,550), Taiwan (3,855), and United Kingdom (3,822). The amount of scientific papers each year has increased particularly in the last seven years (2013-2020) in which 1009 articles were written, reflecting 62 percent of contributions to this research subject. Also, for the past 63 years, research on intellectual capital and performance have piled up from business, management and accounting, social sciences, and economics, econometrics and finance (Top 3 topics conducted on intellectual capital and performance to energy, Mathematics, and psychology in Bottom 3. This cemented the fact how significant and important intellectual capital and performance topic is to the scholars around the world.

Among Top 9 authors who actively explore intellectual capital and performance research, seven are Europeans [Bontis (Canadian), Kianto (Finnish), Roos (Swedish), Marr (German), Grimaldi (Italian), Schiuma (Italian), and Cricelli (Italian)] and two are Asians [Lu (Taiwanese) and Khaliq (Pakistani)]. These scholars are among the best scholars in this field with at least ten publications. The accumulated citation indicates how many times other publications cited by other journals listed in Scopus. These scholars use keywords relevant to financial literacy e.g. knowledge management, human capital, financial performance, innovation, intangible assets, and relational capital. Over the period of 63 years (1956-2020), 1,621 articles on "intellectual capital" and "performance" contributed by approximately 178 authors were written. The combination of these authors generates about 20,921 total citations. Average citation per year, citation per paper, and citation per author are 542.05, 21.61 and 194.89

respectively. Paper per author accounted for about 9.02 with author per paper at 0.11. h-index and g-index on December 12, 2020 were 88 and 151.

### **Conclusion**

An organizational intellectual capital can be a source of competitive advantage and business performance can be partially clarified by its intellectual capital. Thus, this paper presents the current trend and development on intellectual capital and performance. By conducting bibliometric analysis, it enabled us to evaluate the evolution of the field's seminal work, prolific authors, affiliated countries, productive journals, keywords used, and work interrelationships. The research of intellectual capital is still in its early stage in most developing nations especially Africa and Asia. Many more researches have yet to be documented on intellectual capital especially on functional level e.g., quality, innovation, productivity, and service or on enterprise level e.g., strategic goals such as economic and market goals that are worth to be investigated further.

Additionally, bibliometric methods are increasingly used to rank research departments and institutions. The method is increasingly being utilised to offer information about the interactions of various groups within the scientific community (Barth et al. 2014). Bibliometric methods, or "analysis," have become well-established as scientific specialties and are an integral part of the methodology of research evaluation, particularly in the scientific and applied fields. The primary goal of all bibliometric exercises is to reduce an intangible concept (scientific quality) to a manageable entity. In comparison to peer review, which has a limited scope of investigation, bibliometric methods make it simple to examine an unlimited number of publications. We can deduce that the number of publications employing bibliometric method as a method for scientific research has been progressively increasing in recent years. This could be due to a variety of factors, including: To elicit a bibliometric research, a sufficient amount of literature in a field must be published, and the tools available to treat large data sets are now widely used. Numerous scientific communities, as well as politicians and funding agencies, are likely to increase their demand for these types of analyses in evaluating research and productivity. Bibliometric method appears to be regarded as a valuable method for evaluating scientific output, and it is gaining traction, particularly within the scientific community. The current work shows how bibliometric analysis is gradually becoming accepted as a useful tool for the professional community, rather than just an academic tool for bibliometricians.

### **Limitation and Study Forward**

Our analysis has some drawbacks inherent in the database. It should also be stressed that while Scopus is one of the biggest indexes, there are still unindexed articles, because it may have been overlooked for publications in these journals. In comparison, this report centred only on the topic of intellectual capital and performance, based on the title of the paper. Thus, other research related to intellectual capital and success was also disregarded, but it did not explicitly contain the word in the title. It is also crucial to note that no search query that exists is 100% perfect, false positive and false negative outcomes. The search question may be expanded by potential study to other databases, such as the Web of Science and Google Scholar. It may contribute to more thrilling and invaluable results by integrating these three databases.

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