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BIOMETRIC ANALYSIS OF STUDIES IN THE FIELD OF INTEGRATED REPORTING

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Abstract

The development and dissemination of integrated reporting has solved the inadequacy of financial reporting and the burden of presenting sustainability reporting separately. The development and dissemination of integrated reporting has solved the inadequacy of financial reporting and the burden of presenting sustainability reporting separately. Academic studies have played an important role in this field. Academic studies analysing and evaluating published integrated reports can improve their quality. Bibliometric analysis of such studies aims to create a resource for scientists to conduct new research by identifying gaps and making comparisons and analyses. Additionally, through a systematic review of the literature, this aims to evaluate the role attributed to integrated reporting and computer technology in sustainable business models.The study analysed 330 articles and found that only one article had been published in this field until 2011, after which the number of publications increased. The years with the highest number of articles published were 2020 and 2022. The journal that published the highest number of articles on this theme was Sustainability (Switzerland). The authors who published the most articles were Maroun, W., De Villiers, C., and Dumay, J. The most frequently used keywords were integrated reporting and sustainability. The institution that published the most articles was the University of the Witwatersrand, and the country with the highest number of citations was Italy.

Keywords: Integrated Reporting, Sustainability, Bibliometric Analysis.

1. INTRODUCTION

In today's world, organisations that invest in sustainable practices are gaining recognition. Sustainability involves considering the needs of future generations while meeting economic, social, and environmental requirements. It has become a concept that organisations strive to contribute to in order to achieve the United Nations' 17 Sustainable Development Goals by 2030. Organisations prepare annual reports, sustainability reports, and integrated reports to provide information about their contribution to the set targets.

Organisations' areas of responsibility have expanded to meet society's expectations in the global world. In the past, financial reports were sufficient for profit-focused institutions with a narrow area of responsibility. However, in today's world, society is interested in more than just earnings. To meet the expectations of this changing society, organisations are moving towards integrated reporting.

Integrated reporting combines financial and sustainability reporting for organisations (Alptekin and Can, 2021: 783). It is an evolution in communication and value creation

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processes, utilising advanced computer technology. As information requirements and stakeholder demands continue to increase, it is increasingly important to develop approaches for understanding integrated reporting and defining the scientific environment in this field.

This text provides a comprehensive and systematic overview of the academic literature on the role of integrated reporting and integrated thinking in achieving sustainable business models. While this new form of reporting is being adopted by various organizations in many countries, inconsistencies may arise due to the lack of clarity of the concept, both conceptually and procedurally, particularly in terms of the adoption of the International Framework. In recent years, there has been a significant increase in the number of studies published on integrated reporting. However, conflicting findings indicate the need to emphasise the main common issues related to this topic.

The study presents a conceptual framework and a resource for scientists to conduct new research by identifying gaps and opportunities for comparison and analysis. The literature review aims to evaluate the role of integrated reporting and computer technology in sustainable business models.

2. CONCEPTUAL FRAMEWORK

2.1. Integrated Thinking and Integrated Reporting

Reporting serves as a bridge for stakeholders to access information about the organization. The reporting process began with financial reporting and has evolved to its current stage with integrated reporting. In this process, organizations present non-financial information to stakeholders through reports on compliance with corporate governance principles, corporate social responsibility, sustainability, and financial reporting. At the end of the process, the integrated reporting phase was initiated to present separately presented information together.

Organizations aimed to adopt an integrated mindset to present financial and non-financial information in a cohesive manner. This approach allows top management to monitor, manage, and inform the value creation process in the short, medium, and long term (Aras & Sarıoğlu, 2015).

Integrated reporting is a new form of corporate reporting that conveys information on creating value today and in the long term with the effective use of resources. It aims to sustain the activities of the organization in a concise and understandable manner with a holistic and strategic perspective. Integrated thinking is the foundation of integrated reporting. (Sultanoğlu and Akdoğan, 2020: 22).

Integrated reporting is founded on the concept that business operations have social, economic, and environmental impacts, and that these impacts should be reported holistically (Altınay, 2016:57). The purpose of integrated reporting is to disclose the correlation between financial and non-financial performance and to clarify how these interconnected dimensions generate value for shareholders and other stakeholders (Buitendag et al., 2017:2). Integrated reporting is a concise and comprehensible

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presentation of a company's strategy, corporate governance approach, and financial indicators from social, environmental, and economic perspectives. It demonstrates their contribution to the value creation process (Yılmaz et al., 2017:97).

The International Integrated Reporting Council (IIRC, 2013: 7) defines integrated reporting as a clear and concise expression of how an entity's strategies, management approach, performance, and expectations can create value over time, considering the entity's external environment.

Based on these definitions, integrated reporting can be defined as the process of evaluating both financial and non-financial information of an enterprise to create value. This information is then presented in a single report that is easy to understand for interested parties (Oral & Erkuş, 2018: 266).

2.2. Organisations Regulating Integrated Reporting

The International Integrated Reporting Council (IIRC) is the foremost organization in the development and dissemination of integrated reporting. The IIRC has established the Integrated Reporting Framework to ensure the development and dissemination of integrated reporting. The framework includes guidelines for integrated reporting and content elements.

The International Integrated Reporting Council (IIRC) was established in 2010 by IFAC, GRI, and A4S, the Accounting for Sustainability Project (Main and Hespenheide, 2010: 127). On 16 April 2013, the Council published the Integrated Reporting Framework (Busco et al., 2014: 7).

In 2011, studies were initiated in Turkey in cooperation with the Sustainable Development Association (SKD) and the Corporate Governance Association of Turkey (TKYD) to raise awareness about integrated reporting (Doğan, 2020: 134). The Integrated Reporting Turkey Network (ERTA) was established in 2015 to develop and promote integrated reporting in Turkey. Based in Istanbul, ERTA supports organizations in integrated reporting. ERTA (Ercan and Kestane, 2017) translated the Integrated Reporting Framework into Turkish.

The lead organisation was established with the support of regulatory bodies, and their activities were effective in the development and dissemination of integrated reporting. Other regulatory bodies that are effective in integrated reporting are briefly mentioned.

The International Federation of Accountants (IFAC) was established in 1977 during the 11th Congress of Accountants in Munich. Its objective is to enhance the value of the accounting profession by improving accounting practices worldwide. In 2009, the organization participated in the establishment of the International Integrated Reporting Council (IIRC) at the request of the Prince of Wales, in collaboration with the Global Reporting Initiative (GRI) (Yüksel, 2018: 15).

The Global Reporting Initiative (GRI) is an independent organisation established in Boston in 1997 that prioritises sustainability reporting (Brown, Jong, Lessidrenska, 2009:

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115). In 2011, GRI published the G4 Guidelines, which marked a step towards the start of preparations for integrated reporting (Eccles and Saltzman, 2011: 58).

The Integrated Reporting Committee of South Africa (IIRC) was established in 2010 by South Africa's major industrial and professional organisations to provide guidance on integrated reporting to businesses. The IIRC plays a crucial role in the development and adoption of integrated reporting by businesses (Gökçen and Eldemir, 2019: 365).

3. LITERATURE REVIEW

Integrated reporting is a communication tool that conveys the value creation story of organisations to stakeholders. Its use and importance have increased since the 2000s. The integrated reporting framework was translated into Turkish in 2021, leading to an increase in the number of publications in Turkey. Studies on the subject have intensified after 2021 (Kurt, 2023: 15). When examining the literature on the subject, it becomes clear that studies were mostly conceptual in the early years. However, in subsequent years, there was a shift towards application-oriented analyses, with companies publishing integrated reports.

Academic studies have played a significant role in the development and dissemination of integrated reporting. Academic studies examining and evaluating published integrated reports can improve their quality both within the publishing organization and the country as a whole. Such studies also function as an audit mechanism to eliminate deficiencies and correct inaccuracies.

Below are some bibliometric studies on the subject, evaluated alongside topics such as sustainability reports, environmental issues, and corporate responsibility reports:

Doğan (2020) analysed 64 academic studies on integrated reporting registered in the National Thesis Centre of the Council of Higher Education (YÖKTEZ) and the National Academic Network and Information Centre (ULAKBİM) between 2010 and 2020. The bibliometric characteristics of the studies were evaluated. Based on the findings, the year with the highest number of theses was 2019, while the year with the highest number of articles was 2018. The first thesis was published in YÖKTEZ in 2016, and the first article was published in ULAKBİM in 2012.

Baditoiu et al. (2021) conducted an analysis of scientific studies on the topic of integrated reporting and its connection with performance. The study analysed 262 articles from the Web of Science (WoS) Core Collection database and evaluated the findings. The research area showed a correlation between integrated reporting and performance, as evidenced by keywords, co-authorship, and co-citations. The study also identified the need for long-term institutional change in the social and economic areas impacted by integrated reporting.

Hyk (2021) conducted a bibliometric content analysis of scientific publications on integrated reporting. The study analysed publications in the Scopus and Web of Science databases with the keyword 'integrated reporting' between 1990 and 2020. The findings indicate a significant increase in publications on the subject since 2014. The International

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Integrated Reporting Council approved the adoption of the International Integrated Reporting Framework at the XIXth World Congress of Accountants in 2014, which sparked public debate.

In 2021, Vaio et al. conducted a bibliometric analysis of 60 English language publications from 1990 to 2019. The findings indicate that the integration of reporting and computer technology has led to an evolution in the way organisations communicate and create value. This has facilitated the integration of processes and improved the allocation of resources and capital.

Othman and Basnan (2021) conducted a bibliometric analysis of the main publications on integrated reporting. The study analysed 358 studies in the Scopus database and found an increase in integrated reporting research, particularly from 2013 to 2020. The research revealed contributions from 59 countries, 160 institutions, and 120 authors collaborating on multi-author studies.

Fayad et al. (2023) conducted a systematic analysis of publications in the field of integrated reporting. They evaluated current publication trends based on data obtained from the Scopus database. The findings indicate an increase in the trend of international relations literature from 2017 to 2019. The subject was contributed to by 148 authors from 40 institutions across 20 countries.

Kurt (2023) analysed 102 articles and 63 theses written in Turkey between 2012 and 2022 on integrated reporting. The research focused on publications in TR Index, Dergi Park, and National Thesis Centre. The findings were evaluated, and it was determined that the first article was published in 2012 and the first thesis in 2016. The studies published between 2021 and 2022 were found to be concentrated. In 2021, it was found that translating the Integrated Reporting Framework into Turkish did not impact the number of publications.

Upon evaluating the literature, it is clear that integrated reporting has gained popularity in recent years. However, there is a need to identify gaps in this field through effective evaluation of conducted studies. When evaluating academic studies on the subject, it is important to identify the specific issues related to integrate reporting that scientists should focus on. This will help to develop an understanding of integrated reporting thinking and create high-quality reporting in applications.

4. METHOD

Contributing to progress in a scientific field can be achieved by reviewing the existing literature. In this regard, it is particularly challenging and crucial to contribute to and develop theory. Theory provides structure and coherence to various research questions, aiding in the understanding of which factors should be analysed, the relationship between them, and how they can be applied (Kontogianni and Alepis, 2020: 4). A bibliometric analysis was conducted to study the theoretical deficiencies and practical applications of the subject.

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Bibliometric research is a method that offers an overview of academic research in a specific field and identifies key trends in articles, citations, authors, keywords, and institutions (Martínez-Lopez et al., 2018: 441; Srisusilawati et al., 2021: 5). Databases such as WoS, Google Scholar, Scopus, and PubMed can be used to obtain the data for the research. However, the selection of a database often depends on the researcher's preference, as there is no general consensus. In social sciences, the WoS and Scopus databases, which offer accessible statistical data, have advantages. This study used the Scopus database because it provides a more comprehensive search opportunity (Ferjanić Hodak & Krajinović, 2020; Martín-Martín et al., 2018).

With the Scopus database analysis tool, 505 studies were accessed on 05.01. On 2024, 505 studies were accessed by using the TITLE-ABS-KEY ((("Integrated Reporting") AND (Sustainability))) parameter, TITLE-ABS-KEY (((("Integrated Reporting") AND (sustainability))) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (PUBYEAR , 2024)) and 330 articles were obtained.

Bibliometric analyses have two main uses: performance analysis and scientific mapping (Cobo et al., 2011: 1382). Science mapping or bibliometric mapping is an important research topic in bibliometrics. In other words, science mapping aims to show the structural and dynamic aspects of scientific research (Morris and Van Der Veer Martens, 2008: 216). Performance analyses are based on the analysis of productivity and impact indicators such as the number of published documents and the number of citations (Gaviria et al., 2018: 1656). Performance and mapping analyses were performed on the data obtained within the scope of bibliometric analysis and answers to the following questions are sought by considering the existing literature:

1. Which journals are prominent in the field of integrated reporting and sustainability?
2. What is the performance data of research publications?
    - 2.1. What is the number of articles published in research journals and their distribution by years?
    - 2.2. Which articles are most frequently cited in research?
    - 2.3. Which authors, universities and countries publish the most and are the most cited?
3. How are the collaborations related to the research topic?
    - 3.1. What are the words that form the most collaborations in research, their relationships by years, and the development and interaction of concepts?
    - 3.2. Who are the authors who collaborate the most on the research topic?
    - 3.3. Between which countries is the most co-operation in research?

In the study, R bibliometrix software created for bibliometric analysis was used. The findings in the study were obtained from Biblioshiny application.

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5. FINDINGS

In this part of the study, the performance and scientific mapping analyses of publications in the field of integrated reporting were made and the results were evaluated.

5.1. Findings Related To Journals in the Research Area

In the Scopus database ("Integrated Reporting") AND (Sustainability) words were selected as keywords and searched without date limitation. The journals that conducted studies on the subject were analysed in the bibliometrix programme. Only journals published in English were included in the analysis.

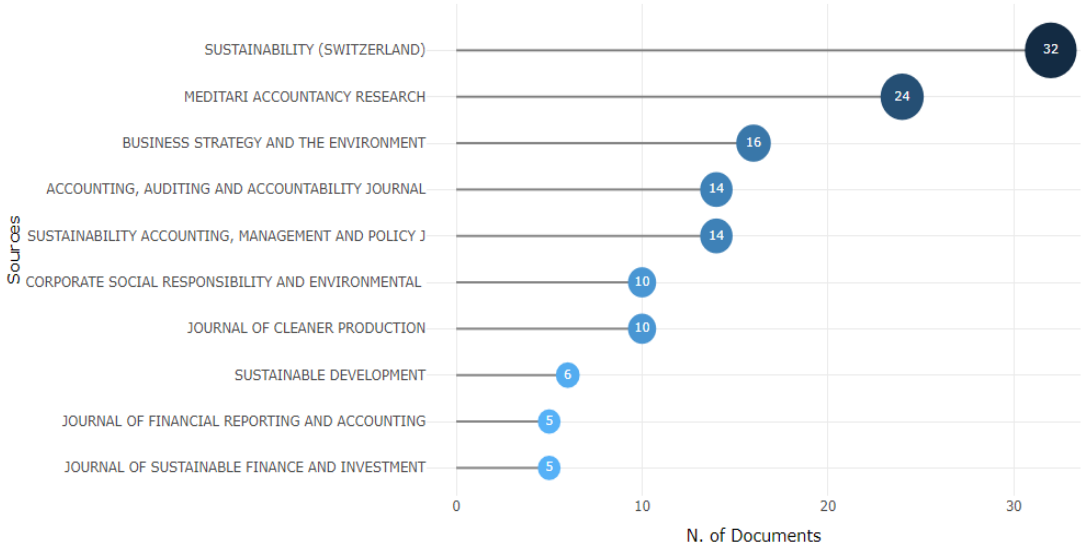

Figure 1: Top 10 Journals by Number of Publications

Figure 1 shows the top 10 journals in the Scopus database related to the research topic. Sustainability (Switzerland) has the highest number of publications. To determine the impact power of the journals, Bradford analysis was performed and the results are presented in Table 1, which shows the prominent core journals in the database.

Table 1: Bradford's Law

SO	Rank	Freq	cumFreq	Zone
SUSTAINABILITY (SWITZERLAND)	1	32	32	Zone 1
MEDITARI ACCOUNTANCY RESEARCH	2	24	56	Zone 1
BUSINESS STRATEGY AND THE ENVIRONMENT	3	16	72	Zone 1
ACCOUNTING, AUDITING AND ACCOUNTABILITY JOURNAL	4	14	86	Zone 1
SUSTAINABILITY ACCOUNTING, MANAGEMENT AND POLICY JOURNAL	5	14	100	Zone 1
CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	6	10	110	Zone 1
JOURNAL OF CLEANER PRODUCTION	7	10	120	Zone 2
SUSTAINABLE DEVELOPMENT	8	6	126	Zone 2
JOURNAL OF FINANCIAL REPORTING AND ACCOUNTING	9	5	131	Zone 2
JOURNAL OF SUSTAINABLE FINANCE AND INVESTMENT	10	5	136	Zone 2

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Bradford's Law, developed by Samuel C. Bradford, states that documents on a particular subject are distributed according to a mathematical function. Therefore, an increase in articles on a subject will require an increase in the number of journals or information sources (Sangam, 2015: 2). This law is used to determine the core group of journals published in the relevant field. The journals are classified into three groups by the law. The core group, which contains one third of the articles on the subject, is the first group (Garfield, 1980: 477).

The analysis according to Bradford's law is given in Table 1 and SUSTAINABILITY (SWITZERLAND), MEDITARI ACCOUNTANCY RESEARCH, BUSINESS STRATEGY AND THE ENVIRONMENT, BUSINESS STRATEGY AND THE ENVIRONMENT, ACCOUNTING, AUDITING AND ACCOUNTABILITY JOURNAL, SUSTAINABILITY ACCOUNTING, MANAGEMENT AND POLICY JOURNAL, CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT were found to be the most productive journals as a core group. As a core group, they were found to be the most productive journals.

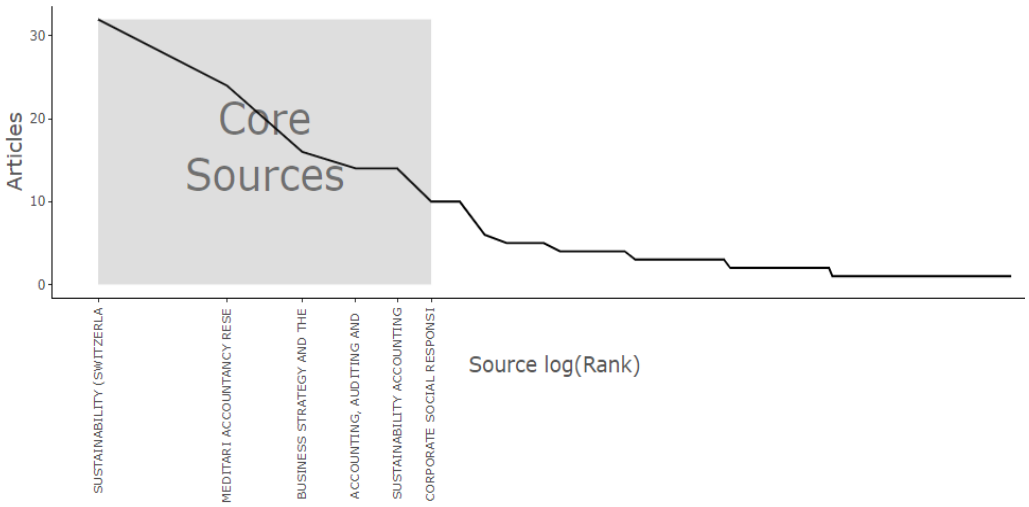

Figure 2: Distribution Chart of Journals According to Bradford's Law

Figure 2 shows the distribution graph of journals according to Bradford's law. When the scatter plot is analysed, it is confirmed that the journals listed above constitute a core group among the journals publishing on research.

Table 2: Sources' Local Impact

Element	h_index	g_index	m_index	TC	NP	PY_start
BUSINESS STRATEGY AND THE ENVIRONMENT	14	16	1,077	1520	16	2012
SUSTAINABILITY (SWITZERLAND)	14	25	1,556	635	32	2016
ACCOUNTING, AUDITING AND ACCOUNTABILITY JOURNAL	12	14	1,091	1619	14	2014
MEDITARI ACCOUNTANCY RESEARCH	12	24	0,923	688	24	2012

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JOURNAL OF CLEANER PRODUCTION	10	10	0,833	901	10	2013
SUSTAINABILITY ACCOUNTING, MANAGEMENT AND POLICY JOURNAL	10	14	1	383	14	2015
CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	7	10	0,583	798	10	2013
SUSTAINABLE DEVELOPMENT	5	6	0,217	184	6	2002
ACCOUNTING, ECONOMICS AND LAW: A CONVIVIUM	4	4	0,8	52	4	2020
CRITICAL PERSPECTIVES ON ACCOUNTING	4	4	0,4	1019	4	2015

Examining Table 2, which analyses the source effect, reveals that Business Strategy and The Environment has the highest impact value with an h-index of 16, a g-index of 16, and an m-index value of 1.077 in the journal's ranking index. The journal, which first published on integrated reporting in 2012, has published 16 research articles and received a total of 1520 citations.

5.2. Performance Analysis of Research

To analyse the performance of publications in the study, scientific data such as general publication data, article count and development over time, highly cited articles, productive authors and universities, cited countries, and relevant keywords were used (Gaviria et al., 2018: 1656).

Within the scope of the research, 330 articles were accessed between 2002 and 2023 by searching for the keywords 'Sustainability' and 'Integrated Reporting' on the 'Scopus' database. Table 3 provides general information about the articles.

Table 3: General Findings Related to the Study

Description	Results
Timespan	2002:2023
Sources (Journals)	136
Documents	330
Annual Growth Rate %	20,59
Document Average Age	4,75
Average citations per doc	38,47
Author's Keywords	790
Authors	690
Single-authored docs	54
Co-Authors per Doc	2,6
International co-authorships %	28,79
Article	330

Based on the data presented in Table 3, a total of 690 authors conducted research studies until 2023. The number of single-author publications was 54, and the ratio of co-authors per publication was 2.6. Additionally, the ratio of international co-authors was 28.79%.

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5.2.1. Scientific Production by Year

Figure 3 shows the graph of annual scientific production from 2002 to 2023 based on the themes analysed through bibliometric analysis.

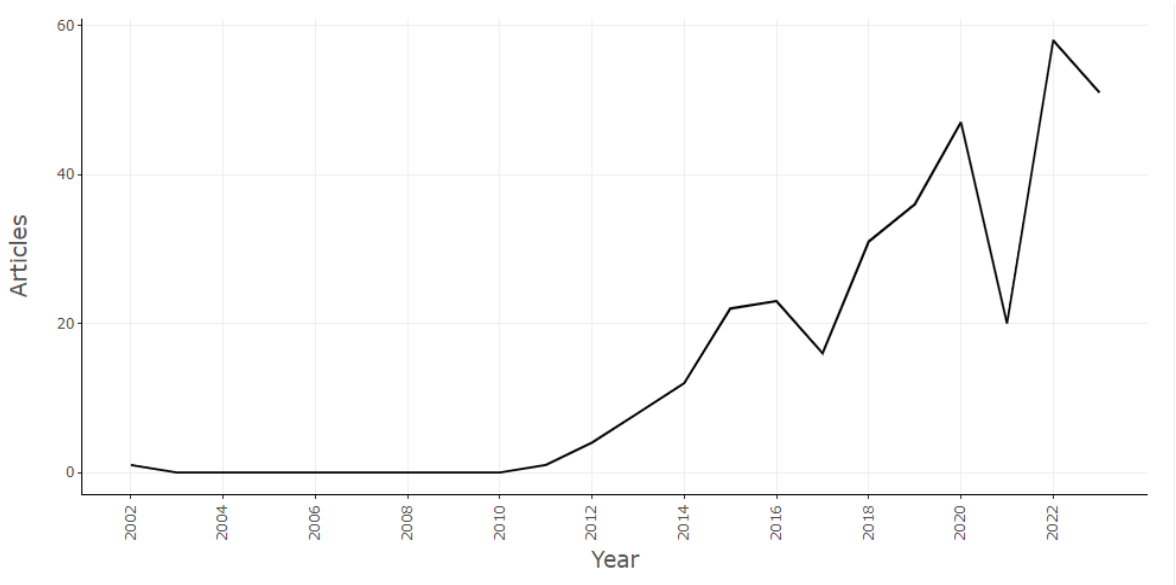

Figure 3: Scientific Production by Years

Figure 3 illustrates the publication trend of articles on the research topic. The first article was published in 2002, followed by another article in 2011. The rate of article publication increased in the subsequent period. The number of articles published in 2020 was 47, which decreased to 20 in 2021, and reached the highest number of publications of 58 in 2022.

5.2.2 Total Annual Number of Citations

Citation analyses are commonly used in bibliometric studies to measure impact. This involves creating a list of the most cited works, authors, or journals in the field under investigation. The underlying assumption is that authors cite documents that they find important for their work, so an article is considered important if it is heavily cited (Zupic & Cater, 2015:431).

Table 4: Total Number of Annual Citations

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2023	2,1	51,00	1,05	2
2022	7,74	58,00	2,58	3
2021	16,05	20,00	4,01	4
2020	25,94	47,00	5,19	5
2019	32	36,00	5,33	6
2018	57,48	31,00	8,21	7
2017	71,19	16,00	8,90	8
2016	55,78	23,00	6,20	9
2015	88	22,00	8,80	10

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2014	136,25	12,00	12,39	11
2013	125,5	8,00	10,46	12
2012	133	4,00	10,23	13
2011	2	1,00	0,14	14
2002	134	1,00	5,83	23

Upon analysing Table 4, it becomes apparent that articles published in previous years received more citations. Specifically, 2014 was the most productive year with an average citation rate of 12.39 per article and an average annual citation rate of 136.25. In that year, 12 research articles were published.

5.2.3. Most Relevant Authors

The study analysed the scientific production of authors by examining the number of publications, production by year, and impact values. Figure 4 displays the most relevant authors related to the research topic. Among the top 10 authors with the most publications between 2002-2023, Maroun, W. has the highest number of publications with 17 articles. De Villiers, C. ranks second with 7 articles, and Dumay, J. ranks third with 5 articles.

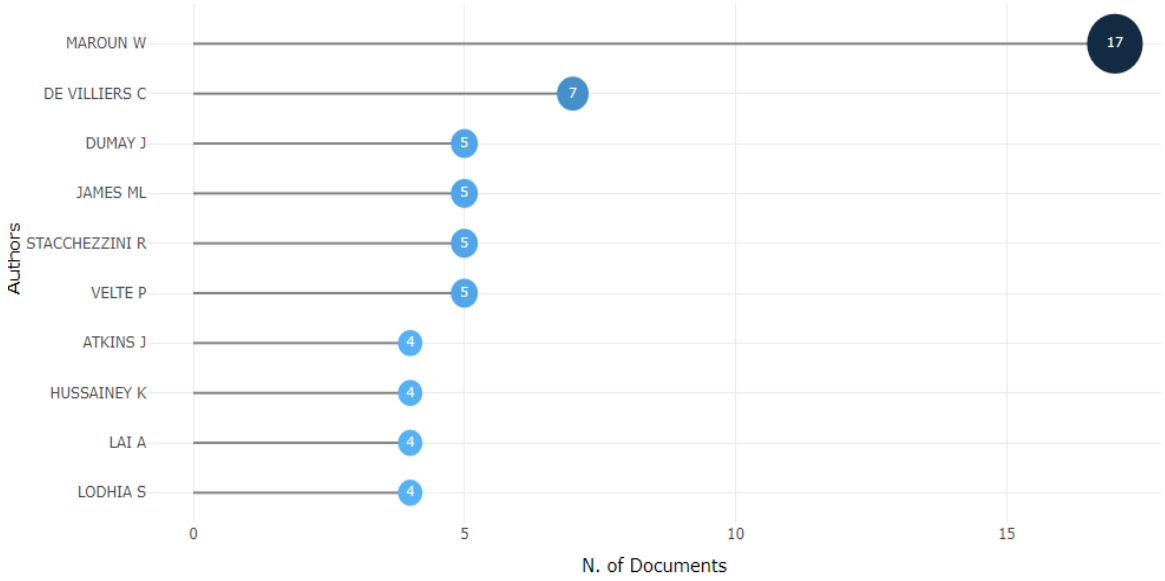

Figure 4: Most Relevant Authors

Figure 5 displays the publication timeline of the 10 most prolific authors over time. Each row represents a respective author, with button size indicating the number of documents and colour intensity indicating total citations per year.

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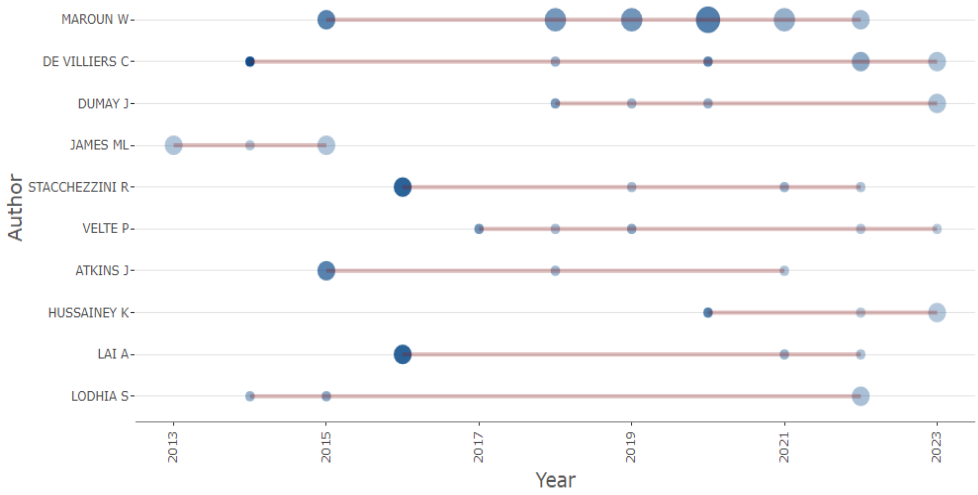

Figure 5: Authors' Production over Time

Upon analysing Figure 5, which displays the authors' studies and citations by year, it becomes apparent that De Villiers, C. stands out with the studies conducted in 2014 and a total of 494 citations per year.

Table 5: Authors' Local Impact

Element	h_index	g_index	m_index	TC	NP	PY_start
MAROUN W	13	17	1,3	690	17	2015
DE VILLIERS C	6	7	0,545	730	7	2014
JAMES ML	5	5	0,417	62	5	2013
STACCHEZZINI R	5	5	0,556	416	5	2016
ATKINS J	4	4	0,4	318	4	2015
DUMAY J	4	5	0,571	212	5	2018
LAI A	4	4	0,444	382	4	2016
LODHIA S	4	4	0,364	237	4	2014
UNERMAN J	4	4	0,364	662	4	2014
VELTE P	4	5	0,5	276	5	2017

TC=Total Citation, NP= Number of Publications, PY_start= Year of First Publication

Table 5 displays the impact values of the authors in the dataset based on their total citations, number of publications, and the year of their first publication in the journal. Maroun, W. ranks first with an h-index value of 13, a g-index value of 17, an m-index value of 1.3, and 690 citations.

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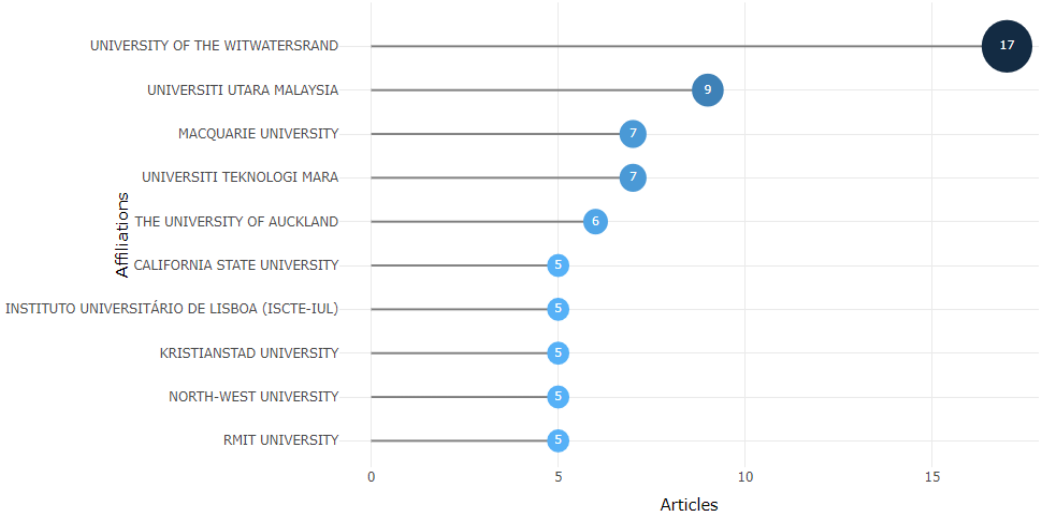

Figure 6: Most Relevant Affiliations

Upon examination of the affiliated institutions of the authors of the articles in the database related to the study, the University of the WİTWATERSRAND ranks first with 17 authors, followed by UNİVERSİTİY UTARA MALAYSİA with 9 authors, and MACQUARİE UNİVERSİTY with 7 authors.

5.2.4. Most Cited Articles Worldwide

Table 6 displays the most cited articles globally and the journals in which they were published, based on data obtained from the Scopus database. The article with the highest number of citations resulting from the bibliometric analysis is 'Integrated Reporting: Insights, gaps and an agenda for future research' by De Villiers, C., Rinaldi, R., Unerman, J. (2014).

Table 6: Most Global Cited Documents

Article Title	Researchers	Year	Journal	TC	TC Per
Integrated Reporting: Insights, gaps and an agenda for future research	De Villiers, C., Rinaldi, R., Unerman, J.	2014	Accounting, Auditing, Accountability Journal	494	44,91
The role of the board in the dissemination of integrated corporate social reporting	Aceituno Jv, F., Ariza, R.L., Sanchez, IM.G.	2013	Corporate social responsibility and environmental management	423	35,25
The international integrated reporting council: a story of failure	Flower, J.	2015	Critical Perspectives on Accounting	409	40,90
The international integrated reporting council: a call to action	Adams, C.	2015	Critical Perspectives on Accounting	340	34,00
Determinants of traditional sustainability reporting versus integrated	Jensen, JC, Berg, N.	2012	Business Strategy and the Environment	334	25,69

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reporting. An institutionalist approach					
Integrated reporting and internal mechanisms of change	Stubbs, W., Higgins, C.	2014	Accounting, Auditing, Accountability Journal	288	26,18
Explanatory factors of integrated sustainability and financial reporting	Frias-A. J. V., Rodríguez-A, L.,Sánchez,G I. M	2014	Business strategy and the environment	286	26,00
Integrated reporting: On the need for broadening out and opening up	Brown, J., Dillard, J.	2014	Accounting, Auditing, Accountability Journal	261	23,73
Is integrated reporting determined by a country's legal system? An exploratory study	Frias, A.J. V., Rodríguez,A. L., Sánchez,G. I. M.	2013	Journal of cleaner production	242	20,17
The cultural system and integrated reporting	Sánchez,G.I.M., Rodríguez,A.L., Frías,A. J. V	2013	International Business Review	228	19,00

5.2.5. Most Cited Countries

Table 7 presents the countries with the highest number of citations related to the research topic.

Table 7: Most Cited Countries

Country	TC	Average Article Citations
ITALY	1680	48,00
SPAIN	1555	91,50
UNITED KINGDOM	1279	55,60
GERMANY	1186	74,10
AUSTRALIA	948	55,80
SOUTH AFRICA	644	22,20
NETHERLANDS	613	61,30
NEW ZEALAND	606	55,10
FRANCE	278	69,50
INDIA	191	38,20

The analysis results indicate that Italy is the most cited country with 1680 citations and an average of 48.00 citations per article. Spain follows with 1555 citations and an average of 91.50 citations per article, and the UK with 1279 citations and an average of 55.60 citations per article.

5.3. Science Mapping Analysis of Research

Science mapping analysis examines the structural and dynamic aspects of scientific research, including co-citation and co-word analysis, to explore the relationship between the articles being studied (Farooq, 2021; Zupic & Cater, 2015). The objective of science mapping is to identify intellectual connections within the knowledge system, categorize items such as documents, authors, journals, and words into different groups, and create

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a visual representation of the research field's structure and resulting classification (Zupic & Cater, 2015: 429). Science mapping analyzes scientific knowledge from a statistical perspective.

5.3.1. Most Relevant Keywords

Keywords provide a clear and concise description of the research content and are used to determine the frequency, change over time, and trend of topics in the research area (Zheng et al., 2016: 1218). Figure 7 shows the word cloud formed by the keywords related to the study topic (Author's keywords) within the scope of the analysis.

Figure 7: Word Cloud

Upon analysis of the word cloud, it is evident that the terms 'Integrated Reporting' and 'Sustainability Reporting', which are the focus of this research, are frequently utilised.

5.3.2. Co-occurrence Analysis

The co-occurrence network, also known as a coword network, is a content analysis technique used to establish relationships between words in documents and create a conceptual structure of the area under investigation (Callon et al., 1983).

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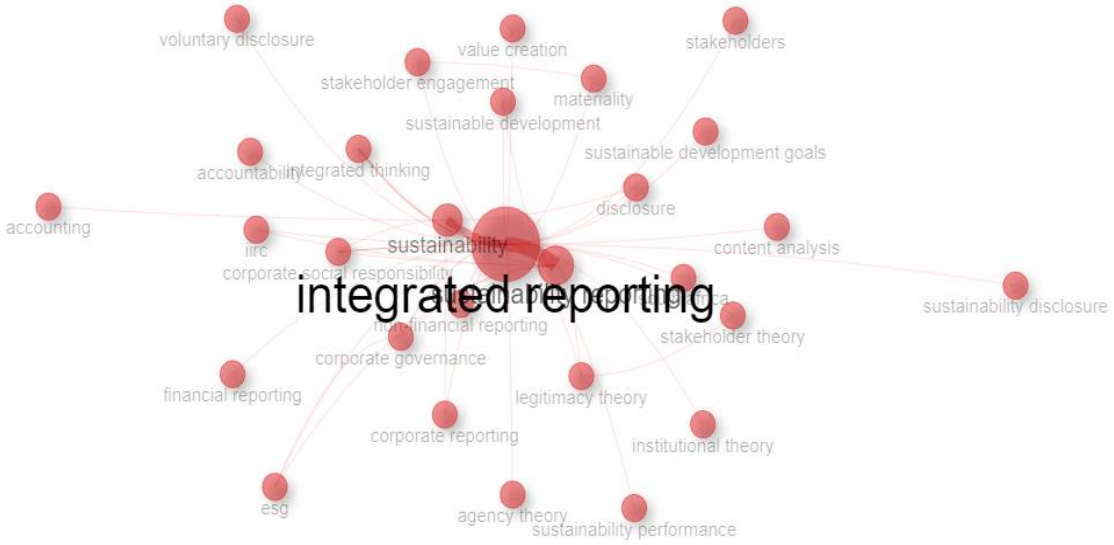

Figure 8: Co-occurrence Network

Figure 8 shows the structure (co-occurrence network) formed by the occurrence of keywords together. The minimum number of occurrences of a keyword chosen during the analysis was 5. The colours represent the clusters to which each word belongs, and each cluster can be seen as a topic. The size and proximity of the nodes in the clusters indicate the frequency of use of the words. As shown in Figure 8, the peer association network consisted of only one cluster of keywords. The cluster contains the research topic 'Integrated Reporting', with the largest node being the word 'Sustainability'.

5.3.3 Co-author Analysis

Co-authorship analysis examines the collaboration networks of authors on articles (Acedo et al., 2006: 959). It is assumed that co-authorship of scientific publications is a measure of collaboration. Author collaboration analysis is used to understand the patterns of scientific collaboration (Sampaio et al., 2016: 1). The author collaboration network is presented in Figure 9.

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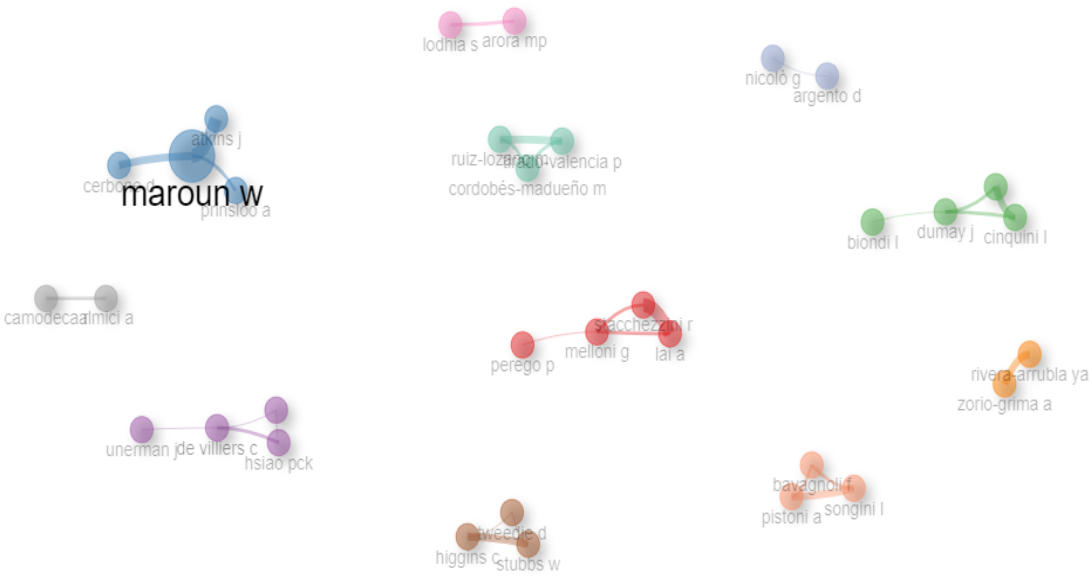

Figure 9: Author Collaboration Network

Figure 9 shows the authors who collaborate the most, with the size of the nodes indicating their level of collaboration. Each colour cluster represents the authors' different collaborations. The blue cluster, which is the largest node, consists of Maroun, W, Atkins, J, Cerbone, D, and Prinsloo, A. Their research focuses on “Corporate Governance and Integrated Reporting”, “Integrated Thinking”, and “Integrated or Sustainable Reporting”.

5.3.4. Collaboration Analysis Consisting of Countries

The collaboration analysis of countries is presented in Figure 10, which displays the network illustrating the cooperation between them.

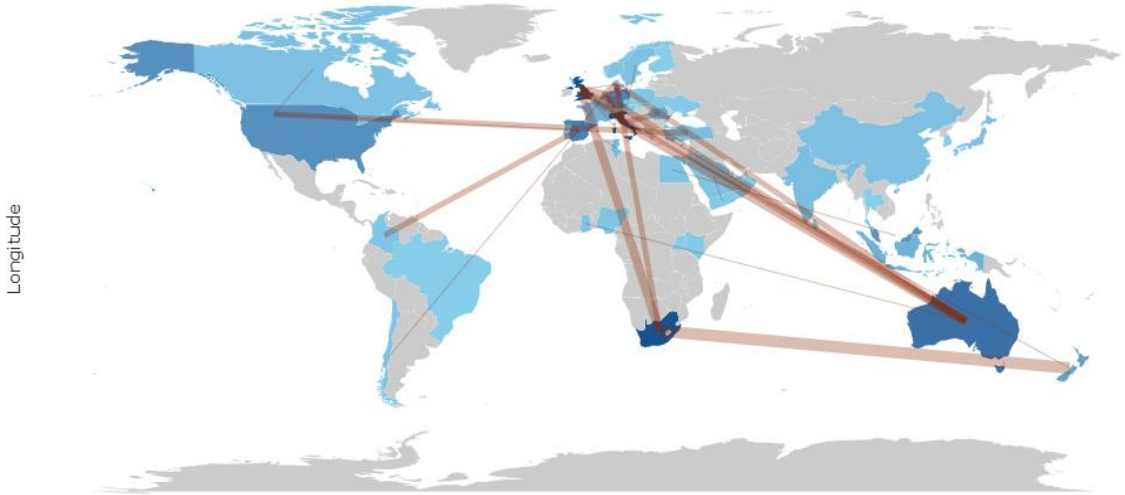

Figure 10: World Cooperation Map

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Figure 10 shows the world cooperation map, which indicates that the countries with the highest level of cooperation are SOUTH AFRICA and NEW ZEALAND (f=7), followed by ITALY and AUSTRALIA (f=5).

CONCLUSION

Integrated reporting is a practice that responds to changing societal expectations and serves sustainability. To turn the sustainability approach, which takes into account the needs of future generations, into a competitive advantage, it is important to present contributions to sustainability to stakeholders through reporting. Sustainability reporting serves this purpose. However, creating separate reports for financial and non-financial information results in a lack of connection and reduces understandability. Integrated reporting, which presents financial and non-financial information in an integrated manner, is expected to enhance sustainability understanding and benefit the world as a whole.

The study 'Integrated Reporting' conducted a search for the words 'Sustainability' in the Scopus database, resulting in a total of 505 studies. The articles were then filtered to include only those in the fields of 'Business, Management and Accounting', 'Economic Econometric and Finance', and 'Social Sciences', resulting in 330 articles in English. In the field of integrated reporting, only one article was published until 2011. However, the number of publications has since increased, with the most articles being published in 2020 and 2022. Sustainability (Switzerland) published the most articles on this theme, with the highest number of publications by Maroun, W., De Villiers, C., and Dumay, J. The most commonly used keywords were integrated reporting and sustainability. The University of the Witwatersrand was the institution with the highest number of publications, and Italy was the most cited country. The production of integrated reporting and sustainability research by countries, universities, and authors has increased over the years. Despite the growing interest, studies in this field remain insufficient, making it an area open to academic research.

This study aims to contribute to the literature by determining the place of the concepts of 'Integrated Reporting and Sustainability' in international literature and their level of coverage. Therefore, future research should re-evaluate the theme at different times using various analysis techniques and compare its contributions to the literature over the years.

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