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Accounting for intangibles and intellectual capital: A literature review from 2000 to 2020

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Abstract

This article presents the results of a structured literature review on research into intangibles and intellectual capital. From a corpus comprising articles published in the top 20 accounting journals between 2000 and 2020, we find that North American accounting scholarship during this period predominantly centred on identifiable intangibles and how these appear in the balance sheet. Much less attention was given to management issues and IC, even though these issues are more common in the European and Australian accounting literature. The review includes an evaluation of recent developments and trends and a discussion on promising avenues for future research.

Keywords: intangible assets; intellectual capital; intangibles; accounting; structured literature review

JEL: M40, M41, M48

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1 Introduction

The field of intangibles and IC accounting has undergone significant changes during the last 20 years in Europe, North America, and Australasia, increasing the relevance of academic research in this field (for example, Dumay et al., 2018a). However, interest in intangibles and IC is not limited to academia; from a practice perspective, regulators like the Financial Accounting Standards Board are also interested (e.g., FASB 2011, 2014, 2015).

This paper presents a critical analysis of 476 articles related to intangibles and IC published in the top 20 accounting journals from 2000 to 2020. We use total citations and citations per year to identify and draw conclusions about the most influential papers and researchers in the field. We also distinguish the peculiarities of scholarship among the European, North American, and Australasian regions. The review concludes with a discussion on the prevalent trends in research over this two-decade period and potentially fruitful directions of research for the future.

Since Cañibano et al. (2000) studied accounting for intangibles 20 years ago, IC has been the topic of a rigorous academic literature review, mainly from a management practice perspective (e.g., Buenechea-Elberdin, 2017; Cuzzo et al., 2017; Pedro et al., 2018). Thus, we argue that studying accounting for intangibles and IC is timely for four reasons. First, from a regulatory perspective, the field has developed significantly over the last three decades. Early reforms (from 1994 to 2004) saw the voluntary adoption of International Accounting Standards (IAS). As the IAS promulgated, standard-setting bodies across the globe revised and rewrote their many of their accounting guidelines, a host of which gave firms greater flexibility in their accounting choices. 1 April 2001 marks the takeover of these standards by the IASB and their renaming as the International Financial Reporting Standards (IFRS); thus, studying new regulatory insights after 2000 is highly relevant. Since 2005, the European Union (EU) has legislated to

mandate IFRS as the region's accounting language, and 2007 saw the beginning of a process to harmonise IFRS with the United States' preferred Generally Accepted Accounting Principles (US GAAP). Disregarding some differences between IFRS and US GAAP related to accounting for intangibles, the process of harmonization is at a much higher stage now than before.

Second, despite new regulations, accounting practices regarding intangibles and IC remain controversial. Many academics lay the blame on IAS 38 and SFAS 2, which regulate how intangible assets are recognised, measured, and disclosed (Chalmers et al., 2012; Lev, 2018). While IAS 38 generally prescribes expensing R&D expenditures, it also allows R&D expenditures to be capitalised if they meet specific criteria. Additionally, practitioners and academics often criticise accounting standards for not providing enough guidance on exactly how to measure intangibles (Amir et al., 2007; Wyatt, 2005). For example, IFRS 3 and SFAS 142 pertain to recognising goodwill and impairment. Both have received significant attention as producing highly unreliable estimates of fair value (e.g., Hamberg et al., 2011; Li and Sloan, 2017).

A third issue that makes this study timely is the need to synthesise two separate lines of scholarship on the definitions, measurement, management, and reporting of intangibles and IC that have been developing concurrently – one in Europe and Australasia, the other in North America. Both discuss the same issues but use different terms and vocabulary (Cuozzo et al., 2017), and the vernacular differs across disciplines, too. For example, accounting scholars in Europe and Australasia often refer to the term 'intellectual capital', while, in the US, researchers more often use the term 'intangible assets'. At the same time while the terms are in use in different fields, "Intangible Assets in accounting literature, Knowledge Assets – by economists, Intellectual Capital – in management and law literature", they essentially mean the same thing, "future benefits that are not embodied materially" (Lev, 2001), but with perhaps subtle differences in form and substance. Further, the scholarship and research agendas of

academics across the two regions are essentially different. Hence, in both reviewing coverage of the issues and comparing and contrasting the two streams, Lev's definition above holds, and we use the terms 'intangibles', 'intangible assets' 'knowledge assets', 'IC' and other similar terms interchangeably.

Fourth, IC research has evolved through five distinct stages over the past 20 years. From its beginnings as a 'good idea' (first-stage IC research), to creating IC frameworks (second-stage), to understanding how IC works in practice (third-stage) (Guthrie et al., 2012), some scholars have moved beyond organisational boundaries into a fourth stage of IC research, or what they call an 'ecosystem approach' to effective IC management (Garanina and Dumay, 2013). Dumay et al. (2018b) have also since introduced a fifth stage of research that focuses on the question "Is managing IC a worthwhile endeavour?". This iteration of scholarship considers how IC can help resolve societal problems rather than just organisational issues. Exploring how IC research has developed over time helps us to identify future research directions.

The review was conducted following Massaro et al.'s (2016) structured literature review (SLR) methodology. The SLR frame advocates three standard research questions with modifications to suit the purpose and context of the specific review. Our purpose and context is to examine the articles devoted to intangible assets and IC published in the world's top accounting journals between the years 2000 and 2020. This leads to the following three research questions:

- RQ1. What are the characteristics of the articles published in the top accounting journals and which authors are influential?
- RQ2. What are the commonalities and differences in focus areas and research methods between European, American, and Australasian scholars?

RQ3. What are the main trends and proposed research directions for IC and intangibles in the European, American and Australasian research?

In answering these questions, this article establishes the main trends in intangibles and IC accounting research – past, present, and future and in theory and practice. We not only provide insights for future academic research but also for investors, financial institutions, accounting bodies and accountants and managers working in different industries. By synthesising American, Australian, and European research on intangibles and IC, our overarching conclusions inform new paths for future research. The next section introduces our research methodology and our analytical framework, followed by a presentation of our results. The paper concludes with a discussion on current trends and suggestions for future research.

2 Research methodology

A literature review should have a logical structure and should be based on a precise plan (Hart, 1998, p. 172). Following Massaro et al. (2016, pp. 771-772), our literature review follows a ten-step approach. Having already outlined the research questions, this section covers the following steps of an SLR: writing a literature review protocol, carrying out a comprehensive literature search, defining an analytical framework, and coding data according to the developed framework.

2.1 Research protocol

The review protocol documents the procedures to follow during the analysis. It is written ahead of time to guide not post hoc to commemorate. In line with our purpose, the corpus of articles to be studied consisted of :

- papers published in the top 20 accounting journals. Limiting the scope of journals helped us to better understand the importance of the topics analysed (Guthrie et al., 2012; Massaro et al., 2016);

- papers published in peer-reviewed journals. Peer-review served as a proxy for ensuring that only high-quality articles were included in the sample (Hart, 1999; Massaro et al., 2015);
- papers published between 2000 and 2020. Beyond the reasons listed above, Cañibano et al. published the seminal paper in this field of research in 2000; and
- papers devoted to intangibles and IC as both of them represent an essential source for company's value creation (e.g., Lev, 2018; Pedro et al., 2017; Garanina and Dumay, 2017).

2.2 Carrying out a comprehensive literature search

As “not all research evidence (qualitative or quantitative) is of equal validity or relevance” (Petticrew and Roberts, 2008, p.69), we followed a rigorously structured 3-phase methodology for identifying relevant articles to ensure the SLR's quality.

Phase 1. To begin our search, we composed a shortlist of the top 20 academic journals in accounting – ‘top’ being defined as ‘most cited’. Following Massaro et al. (2016), we used Google Scholar metrics¹ to identify the journals. Google Scholar ranks journals in a wide variety of categories and subcategories based on citations received over the last five years. The first 20 journals on this list served as our top 20, as listed in Table 1. Google Scholar provides a broader coverage of sources than Web of Science or Scopus (Harzing and Alakangas, 2016). Additionally, Google Scholar does not bias positivist journals over qualitative journals (or vice versa).

¹ https://scholar.google.com/citations?view_op=top_venues&hl=en&vq=bus_accountingtaxation

Table 1 Top 20 accounting journals according to Google Scholar metrics

Accounting and Finance
Accounting and Business Research
Accounting Horizons
Accounting, Auditing & Accountability Journal
Accounting, Organizations and Society
Auditing: A Journal of Practice & Theory
Contemporary Accounting Research
Critical Perspectives on Accounting
European Accounting Review
International Journal of Accounting Information Systems
International Tax and Public Finance
Journal of Accounting and Economics
Journal of Accounting and Public Policy
Journal of Accounting Research
Journal of Business Finance & Accounting
Management Accounting Research
National Tax Journal
Review of Accounting Studies
The Accounting Review
The British Accounting Review

Phase 2: Article searches were done individually for each journal using the search engines on the homepages of each journal's website. Each search was limited to the period January 2000 to March 2020 and used the same search keywords as Eccles and Krzus (2010), i.e., "intangible asset*", "intellectual asset*", "intangible capital", "intellectual capital" and "intangible*". This search strategy returned 2,739 potentially relevant articles, which were migrated into the reference management software RefWorks.

Phase 3: The corpus was then reviewed manually for relevance and inappropriate articles were removed over a sequence of three refinement parses beginning with the title, then the abstract, then the full article. After excluding articles with titles that did not reflect a focus on accounting for intangibles, 901 remained. Reading the abstracts reduced the number to 523. A full reading of the text excluded 47 articles that had

only a marginal focus on accounting for intangibles (Englund and Gerdin, 2014). Thus, the final number of papers in the sample was 476. This set of articles represents a "corpus of scholarly literature, to develop insights, critical reflections, future research paths and research questions" (Massaro et al., 2016).

We then measured the impact of those 476 articles as at 28 June 2020 to identify the most influential articles. Queries Google Scholar citations were performed, per paper, using Harzing's Publish or Perish software. Both overall citations and citations per year were retrieved (Dumay and Cai, 2014).

2.3 Defining an analytical framework

We used NVivo software to code the abstracts and full texts of the articles based on adapting the categories and attributes of analytical frameworks from prior SLRs (e.g., Dumay et al., 2018a). Table 2 presents the analytical framework we employed in our study.

Table 2: Analytical framework

Category	Attributes	Results		Krippendorff's alpha
Article	Title	476 unique titles		1.000
	Journal	20 unique titles		1.000
	Year	2000-2020		1.000
	Author(s)	890 unique names		1.000
	Overall citations	0 to 6504		
Region	Australasia	109		1.000
	Europe	153		1.000
	North America	209		1.000
	Other	5		1.000
Research method	<i>Single-method analysis, including:</i>	394	82.77 %	0.954
	Case study and interviews	30	6.30 %	
	Content analysis	16	3.36 %	
	Empirical research	244	51.26 %	
	Experiment	9	1.89 %	
	Literature review and essays	91	19.12 %	
	Survey	4	0.84 %	

Category	Attributes	Results		Krippendorff's alpha
Research method	<i>Multi-method analysis, including:</i>	82	17.23 %	0.923
	Case study / Content analysis / Interview	29	6.09 %	
	Case study or Interview and Empirical research	6	1.26 %	
	Content analysis and Empirical research	28	5.88 %	
	Survey and Empirical research	5	1.05 %	
	Survey and Interview	2	0.42 %	
	Literature review and critical analysis	12	2.52 %	
Research focus	<i>Accounting perspective:</i>	261	54.83 %	0.936
	Goodwill	36	7.56 %	
	R&D expenses	60	12.61 %	
	A mix of goodwill, R&D expenses, patents, advertising costs	96	20.17 %	
	Capitalised intangibles	69	14.50 %	
	<i>Managerial perspective:</i>	215	45.17 %	0.902
	Human capital	28	5.88 %	
	Relational capital	10	2.10 %	
	Structural capital	10	2.10 %	
	A "trio" approach: human capital, structural capital, relational capital	35	7.35 %	
	A "trio" approach and other elements of IC	88	18.49 %	
	Innovative approaches to IC	44	9.24 %	

2.4 Coding data using the developed framework and assuring reliability

According to Larsson (1993, p.1521), multiple coders “can improve the quality of coding through identifying mistakes and personal biases”. Therefore, in this research, we used NVivo 10 (QSR International Pty Ltd, 2014) with the library “irr” (Gamer et al., 2012) to calculate Krippendorff's alphas for reliability test (Krippendorff, 2013, p. 277). Each of the researchers individually coded a select sample of the articles, and we compared each other's work. Some incremental changes and adjustments to the coding protocol were made as a result, including extending the list of IC elements and more clearly defining the research methods. All the changes to the protocol were discussed between the authors to

achieve a consensus. Once the final coding protocol was agreed upon, all the remaining articles were coded by one author to ensure consistency. Table 2 presents the results of reliability testing alongside the content analysis. In all cases, the reliability measure for the coding exceeded 0.800, which indicates a high level of reliability.

3 Research results

What follows are the results of our analysis and critical insights into how the leading IC and intangibles literature has developed over the period 2000-2020 for scholars in Europe, North America, and Australasia. Subsections 3.1. and 3.2. answer the first research question:

RQ1. What are the characteristics of articles published in accounting journals and who are the influential authors?

Subsections 3.3.-3.6. answer the second:

RQ2. What are the differences in focus areas and research methods between European, American and Australasian scholars?

3.1 Articles over time

Figure 1 shows that the annual volume of publications focused on intangibles and IC has averaged between 15 and 25 over most of the last 20 years. However, in the last three years, that number has seen a significant increase up to 40. From 2001 to 2016, the number of articles published was relatively stable. The noticeable spike since then reflects recent renewed interest in the topic.

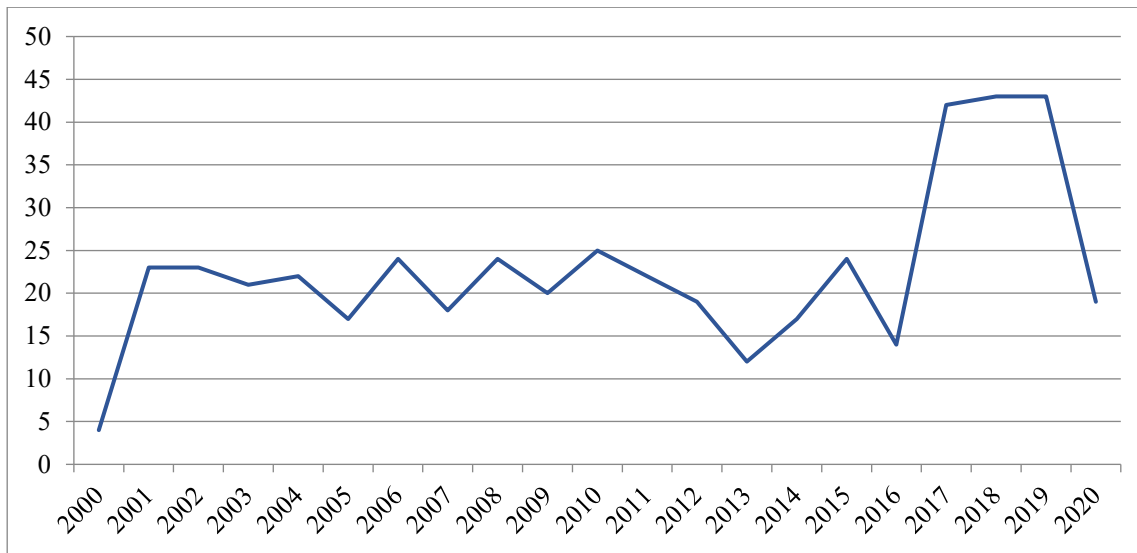


Figure 1. No. of articles published by year 2000-2020

The graph also shows an increase in articles around the turn of the millennium, when intangibles became a hot topic (Guthrie et al., 2001). We can also see a small increase in articles from 2005–2006 when IFRS became mandatory in Europe for publicly-listed companies (Ahmed and Falk, 2006; Cazavan-Jeny et al., 2011). During and after the 2008 global financial crisis, the question of voluntary disclosure of intangibles and non-financial information was of high interest, showing up as a small increase from 2009–2010 (Clarkson et al., 2008; Elsayed and Hoque, 2010). The next increase in articles was in 2014 when questions surrounding integrated reporting, corporate social responsibility, and environmental disclosure were receiving significant attention from researchers (Duff, 2016; Griffin et al., 2017). The increase after 2016 coincides with: amendments to IAS 38, which deals with appropriate methods of amortising and depreciating intangibles; some emerging issues related to blockchain technology; and the first sparks of attention given to machine learning techniques by the field (Berkman et al., 2018; Moll and Yigitbasioglu, 2019; Wang and Kogan, 2018). Many of the empirical papers of researchers from North America during this period were reactions toward changes by the Public Company Accounting Oversight Board (PCAOB) that mandated auditing accounting estimates (including fair value measurements issued on 1 June 2017) (e.g., Wolfe et al., 2020; Acito et al., 2018).

3.2 Citation analysis: measuring articles impact

Following Dumay et al. (2018), a proxy for influence in an academic field is overall citations and citations per year (CPY). Figure 2 offers a citation decay chart, which shows most of the citations ever given have been given to a relatively small number of the 476 articles.

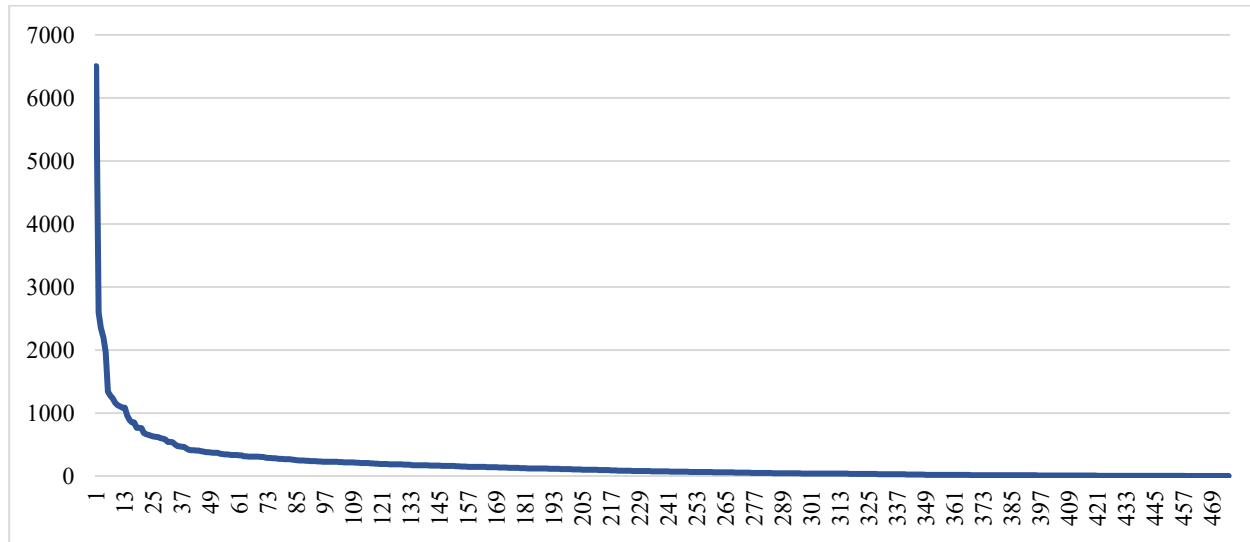


Figure 2. Citation decay

Source: Google Scholar data as reported using Harzing's Publish or Perish software

The most cited paper is by Graham et al. (2005) with 6504 citations. Three further articles (Kaplan and Norton, 2001; Barth et al., 2001; Clarkson et al., 2008) have received over 2000 citations each.

The overall citation counts by year are provided in Figure 3. The decline in citations during the last five years is because articles published recently have not yet had enough time to garner citations (Dumay et al., 2018a). This phenomenon also explains the relatively higher number of citations for the first decade under study compared to the second.

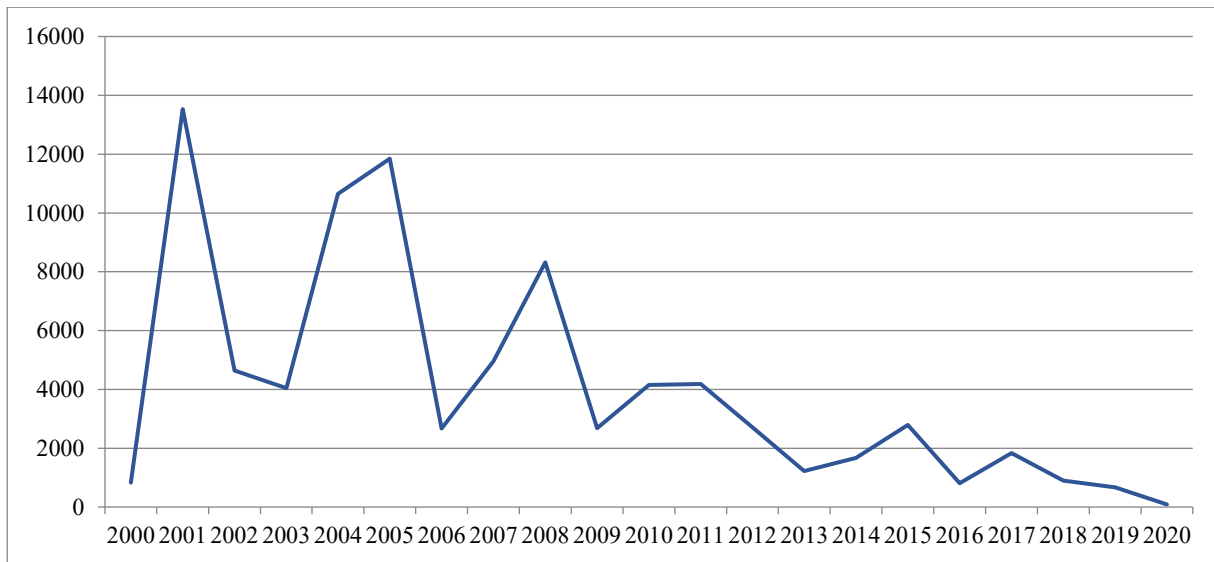


Figure 3. No. of citations by year 2000-2020

In fact, the ten articles with the highest number of citations in the sample were all published between 2000 and 2008, Table 3 shows. Examining articles based on citations helps to identify those that have had a high impact in the field (Small, 2004).

Table 3: The top 10 articles by total number of citations

Authors	Title	Cites	Source
Graham, Harvey, and Rajgopal (2005)	The economic implications of corporate financial reporting	6504	Journal of Accounting and Economics
Kaplan and Norton (2001)	Transforming the Balanced Scorecard from performance measurement to strategic management: Part I	2594	Accounting Horizons
Barth, Beaver, and Landsman (2001a)	The relevance of the value relevance literature for financial accounting standard setting: another view	2350	Journal of Accounting and Economics
Clarkson, Li, Richardson, and Vasvari (2008)	Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis	2197	Accounting, Organizations and Society
Al-Tuwaijri, Christensen, Hughes II (2004)	The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach	1970	Accounting, Organizations and Society

Authors	Title	Cites	Source
Bushee (2001)	Do institutional investors prefer near-term earnings over long-run value?	1340	Contemporary Accounting Research
Chenhall (2005)	Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study	1270	Accounting, Organizations and Society
Barth, Kasznik, and McNichols (2001b)	Analyst coverage and intangible assets	1231	Journal of Accounting Research
Francis, Nanda, and Olsson (2008)	Voluntary disclosure, earnings quality, and cost of capital	1127	Journal of Accounting Research
Hung and Subramanyam (2007)	Financial statement effects of adopting international accounting standards: the case of Germany	1102	Review of accounting studies

Further analysis of these ten articles reveals that seven of them were published in US accounting journals and are by authors affiliated with US universities. The articles are mostly written from an accounting perspective and relate to intangibles like R&D expenses, advertising expenses, goodwill, and patents as opposed to managerially-driven research on the tripartite of human, relational, and structural capital. Eight are empirical, providing insights into intangibles by combining data from content analysis or interviews with further econometric analysis.

In addition to the overall number of citations, another, and arguably more acute, proxy for measuring influence is CPY. Table 4 lists the articles with the highest CPY.

Table 4: The top 10 articles by citations per year

Authors	Title	CPY	Source
Graham et al. (2005)	The economic implications of corporate financial reporting	433.64	Journal of Accounting and Economics
Kaplan and Norton (2001)	Transforming the Balanced Scorecard from performance measurement to strategic management: Part I	183.08	Accounting Horizons
Barth et al. (2001a)	The relevance of the value relevance literature for financial accounting standard setting: another view	136.53	Journal of Accounting and Economics

Authors	Title	CPY	Source
Clarkson et al. (2008)	Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis	123.68	Accounting, Organizations and Society
Al-Tuwaijri et al. (2004)	The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach	123.13	Accounting, Organizations and Society
Armstrong, Guay, and Weber (2010)	The role of information and financial reporting in corporate governance and debt contracting	116.2	Journal of Accounting and Economics
Francis et al. (2008)	Voluntary disclosure, earnings quality, and cost of capital	93.0	Journal of Accounting Research
De Villiers, Rinaldi, and Unerman (2014)	Integrated Reporting: Insights, gaps and an agenda for future research	90.00	Accounting, Auditing & Accountability Journal
Hung and Subramanyam (2007)	Financial statement effects of adopting international accounting standards: the case of Germany	84.77	Review of Accounting Studies
Chenhall (2005)	Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study	84.67	Accounting, Organizations and Society

Comparing Tables 3 and 4, we see a high correlation between them. However, with CPY as the indicator, a new article published less than ten years ago rises to the surface – De Villiers et al. (2014).

The journal with the highest overall citations is the *Journal of Accounting and Economics*. *Accounting, Organisations and Society* and *Journal of Accounting and Economics* have published a number of papers with the highest CPY.

3.3 Author(s)

To ascertain the number of unique authors, each article was coded separately. We also coded information to identify how many co-authors worked on each article. The results show that most papers were co-authored by either two (35.08%) or three (33.85%) researchers, reflecting the value of collaboration. Less than one in four (23.69%) had only one author.

It is also essential to identify the most cited and published authors to reveal any Matthew or Superstar effect that may be in play (Merton, 1968). Table 5 lists the authors who have published more than five articles in the last 20 years, with total citations in the last column.

Table 5: Top authors by number of articles

Year/ Author	'00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	Total	Cit
Lev, B.			1	1	2	1	1			1	1					1		1	1	1		12	2032
Mouritsen, J.		2		1		2	2					1						1		1	1	11	2379
Guthrie, J.		1			1	1		1	1				1						1	1		8	2203
Dumay, J.										1			1		1		2		2		1	8	1012
Roslender, R.		1		1	1					1	1					1		1				7	851
Barth, M.	1	3					1								1							6	5632
Ciftci, M.												1	1		1	1	1					5	282
Johanson, U.		3		1			1															5	1095
Skoog, M.		2					1							1					1			5	778

The leading author by the number of articles is Baruch Lev, who has published 12 articles with altogether more than 2000 citations. It is interesting to observe that while Mary E. Barth has only published six articles, her citation metrics are higher than all other researchers – even Lev’s who has published twice as many papers.

3.4 Region of origin

Being the first author can be viewed as a non-monetary reward that recognises an individual as the most prominent contributor to the article (Floyd et al., 1994). Based on professional norms the order of the authors’ names on a publication usually represents their relative contribution and, in turn, merit (Venkatraman, 2010; Sauermann and Haeussler, 2017; Balkin et al., 2020). Following Dumay et al.

(2018), we coded the first author’s country based on the university they represent and categorised them into three main regions: Australasia (including Australia, New Zealand and Asian countries), Europe (including countries such as Finland, Denmark, France, Sweden), and North America (including Canada and the US). There were a small number of authors whose university affiliations fell outside of those regions (e.g., Saudi Arabia) that received the regional classification of ‘Other’.

Figure 4 charts the number of papers by region and year, showing that North American authors have maintained a slightly higher count of 209 (43.9%) over the period than their European counterparts at 153 (32.1%). Researchers from Australasia have produced fewer articles than either of the two at 109 (23%). Only five papers (1%) written by authors from countries outside these regions have been published in the top 20 journals in the last two decades.

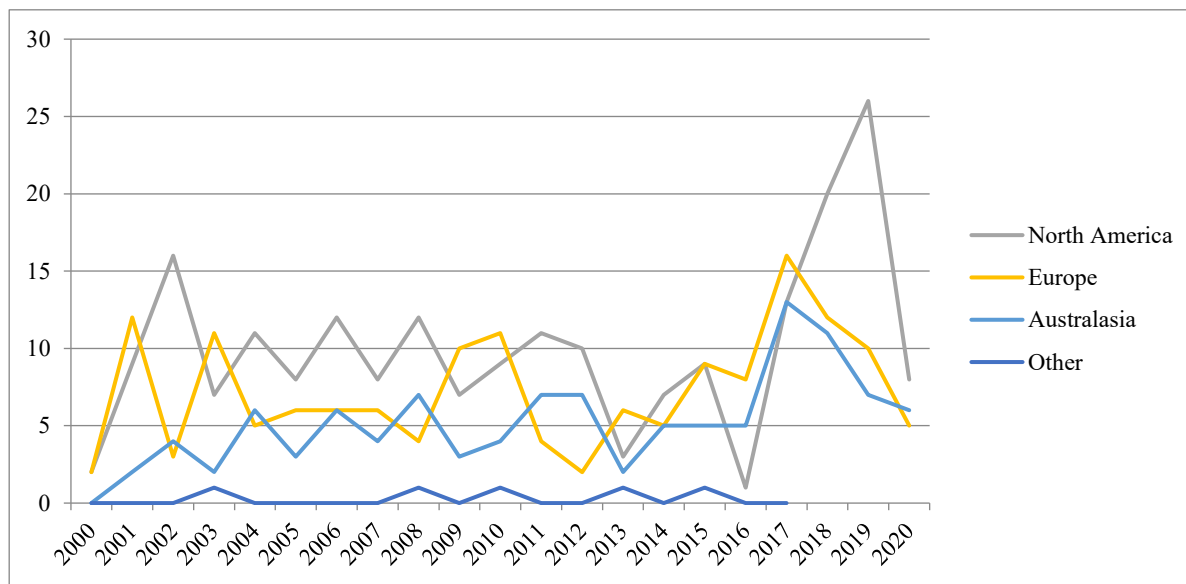


Figure 4. No. of papers by region by year

A closer look at the articles led us to the conclusion that the country of the first author quite often dictates the location of the object of analysis. We found that 62.9% of the articles written by authors from universities in Europe used European data, with 60% of Australasian researchers using Australasian data. However, for North American researchers, that number falls to 45.6%. The general distribution between

countries reveals that companies from the US have been the most widely-used object of analysis, which can be explained by the easy access to historical financial data from this country.

3.5 Research methods

To code research methods, we extended the methodology presented in Dumay et al. (2018) to give a slightly more detailed picture of the methods used by the authors. We also separately coded those articles that employed just one research method and those that used several.

Analysis of the research methods reveals that, in accounting journals, authors from all continents use a single method more often than combining several (Figure 5).

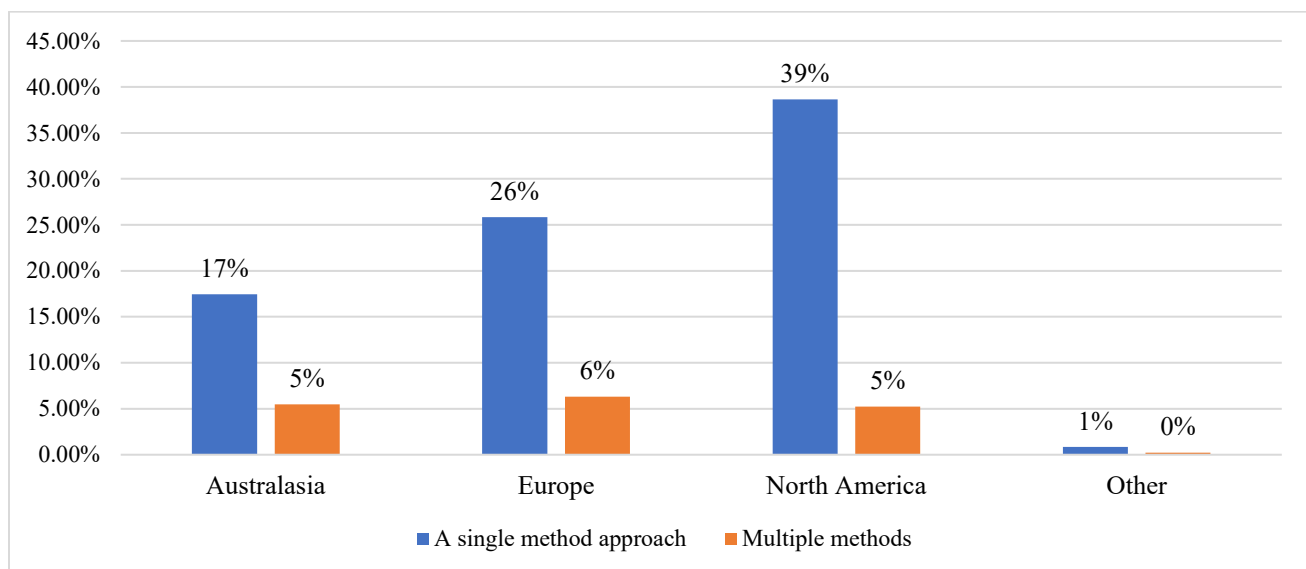


Figure 5. Research approach used by region

We also observed that the methods most commonly applied by authors differ by continent, as outlined in Figure 6. For example, empirical studies are very popular with North American researchers (29.20%), whereas European and Australasian researchers rely on empirical studies considerably less at only 11.76% and 9.66%, respectively. Also, researchers from universities outside North America tend to use

multiple methods slightly more often – the most common combinations being surveys or content analysis combined with empirical methods.

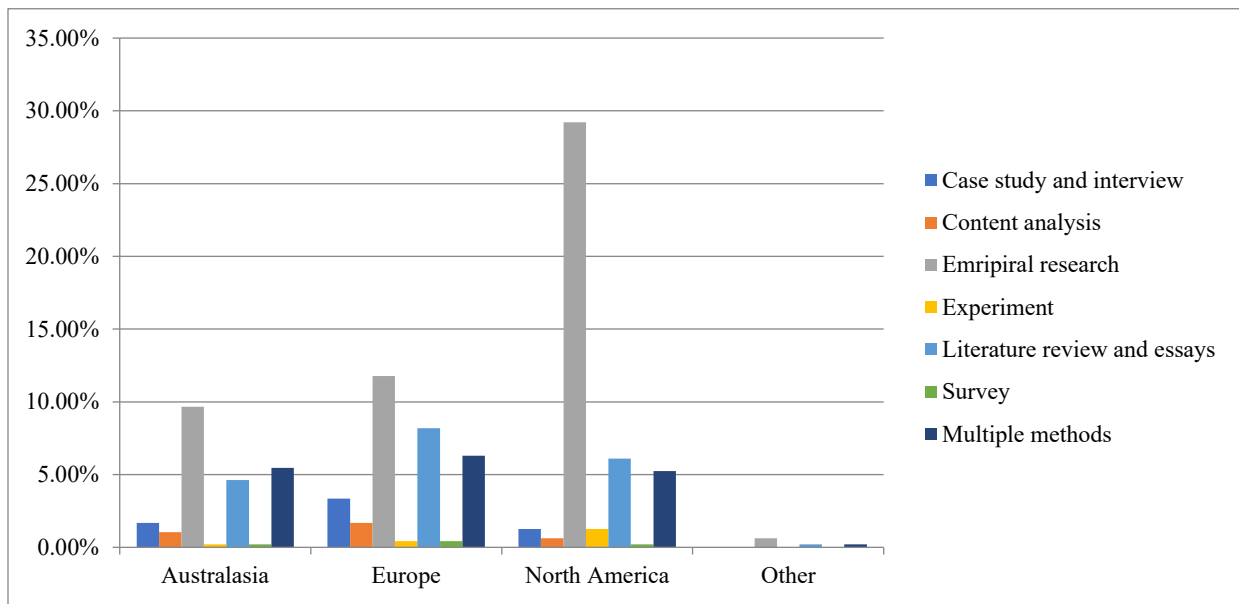


Figure 6. Research method used by region

After the global financial crisis in 2008, more researchers began to expand their methods beyond pure empirical analysis into qualitative studies – especially studies on intangible asset disclosure in annual reports, financial statements, and other prospectuses. This crisis fundamentally changed the world’s economy and increased awareness of business risks. As a result, there was increasing concern over how companies disclose risks and the impact of risk on performance. Voluntary disclosures were one way companies could reduce those concerns, and researchers spearheaded these efforts with many investigations and examinations on this topic (Garanina and Dumay, 2017). Measuring intangibles using multiple methods gained popularity after 2008, particularly those that incorporated ‘soft’ qualitative methods into the harder quantitative studies of the past (e.g., Barth et al., 2014; Singh et al., 2008).

3.6 Research focus

Each article was also coded to the specific intangible(s) focussed. In line with Cañibano et al.'s (2000) study on pre-2000 accounting for intangibles, we coded the articles according to the categories found in the financial statements, e.g., advertising expenses, capitalised brand, research and development, etc. Articles that did not highlight any particular intangible asset, but rather intangibles generally, were coded to a general capitalised intangibles category. Further, articles written from a managerial perspective were separated from those about the trio of capitals and from those again based on the trio of capitals with extra elements, such as innovation, trust, strategic, or entrepreneurial capital (Inkinen, 2015).

Figure 7 shows that North American authors are more focused on accounting for intangibles than managing. About a third of North American articles (31.79%) focus on goodwill, R&D expenses, patents, advertising costs, and other specific intangibles listed in the financial statements (e.g., Abdolmohammadi et al., 2006). Conversely, most articles written by authors from Australasia and Europe explore intangibles and IC from a managerial perspective, covering issues such as disclosure.

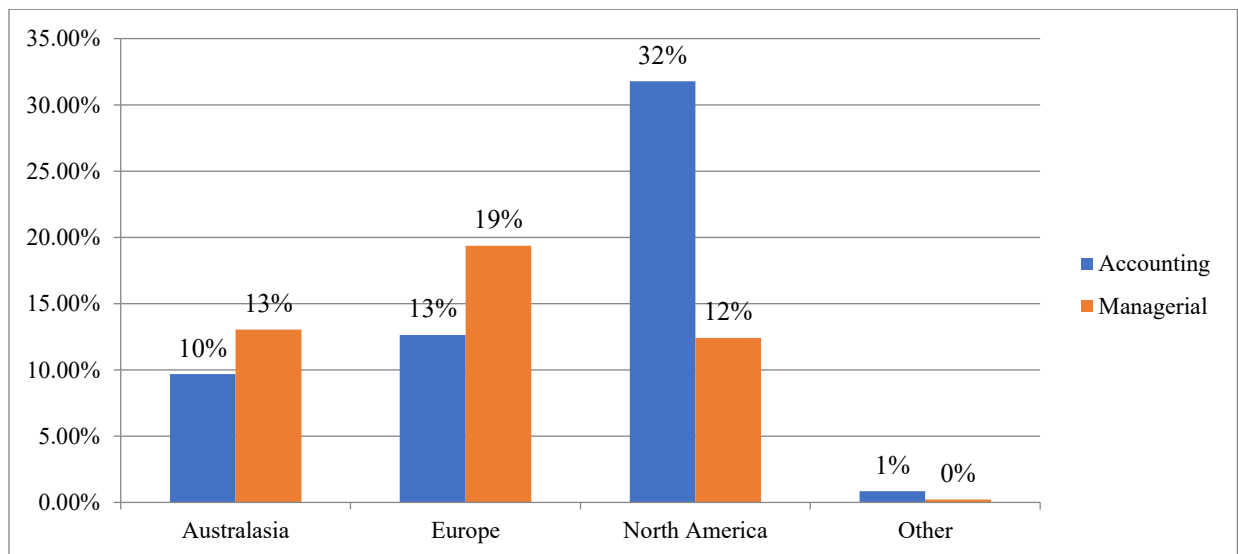


Figure 7. Accounting vs managerial perspective taken by region

A more detailed analysis of the accounting perspective in Figure 8 highlights a focus on intangible assets as a whole rather than considering them as separate elements. Authors focus on a variety of topics, including the treatment of intangibles, the pros and cons of intangibles capitalisation, the differences in treatment between IFRS and US GAAP, the value relevance of goodwill, R&D expenses, advertising costs, and patents.

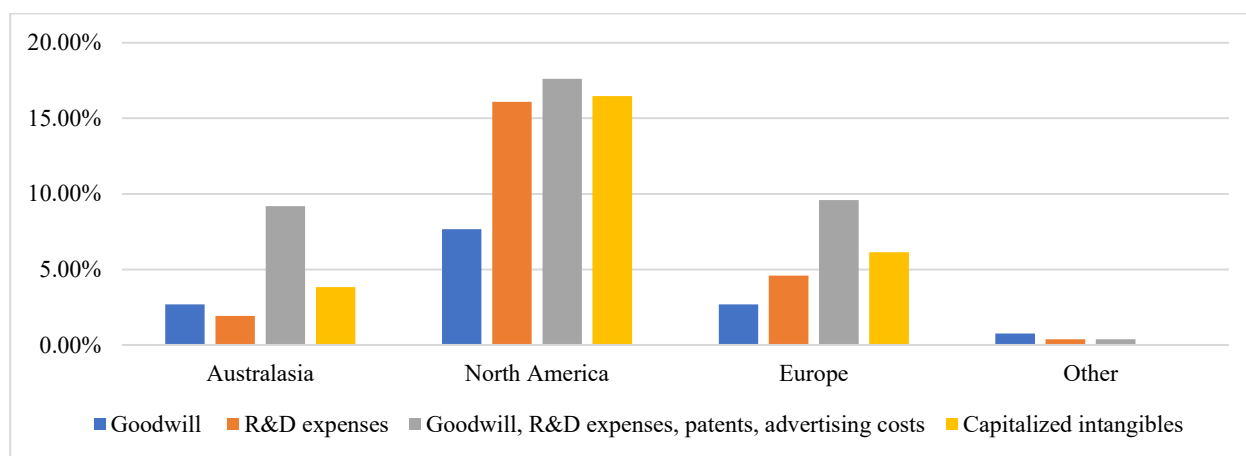


Figure 8. Subcategory of accounting perspective taken by region

The second group of articles analyses intangibles from a managerial perspective (Figure 9). Here, we find that articles published by European and Australasian researchers in accounting journals are mainly devoted to managerial aspects of IC elements, including the disclosure of information on intangibles, application of the Balanced Scorecard, and attempts to “measure the unmeasurable” by escaping from accounting’s cage. These articles tend to focus on the three main capitals – human, relational, and structural, or the myriad other names they are known by. Indeed, some articles focus on introducing new terminology for already existing elements of IC, such as employee capital for human capital (Striukova et al., 2008), social capital for relational capital (Chenhall et al., 2010; Robertson and Funnell, 2012), and process capital for structural capital (Van der Meer-Kooistra and Zijlstra, 2001). Others expand or

subdivide the classic tripartite by introducing elements like information technology (IT) capital (Singh and Van der Zahn, 2008) or innovation capital (Bellora and Guenther, 2013).

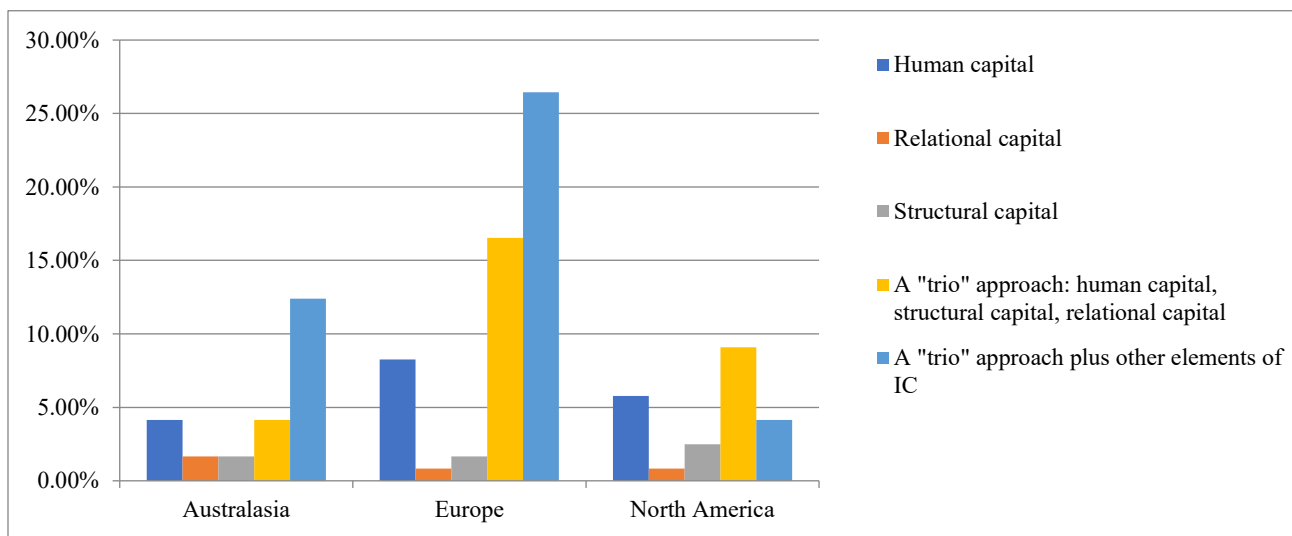


Figure 9. Subcategory of managerial perspective taken by region

We also find that innovative approaches to what can be referred as an intangible asset in a company have been introduced by researchers from every continent. For example, authors detect the efficiency of managerial accounting innovations (Ax and Greve, 2017), examine Big Data and intangibles (Vasarhelyi et al., 2015), look at environmental disclosures (Middleton, 2015) or strategic environmental capital (Clarkson et al., 2011), and even consider ethical capital (McPhail, 2009).

Notably, our analysis of the managerial approach also revealed evidence of conservatism in the current accounting frameworks. Thus, we agree with the final conclusion of the most-cited article in the sample that “GAAP-based financial reporting ignores assets such as people, processes and brand position” (Graham et al., 2005, p.59). Unfortunately, US GAAP is not the only accounting standard to neglect the essential intangible elements of a company: its reputation, its relationships, the creativity of its employees, IT capabilities, and the social responsibility it takes for its actions (Ax and Greve, 2017;

McPhail, 2009). These oversights are one reason why the classic approach to evaluating IC as a trio of human, relational, and structural capital remains centrally crucial to researchers.

4 Research trends and proposed future research directions

The following summary of the main research trends in North American, European, and Australasian scholarship, past, present and future, answers our third research question:

RQ3. What are the main trends and proposed research directions on IC and intangibles in European, Australasian, and American research?

4.1 Influence of accounting regulations on the accounting for intangibles

The SLR reveals that accounting research into intangibles post-2000 has developed side-by-side with accounting regulations and global macroeconomic changes (e.g., Aharony et al., 2010). Since 2005, when publicly listed companies adopted IFRS in the EU, the question of reconciliation and the accounting aspects of intangible assets have attracted the interest of academics from all continents (e.g., Horton and Serafeim, 2010; Christensen et al., 2009).

The issue of the differences between IFRS standards on accounting intangibles and national accounting standards (including US GAAP) has been of high interest to researchers from all regions of the world. Scholars have explored issues related to IFRS (Bae et al., 2008; Hung and Subramanyam, 2007; Lin et al. 2019), and reconciled IFRS with earnings (Chalmers et al., 2012; Chen and Gaviious, 2017), value relevance for investors (Kimbrough, 2007; Oliveira et al., 2010; Ciftci et al., 2014), and stock prices (Bukh et al., 2005; Hodgson et al., 2018). Some researchers have concluded that the current accounting standards do not need to recognise intangible assets in financial statements and that estimates can not be purely dependent on the figures represented in financial accounts (e.g., Barth et al., 2006; Bhattacharya

et al., 2010; Habersam et al., 2013). Keeping in mind the importance of the issue, we propose closer cooperation between researchers and policymakers in the future to help improve existing frameworks and standards so as to better capture “the amount, timing, and uncertainty” related to accounting for intangibles (e.g., Barker, 2020; Georgiou, 2018).

4.2 Voluntary and involuntary disclosure of intangibles and IC

Later topics, such as voluntary and involuntary disclosure, have attracted the attention of authors, especially ones in Europe and Australasia (e.g., Clarkson et al., 2008; Li et al., 2008). These studies highlight a positive relationship between the disclosure of non-financial information and financial performance indicators (Clarkson et al., 2008; Castilla-Polo and Gallardo-Vazquez, 2016; Cohen et al., 2012). Some authors have even suggested that the most value-relevant disclosures are the involuntary ones, such as the stories and rumours produced by the organisation’s stakeholders and stakeholders (Dumay and Guthrie, 2017).

Issues related to integrated reporting (<IR>) have also been investigated in detail in the last five years (e.g., Stubbs, 2014; Abhayawansa et al., 2019). Researchers have concluded that <IR> does not provide enough information for analysts to assess companies. They report that <IR> is typically characterised by incremental modifications to processes and structures rather than transformative changes to the reporting process (Abhayawansa et al., 2019). We propose that, in the future, there should be a more detailed analysis of different parts of <IR>. Further, given that <IR> is considered to be a “trust-building process” (Chaidali and Jones, 2017), there needs to be an in-depth focus on the performance of <IR> content, not just its existence.

The demand for standardising non-financial disclosure should also be of high interest in the future, along with a demand for a “corporate reporting form” that should act as a force for financial stability and

sustainability (La Torre et al., 2020). Studies on these topics will bring new opportunities for understanding how the reporting practices that currently frame traditional accounting influence stakeholder decisions. The current volatility of many economies around the world as a consequence of COVID-19 also raise the need for a better understanding of how information related to accounting, managing and reporting on IC and intangibles may help to contribute to our collective welfare (Dumay et al., 2020).

4.3 The influence of context on accounting and managing IC

A closer look at our results reveals that even though European and Australasian researchers are more concerned with context (Barker et al., 2017; Cairns et al., 2011; Ding et al., 2008), some North American papers also deal with this issue (e.g., in Guo et al., 2006). Thus, in future research, the role of context will become even more crucial. Academics should deeply analyse country-specific and industry-specific factors (legal, accounting, cultural, regulatory) that influence decision making related to accounting and disclosure information on IC and intangibles (Mazzi et al., 2019).

4.4 Diversity of managing bodies and IC

Issues related to the role of stakeholder diversity is also a future research opportunity. European scholars have begun to tackle the issue of the diversity as perceived by stakeholders perceptions (Beattie et al., 2013; Chen et al., 2014), while Australasian researchers are interested in the role diversity plays in ownership and how it influences communications concerning IC and intangibles (Abeysekera, 2012; Kent and Steward, 2008). Future theoretical and empirical research may explore questions of measuring, managing and reporting on intangibles by considering the diversity of stakeholders.

4.5 The role of disruptive technologies in accounting for intangibles

One of the latest trends found in research published by Australasian scholars relates to how blockchain and other disruptive technologies change accounting and auditing for intangibles (e.g., Cai, 2018; Berkman et al., 2018). Some researchers propose that disruptive technologies will offer better accounting of and protections for intangibles (Amani and Fadlalla, 2017). For example, blockchain and smart contracts may help to break through organisational boundaries and lead to the development of self-assuring accounting ecosystems (Moll and Yigitbasioglu, 2019).

Moreover, the implemented blockchain technologies and cybersecurity systems are themselves intangible assets (Berkman et al., 2018) that contribute to higher firm values, which opens many research opportunities for future research. Similarly, there is Big Data and other emerging and disruptive technologies that have yet to be addressed in intangibles and IC research (Moll and Yigitbasioglu, 2019). However, to get the most value out of these new opportunities for measuring and managing IC within companies and across ecosystems, we need to cultivate closer relationships between researchers, businesses, and policymakers. These technologies have the potential to make existing practices and regulations just as redundant as the technologies they are disrupting, and thus not considering them now may lead to lagging, inadequate policies and management practices in future.

4.6 Implications for theory and practice

This review identifies the main trends in IC research over the period 2000 to 2020, as well as the commonalities and differences between American, Australasian, and European research. The main contemporary trends in IC accounting theory and practice have also been established.

Based on our analysis, there is no unanimously accepted definition of intangible assets or IC, and there is not a shared point of view on the relationship between these concepts. Some papers published in

accounting journals focus on the official definitions of recognised intangible assets provided in accounting standards (e.g., Skinner, 2008; Christensen and Nikolaev, 2013). Other authors treat intangibles from a managerial perspective, referring to them as intellectual capital (e.g., Mouritsen et al., 2001; Fincham and Roslender, 2003). While the terms are treated differently in different fields (Lev, 2001; Lev, 2018), conducting an SLR revealed that researchers from different continents agree that intangible assets and IC are sources of value creation (Wyatt, 2005). Moreover, they share a common belief that they should be treated not as stocks but as flows that reflect the possibility of creating value, regardless of whether an accounting approach recognises R&D, goodwill, advertising expenses, patents, and so on (Collier, 2001).

It is essential to keep in mind that R&D expenses, goodwill, advertising expenses, along with human, structural, and relational capital, are all indicators of an organisation's potential future value. They are the drivers of value creation and of competitive advantage (Ratnatunga et al., 2004). Therefore, internal and external stakeholders and stakeholders would significantly benefit from more consistent and dynamic measuring, managing, and reporting of these indicators (Margaritis and Psillaki, 2007). For example, researchers have started to talk about the role of disruptive technologies in acknowledging and accounting for intangible assets (e.g., Berkman et al., 2018; Moll and Yigitbasioglu, 2019).

A closer look at the scope of articles shows that the context and institutional environment are not studied in detail, even when there is only one country involved in the focus of research. Many articles simply provide the results of empirical research without offering explanations based on institutional and country context. The lack of context opens up potential avenues for future research directions in line with Inkinen et al. (2017) and Pedro et al. (2018), who argue that the differences in institutional contexts that influence IC structure need further research.

This SLR leads us to conclude that many researchers are still rooted in the second stage of IC development, where approaches to measuring and reporting IC come to the fore. More than 50% of the articles in the sample, especially those from North America, methodologically focus on accounting issues related to intangibles. The research relies on a top-down, ostensive approach to examining intangibles impairment, fair value accounting, and expensing versus capitalising rather than employing a critical bottom-up, third-stage approach.

We also observe that many North American researchers mainly search for facts, while those from Europe and Australasia spend much of their time trying to explain the reasons for things. One explanation for this could be that US accounting journals are focused on empirical and mathematical analyses, whereby the authors analyse financial data over long observation periods. At the same time, Tayles et al. (2007) argue that the literature places too much attention on the valuation, measurement, and reporting of IC for external reporting purposes while paying far less attention to the implications of IC for managerial accounting practice.

The European and Australasian scholarship more often arrives at the question of how to manage intangibles, applying a bottom-up third-stage approach to IC research. Researchers mainly argue that it is crucial not only to measure intangibles but manage them more effectively (Chen et al., 2014). For example, there is a group of articles that applies scorecard methods to companies from different industries and formulates arguments about the importance of studying particular cases of companies for a deeper understanding of IC systems for managerial purposes (e.g., Johanson et al., 2006; Hoque, 2014). The research trend in these regions is to not only improve quantitative measures of IC but also qualitative measures, while developing IC management systems that will help generate a more productive dialogue between management and analysts and in turn better decisions (Chen et al., 2014). Our position is that

there is a need to develop IC theory in practice and effective IC management through praxis to provide a better view of the actual impact of IC in action (Dumay and Garanina, 2013).

4.7 Implications for society

All research should be moving beyond a pure accounting approach to measuring, managing, and reporting intangibles. Researchers and practitioners need to understand how to implement new intangible technologies, not only in organisations but also for humanity and a better future for our planet. The measuring, managing, and reporting of IC should not be only about “the maximization of [the] financial wealth of corporations, their shareholders, and their top managers” (Johnson, 2017, p. 167). We should start using our knowledge about IC to analyse changing economic realities critically, and its impacts on “business models, people inside and outside organisations and the relationship companies have with society” (Dumay and Guthrie, 2019, p. 2298). As IC researchers, we must keep in mind that we are an essential part of a research community that has a critical and crucial role to play in transforming society – that is, to enlighten and to tackle wicked problems like climate change that are bigger than any one organisation (Dumay and Guthrie, 2019). Otherwise, IC and intangibles scholarship becomes just a part of the problem, not part of the solution.

5 Conclusion

Over the last 20 years, researchers from all continents have produced papers related to measuring, managing, and reporting on intangible assets. However, often this research has been replication with another set of data. In line with Secundo et al. (2015), Dumay and Guthrie (2019), and Buenechea-Elberdin (2017), we propose that IC researchers need to invent more novel approaches to better link the measuring, managing, and reporting of IC to the betterment of a diverse society. Without this impetus, scholars will remain stuck in the first two ostensive stages of IC research.

Dumay and Garanina (2013) support Tayles et al.'s (2007) argument by adapting the Olson, Humphrey, and Guthrie (2001) evaluatory trap argument to IC research. Dumay and Garanina (2013) argue that already too much IC research is trapped in the second-stage. When this is combined with a lack of comprehensive empirical evidence to support the impact of IC on financial performance and value creation, a vicious cycle ensues where research attempts to find an all-encompassing framework for developing IC. Academics in the fourth- and fifth-stage schools assert that IC research must move even further beyond the third-stage of examining implementation practices within a single company. At this stage of the field's maturity, researchers should be looking at how intangibles create utility, social, and environmental value system-wide (Dumay, 2016). Therefore, we call for more studies of IC in action, especially from North America, and especially to tackle the wider problems of society (Dumay et al., 2018b).

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