

Readability Research in Policy Documents (2004-2024): A Bibliometric Analysis of Trends, Themes, Authors, and International Collaboration

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ABSTRACT

Readability plays a vital role in documentation to ensure the targeted readers and the public understand the shared information. Readable documents allow readers to comprehend unfamiliar texts easily, hence helping them make informed decisions. Past studies have shown that documents related to law, finance, business, medical, nursing, and insurance policies, among others, often need clarification for laypeople to comprehend the context due to the technical jargon used. To achieve a clearer insight into the readability of policy documents, this study conducts a bibliometric analysis of research articles from 2004 to 2024, exploring the research trends, significant contributors, prominent subject areas, themes, and countries' collaboration in the research field. The finding reveals that the published articles' trend fluctuated and peaked in 2020 during the COVID-19 pandemic. Essential analysis of the key authors and their cited articles, popular research topics, keywords, and international cooperation networks is also highlighted. It is suggested that future research on readability in public documents should be expanded to broader geographical areas, studying different cultures and norms that affect readability and, thus, enhance global policy communication.

Keywords: *bibliometric analysis, policy documents, readability, reading comprehension*

INTRODUCTION

Policy readability is essential for effective communication and comprehension by a broad audience, including policymakers, policyholders, stakeholders, and the public. Effective and clear communication in policy documents is vital in conveying smooth information and ensuring successful policy implementation. On the other hand, complex documents with unclear technical jargon, lengthy sentences, and specialised terminology often hinder understanding, leading to confusion, misinterpretation, and even non-compliance. This can result in policy failures, public frustration, reduced trust in institutions, and unintended societal or economic consequences. For many people,

especially those with lower literacy skills, non-native speakers and marginalised groups, the intricate language of the policies can be confusing and sometimes impossible to understand fully.

Recent studies show that many public policies remain beyond the comprehension capability of the intended readers. Reviews of COVID-19 guidelines from multiple countries showed the readability index of above eighth grade, making public health advice as “difficult” (Ferguson et al., 2021). Analysis of digital-market laws among 201 European Union (EU) countries indicated that the required comprehension is equivalent to doctoral studies, portraying how legal jargon creates disparities between citizens and those who govern them (Ruohonen, 2021). Additionally, more than 70% of government welfare websites require college-level literacy, which discourages underprivileged users from claiming benefits (Elek-BenMoshe & Rafaeli, 2025). Similar readability issues also appear in sustainability reports (Adhariani & du Toit, 2020) and internal health-service policies (Ali et al., 2019), thus suggesting systematic problems that revolve around sectors and jurisdictions.

For decades, practitioners have measured and diagnosed text complexity with readability formulas such as the Flesch-Kincaid Reading Ease (Kincaid et al., 1975), Gunning Fog Index (Gunning, 1952), Dale–Chall readability formula (Dale, 1948), Coleman–Liau index (Coleman & Liau, 1975) or Simple Measure of Gobbledygook (SMOG) (McLaughlin, 1969). While these metrics are quick and reproducible, they count only surface features (sentence length, syllables) and can disagree by up to five grade levels on the same passage (Arbel, 2024). A recent systematic review of legal texts found that most readability formulas were tested only on school textbooks, raising doubts about their validity for complex policy writing (Han et al., 2024). Scholars also warn that numbers and numerical results can be altered, in which a document may earn a “plain language” score but still be packed with jargon or badly organised (Adhariani & du Toit, 2020).

Momentum for plain-language reform has accelerated, with more than 40 countries or regions now having laws that make government and business documents meet set readability levels (Arbel, 2024). Field evidence suggested that the rules are doable. For instance, an Australian health district lowered its average reading level from grade 14 to grade 11 after giving staff training and using patient feedback while drafting documents (Lambert et al., 2022). Moreover, digital portals are responding by making government welfare websites easier to read, which later resulted in visitors with lower reading skills staying on the site longer and ‘early-exit’ dropped by 32% (Elek-BenMoshe & Rafaeli, 2025). Other sector-specific studies also continue to grow, such as EU legislation (Ruohonen, 2021), Indonesian sustainability reports (Adhariani & du Toit, 2020), organisational plain-language reforms (Lambert et al., 2022), and Malaysian life insurance policies (Ariffin et al., 2025). These examples show that policy documents can be constructed more easily without losing accuracy by setting clear rules, testing the text with real users, and having support from the organisations.

However, despite receiving growing attention regarding the importance of readability in documentation from researchers, such as in educational materials, terms of use of online services, and legislative documents (Alkhurayyif et al., 2018; Derguech et al., 2018; Alschner et al., 2020), there is limited understanding of the evolution of this research area, particularly in the context of policy documents (Yang et al., 2020; Zhang et al., 2022). Little is known about this context of research, i.e. about who researches these issues, which disciplines contribute, what topics dominate, and how countries collaborate locally and internationally. By addressing this gap, we will be able to see where efforts are concentrated, identify emerging themes, and reveal blind spots. This can be done by conducting a bibliometric analysis.

Bibliometric analysis is an effective method for assessing the evolution of a research domain via the systematic examination of publications, citations, and the interconnections among authors and institutions. It enables researchers to monitor knowledge advancement and growth within a particular field by identifying significant contributors, impactful works, and network collaborations among

prominent academicians (Donthu et al., 2021; Öztürk et al., 2024). In the context of policy documents, the bibliometric analysis offers insights into the ongoing research development on readability, emphasising advancement in methodological approaches and the emergence of new research themes (Donthu et al., 2021; Dubey et al., 2023; Hassan & Duarte, 2024). Additionally, analysing the geographical and regional distribution of research and international collaboration patterns can shed light on different countries' approaches in making and enhancing the comprehensibility of policy documents among readers (Gerdsri & Kongthon, 2018). The clear, evidence-based picture of research trends and gaps offered by the bibliometric analysis can help researchers and policymakers better understand the topic's current landscape, hence, identify the underexplored or unexplored areas that need more focus.

Despite its relevancy, only limited research has employed bibliometric approaches to investigate the literature in policy documents, leading to a gap in the present understanding of this area. Several studies have examined readability and text complexity in specific contexts, such as health-related materials (Badarudeen & Sabharwal, 2010), online privacy policies (Wagner, 2022; Robillard et al., 2019), and legislative or regulatory texts (Alschner, 2020; Ruohonen, 2021). However, these studies only focused on evaluating the readability of particular document types or applying readability formulas in specific sectors. For example, Badarudeen and Sabharwal (2010) systematically reviewed the readability of patient education materials, highlighting consistently high reading levels. In addition, Wagner (2022) analysed longitudinal trends in privacy policy complexity. Studies that provided comprehensive bibliometric analysis that maps the evolution of scholarly research on the readability of policy documents across disciplines, countries, and themes have been scarce.

Hence, this study addresses the gap by conducting a bibliometric analysis of research on the readability of policy documents following several key research objectives, namely, the research trends in the readability of policy documents, the most cited authors, the most popular subject areas, countries that published the most related articles, the most popular research keywords, and countries' collaboration in the readability of policy documents. This paper employs bibliometric metadata to analyse the "readability" research work for two decades from 2004 to 2024. The bibliometric analysis uses keywords, authors, countries, and citations indexed by Scopus to gather the objectives. Hence, this paper aims to answer the following research questions:

1. What are the research trends in readability in policy documents according to the year of publication?
2. Who are the most cited authors in readability in policy documents?
3. What are the most popular subject areas in readability in policy documents?
4. Which countries published the most articles on readability in policy documents?
5. What are the most popular research themes/keywords in readability in policy documents?
6. What is the co-occurrence of countries' collaboration in the readability of policy documents?

LITERATURE REVIEW

Readability reflects the simplicity of understanding a text while grasping the information it conveys to the intended readers. In policy documents, high readability is vital for transparency and public participation. Evidence shows that policies, laws, and official notices must employ plain language so non-specialists can understand them (Lambert et al., 2022). Clear communication in policy documents is not only ethical for both policy preparers and readers but also highlights practical aspects and effectiveness. Readers cannot claim their rights or fulfil their duties if they do not comprehend. Indeed, past studies recorded that when official information exceeds average reading levels, many parties were affected and missed critical information (Ferguson et al., 2021). Over the past 25 years, researchers have explored policy readability across health, finance, and legal domains, uncovering ongoing barriers yet promising reforms (Okuhara et al., 2025; Arbel, 2024). This section synthesises

themes related to readability metrics, the prevalence of low readability in policy texts, its implications for stakeholders, the evolution of readability measures, and initiatives aimed at enhancing the clarity of policy documents.

Readability Metrics

Readability is normally rated using sentence length, word complexity, and syllable count following prominent readability formulas and indices. Researchers typically employ readability approaches, for instance, the Flesch-Kincaid Reading Ease (Kincaid et al., 1975), Gunning Fog Index (Gunning, 1952), and SMOG formula (McLaughlin, 1969) to assess text difficulty. The score results represent the ease or difficulty level of understanding a text.

Flesch Reading Ease (FRE) formula

Rudolph Flesch developed the Flesch Reading Ease (FRE) formula in 1948. The FRE score measures a text's total number of words, phrases, and syllables, assigning values and scores ranging from 1 to 100. A high score signifies easy-to-read text, while a lower score implies more challenging texts to comprehend. For instance, a score of 60 is considered standard for publications and articles aimed at a general audience. Meanwhile, a score between 70 and 80 is frequently regarded as easy for the average adult to read and comprehensible for a seventh-grade student between 12-13 years old (Flesch, 1948).

Flesch-Kincaid Grade Level (FKGL)

Kincaid et al. (1975) built the Flesch Reading Grade Level formula based on the Flesch Reading Ease (FRE) formula by Flesch (1948) for the United States Navy to assess a grade level of written materials. Both the FRE and FKGL evaluate readability using two variables: average sentence length (measured by word count) and average word length (measured by syllable count) (Jindal & MacDermid, 2017).

Fog scale (Gunning FOG formula)

Gunning formulated the Gunning Fog Index in 1952. It is a readability formula that approximates the years of formal education necessary to comprehend a document at first reading (Athilingam et al., 2019). The analysis relies on the mean word count per sentence and the percentage of sophisticated vocabulary within the text. The approach generates the grade level of the text, with a higher grade level implying more complexity and difficulty in comprehension (Arora et al., 2014).

SMOG Index

McLaughlin developed the Simplified Measure of Gobbledygook (SMOG) index in 1969 to evaluate the readability of a text. It measures the years of education required to comprehend a text on the first reading (Hamnes et al., 2016). The SMOG index counts the overall number of polysyllabic words in a text sample and uses a formula to determine the writing grade level (Arora et al., 2014).

These formulae have been widely used to evaluate the accessibility of a wide range of policy documents, such as healthcare consent forms (Ferguson et al., 2021), privacy policies and terms of service (Wagner, 2022; Robillard et al., 2019), and national legislation (Alschner, 2020; Ruohonen, 2021). The tools are used to quantify the complexity of the policies in terms of sentence length, word length and syllable count. The scores are then used to determine the reading levels of the documents.

The formulae are popular because they are simple and can provide objective and quantifiable scores. In addition, they can be replicated in varied document types. Thus, researchers are able to make comparisons against the recommended standards. However, it is important to note that these formulae only measure text length and syllable count, and ignore the texts' vocabulary difficulty, structure and coherence. Thus, there can be potential misleading scores where short sentences may receive an 'easy' score level although they contain complex terminology, while longer sentences may obtain a 'difficult' level score although they offer lengthy but clear explanations.

Prevalence of Low Readability in Policy Documents

There is evidence from past research that policy texts are frequently written at a level beyond the reading abilities of the average reader. For example, COVID-19 recommendations from the World Health Organisation and national agencies have been assessed to be "difficult," exceeding the eighth-grade reading level of public materials (Ferguson et al., 2021). Likewise, government websites were only written in college-level literacy, which hindered full access and understanding for those with less education (Elek-BenMoshe & Rafaeli, 2025). Findings such as this are indicators of a wider trend beyond tech companies; for example, conformity with EU digital-market regulations calls for PhD-level comprehension (Ruohonen, 2021), and internal documents in forty British and Irish health policies contain a heavy load of jargon and complex sentence structures (Ali et al., 2019). Furthermore, the language in corporate statements of Indonesian sustainability disclosure was "very complex for investors to understand", and policyholders in Malaysia were found to be frustrated with the complexity of the insurance contract, which prevented them from successfully submitting the claim (Ariffin et al., 2024).

These findings reveal a systematic barrier for policy documents as they routinely exceed the sixth to eighth grade readability score advised for clear communication (Ferguson et al., 2021). A meta-review of 438 studies from 1990–2022 found no real progress in healthcare texts, especially informed consent forms and general health guidelines, to enhance readability score and remained stagnant in the previous readability grade (Okuhara et al., 2025). Effective communication in policy documents is essential for ensuring that all who interact with them clearly understand the policy's goals, requirements, and implications (Schriver, 2017). Low readability poses consequences, whereby readers or policyholders might miss benefits, fail to comply with rules and regulations, and lead to distrust. Acknowledging this widespread complexity underpins recent calls for user testing, stricter plain-language guidelines, and accountability measures to ensure that policy writing truly meets public needs.

Implications of Poor Readability

Poorly written policy text has huge impacts and consequences. In the case of the COVID-19 crisis, official guidance to the public could protect public health only if it was understood. Documents that were written at a level above what the public could read limited these protections and undermined confidence in rule makers (Ferguson et al., 2021). Outside of crisis situations, the use of complex language in welfare information serves as an "information barrier" that blocks the eligible parties from obtaining benefits and contributing to social inequality (Elek-BenMoshe & Rafaeli, 2025). Likewise, such difficulties also arise from the legal and financial documents. When contracts or regulations are packed with complicated details, consumers may miss that they have unknowingly broken the terms they accepted (Arbel, 2024).

Poor readability in digital and organisational settings shows further implications. On a government website, pages with harder language held users longer on page yet produced more exits, suggesting confusion rather than productive engagement (Elek-BenMoshe & Rafaeli, 2025). Within workplaces, professionals benefit from clear instructions and guidelines, as heavy jargon can lead to

non-compliance and safety issues among workers (Ali et al., 2019). Overall, low readability blocks informed decisions, reduces programme uptake, and reduces confidence in public systems. For these reasons, scholars now treat readability as central to policy effectiveness and social justice, not merely a stylistic preference.

Efforts to Improve Readability

Growing concern about unreadable policy text has spurred a plain-language movement that Arbel (2024) calls a “silent revolution.” Since the 1990s, hundreds of statutes worldwide have obliged drafters to meet explicit clarity targets. A key example is the U.S. Plain Writing Act 2010, which requires federal agencies to use language the public can “understand and use.” Similar laws now cover consumer contracts, insurance policies, and other public-facing documents in many jurisdictions (Arbel, 2024). Most mandates set measurable benchmarks, such as a minimum Flesch Reading Ease score, or impose limits on sentence length and word choice. By turning clarity into a legal duty, these reforms aim to make policy communication more inclusive and to strengthen public trust.

Alongside legislation, organisations have launched their own readability programmes. An Australian health service rewrote all policy documents in plain language, trained staff, and invited patients to review drafts; average reading level fell to grades 10–12 and staff reported better usability (Lambert et al., 2022). Digital tools now complement such efforts: some government websites publish “easy-read” summaries, while legal-tech researchers use natural language processing to flag complex wording (Han et al., 2024). Agencies and NGOs also distribute plain-language checklists that promote active voice, short sentences, and familiar terms. Together, top-down mandates and bottom-up initiatives illustrate a multifaceted strategy by combining leadership, training, user testing, and technology to make policy documents clearer for all readers.

Challenges and Ongoing Debates

Defining and measuring readability remains difficult. Most studies rely on simple formulas such as Flesch Reading Ease or Flesch-Kincaid Grade Level, which score texts by sentence length and syllable count. These metrics are popular because they are fast and easy to apply, and the Flesch-Kincaid test is the most common choice in legal-document research (Han et al., 2024). Nevertheless, formula scores often disagree and can be manipulated by changing a few words without fixing deeper problems such as jargon or poor structure (Arbel, 2024). Because the formulas were created for schoolbooks, their value for high-density jargon is uncertain, and a document may hit the target number while still confusing readers (Adhariani & du Toit, 2020). These limits raise doubts about laws that set strict numerical thresholds for “plain language.”

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However, even when plain-language rules exist, writers may slip back into complex habits unless they receive continuous training and support. An Australian health service needed extensive workshops and leadership backing before staff consistently adopted clearer style choices (Lambert et al., 2022). Sustaining these gains demands active monitoring; as new material is added or personnel

change, text can drift toward legalese. Scholars, therefore, recommend feedback in which typical users review drafts or complete simple comprehension checks, such as cloze tests, before publication (Curtotti & McCreath, 2013). These reader-centred practices remain rare in most policy settings, highlighting scope for stronger oversight and routine testing.

Overall, the last quarter-century of research confirms that readability is essential yet hard to guarantee. Debate continues over the best metrics, the trade-offs between precision and simplicity, and the need for culturally adapted tools. Encouragingly, many case studies show that clear writing can be achieved when legal mandates, organisational leadership, and user testing work together. Future work must refine assessment methods and embed plain-language principles across disciplines so that every policy text is not only accurate and lawful but also readily understood by the people it governs.

Readability in Policy Documents

The readability of policy documents holds particular importance because these documents are often intended for a broad audience, including policymakers, stakeholders, and the general public. Effective communication in policy documents is essential for ensuring that all who interact with them clearly understand the policy's goals, requirements, and implications (Schrivier, 2017). Despite this need, several studies have found that policy documents are written at a reading level far beyond the average citizen's comprehension and are often criticized for their complexity, dense language, and the frequent use of technical or legal jargon, which can alienate readers and obscure the intended message (DuBay, 2007; Zou et al., 2019; Becher & Benoliel, 2021; Dziubaniuk et al., 2021). Research on readability has shown that policy documents, such as legislative texts or government guidelines, frequently need to improve on readability metrics, making it difficult for non-experts to engage meaningfully with the content (Alschner et al., 2020; Akal, 2022).

This situation is also extended in sectors such as healthcare, where complex policies and guidelines may directly influence individuals' capacity to make informed decisions about their health (Ali et al., 2019; Lambert et al., 2022). Moreover, there is a lack of consensus among scholars on the most effective methods for assessing readability, with some arguing that traditional formulas fail to capture vital readability aspects such as tone, structure, and context (Crossley et al., 2017; Smit et al., 2021). Consequently, even well-intentioned efforts to simplify the language can result in oversimplification, leading to the omission of important details that could undermine the document's effectiveness (Waller, 2011; Cutts, 2020).

In response to this ongoing debate, efforts to improve the readability of policy documents have focused on several strategies, including adopting plain language principles and using digital tools for content simplification. Plain language initiatives, which advocate for writing that is clear, concise, and free of unnecessary jargon, have been widely endorsed by governments and organisations worldwide (Cutts, 2020). Countries like the United States and the United Kingdom have implemented policies such as the Plain Writing Act (2010) and the Plain English Campaign, respectively, to promote accessible language in public communication (Kerr, 2014; Schriver, 2017; Liske, 2023). These initiatives aim to make policies more understandable to the general public, hence reducing barriers to engagement and compliance.

Furthermore, advancements in digital tools, such as readability software and automated text analysis programs, have facilitated creating more accessible documents by providing instant feedback on text complexity and offering suggestions for improvement (Crossley et al., 2017). Despite these efforts, the success of such initiatives varies, with some sectors adopting plain language more effectively than others, pointing to an uneven implementation across different policy areas. Given these ongoing debates, a bibliometric analysis of the readability of policy documents is warranted to

understand how research in this area has evolved and to identify key contributors and emerging trends.

METHODOLOGY

This study was conducted according to the scientific publications' bibliometric analysis approach to data dealing with “readability”. Bibliometrics integrates, organises, and analyses bibliographic data from scientific publications (Verbeek et al., 2002). These approaches include thorough techniques such as document co-citation analysis, systematic selection of appropriate keywords, literature search, and analysis (Fahimnia et al., 2015), as well as general descriptive statistics, including categorisation of publishing journals, publication year, and principal author (Wu & Wu, 2017).

Timeframe Selection

The study covered a period of two decades of research works (2004 to 2024). There are several reasons for the selection of this timeframe. First, the earliest publication on readability in policy documents in the indexed database appeared in 2004. This indicates the starting point of research that address the readability of policy documents. Second, there had been growing public awareness of transparency and accessibility in policy texts within this period (Robillard et al., 2019; Wagner, 2022) and increasing societal interests in policy communication practices. Last but not least, the researchers chose to end the analysis in 2024 to include recent research trends, which can indicate how scholarly attention to policy readability has evolved (Robillard et al., 2019; Wagner, 2022).

Search strategy

The current bibliometric analysis was conducted using the Scopus database as it has a comprehensive coverage of high-impact peer-reviewed journals across disciplines that are relevant to policy research, social sciences, and applied linguistics (Aghaei Chadegani et al., 2013). This study systematically searched the database to identify publications explicitly focusing on readability in policy documents. Pilot searches of the first 100 records indicated that the combination “readability” AND “policy documents” maximised precision. A representative dataset of publication was later retrieved using the search term “readability” and “policy documents”, covering the period from 2004 to 2024. The query applied was:

KEY (readability AND in AND policy AND documents) AND PUBYEAR > 1989 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "MEDI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ARTS") OR LIMIT-TO (SUBJAREA , "MULT") OR LIMIT-TO (SUBJAREA , "HEAL") OR LIMIT-TO (SUBJAREA , "DECI") OR LIMIT-TO (SUBJAREA , "NURS"))

Inclusion and Exclusion Criteria

The search terms “readability” AND “policy documents” returned 67 records focused on the subject areas in medicine, social sciences, economics, business, arts and humanities, multidisciplinary, decision science, and nursing. The filtered results yielded 44 documents after removal of duplicates and non-article items such as article reviews, books, chapters in a book, editorials, conference reviews, and conference proceedings. This aligns with Ye-na Gan et al. (2022), in which only papers published in meticulously peer-reviewed and prestigious academic journals were considered. The dataset was then filtered with additional restrictions where only English articles were considered, reducing the dataset to 25 articles for this bibliometric analysis. As of September 2024, these obtained

25 articles from Scopus databases relating to readability in policy documents were incorporated into the study. Table 1 below shows the inclusion and exclusion criteria for the data collection.

Table 1: Inclusion and Exclusion Criteria

Inclusion	Exclusion
were peer-reviewed journal articles, conference papers, or reviews	Did not apply readability analysis specifically to policy documents
were published in English	discussed readability only at a theoretical level without empirical application;
were indexed in the Scopus database	were duplicate records;
explicitly focused on the readability or text complexity of policy documents	fell outside the 2004–2024 timeframe.

Data Extraction and Bibliometric Indicator

This bibliometric dataset was further analysed using a combination of software tools. Scopus served as the main source of metadata and citation information. For identifying the most cited works, the data from Scopus were exported in CSV format into Harzing’s Publish or Perish (PoP) v8 software, which enabled calculation of total citations, citations per year, and h-index metrics based on Scopus data (Harzing, 2007; Harzing & Alakangas, 2016). In addition, VOSviewer 1.6.19 was used to create co-occurrence maps and network visualizations, including keyword clustering, country collaboration networks, and thematic structure mapping (Van Eck & Waltman, 2010). Thresholds were set at:

- ≥ 3 keyword co-occurrences for the term map.
- ≥ 1 publication for the country co-authorship network.
- Cluster identification based on the Lin-log normalisation algorithm.

This combined use of Scopus, PoP, and VOSviewer ensured a comprehensive analysis of both citation impact and structural relationships within the research field (Donthu et al., 2021). Figure 1 below shows the process of data collection and selection.

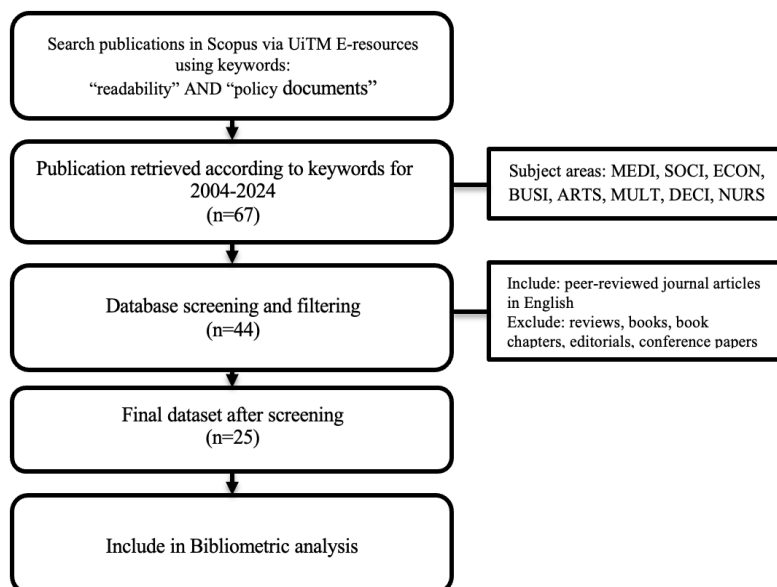


Figure 1: Document selection process for readability in policy documents (2004–2024).

FINDINGS

Based on the proposed research questions and methodology, this bibliometric study sets out to investigate six (6) research questions, namely the relationship between the research trends and readability in policy documents according to the publication year, the most cited authors, the most published articles according to countries, the most popular subject areas in readability, the most popular research themes or keywords as well as the co-occurrence of countries' collaboration in the readability of policy documents.

Research Trends in Readability in Policy Documents according to the Year of Publication

Figure 2 depicts the trend of readability publications published between 2004 and 2024, and Table 3 shows the number of published articles on readability each year for the past two decades. The line graph reveals a fluctuating trend in readability research outputs ranging from zero (0) to five (5) publications within 20 years, with a notable peak and troughs.

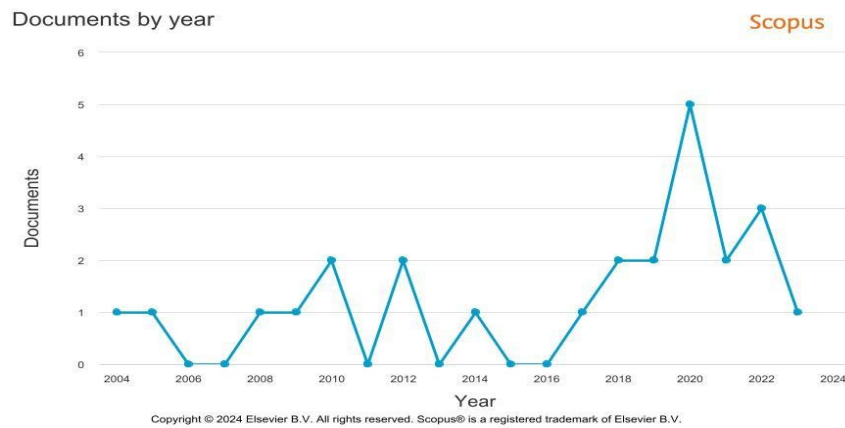


Figure 2: Trend in readability publications according to years

Table 2: Number of published articles on readability from 2004 to 2023

Year	Documents	Year	Documents
2023	1	2013	0
2022	3	2012	2
2021	2	2011	0
2020	5	2010	2
2019	2	2009	1
2018	2	2008	1
2017	1	2007	0
2016	0	2006	0
2015	0	2005	1
2014	1	2004	1

Initially, the number of publications remained low, with irregular increases, particularly in 2010 and 2016. The article on readability in policy documents was first published in 2004, representing 4% of publications, and it continued with another publication in 2005, increasing to 8% of publications. While there was no article published for the next two years in 2006 and 2007, four (4) articles were published consecutively from 2008 until 2010; one (1) article in 2008, increasing to 12%; one (1) article in 2009, increasing to 16%; two (2) articles in 2010, increasing to 24%. The publication

skipped 2011 yet came stronger in 2012 with two (2) published articles, increasing to 32%. The trend fluctuated for the next three years, from 2013 to 2016, with only one (1) research output in 2014.

A significant surge was observed in 2020 when the number of published articles reached its highest point: five (5) articles, representing 20%, suggesting a possible response to ensure the continuity of learning during COVID-19 and the emerging research need. Following this peak is a slight decline in 2021: two (2) articles, representing 8%, with a modest recovery in 2022; three (3) articles, representing 12%. The overall pattern indicated a growing interest in the readability of policy documents over time while also reflecting the variability in research activity across different years.

Three factors are essential. First, the rise in 2020 coincides with the COVID-19 pandemic, when governments worldwide faced criticism for issuing rapidly changing guidelines that were often difficult to read (Ferguson et al., 2021). The surge may therefore represent a research response to urgent public-health communication failures. Second, few publication records in 2006–2007 and 2013–2016 align with findings that readability research is geographically and thematically concentrated, resulting in inconsistent publications (Hassan & Duarte, 2024; Öztürk et al., 2024). Finally, the modest recovery after 2021 showed policy interest in plain-language and digital-government initiatives, which require clearer online legislation and welfare guidance (Ruohonen, 2021; Lambert et al., 2022). Hence, the pattern suggests that policy and regulations reform have been the primary drivers in policy documentation.

The Most Cited Authors in Readability in Policy Documents

Table 3 presents a ranking of the top 20 authors with the highest number of citations in the academic discipline of readability in policy papers, as indexed by Scopus. The table consists of columns for rank, author names, work titles, journal names, publication years, and citation counts. In general, the increasing citation trend reflects a rising concern and significant interest in the readability of health-related materials.

Table 3: The most cited authors in readability in policy documents, ranked by Scopus

Rank	Authors	Title	Source	Year	Cites
1	J.M. Robillard	Availability, readability, and content of privacy policies and terms of agreements of mental health apps	Internet Interventions	2019	72
2	A.K. Massey	Automated text mining for requirements analysis of policy documents	2013 21st IEEE International Requirements Engineering Conference, RE 2013 – Proceedings	2013	66
3	C.G. Mandic	Readability of special education procedural safeguards	Journal of Special Education	2012	47
4	A. Antón	HIPAA's effect on website privacy policies	IEEE Security and Privacy	2007	39
5	F. Hill-Briggs	Five-step methodology for evaluation and adaptation of print patient health information to meet the 5th-grade readability criterion	Medical Care	2012	32
6	V.W. Simonds	Health Literacy and Informed Consent Materials: Designed for Documentation, Not Comprehension of Health Research	Journal of Health Communication	2017	25
7	D. Wickremasinghe	Taking knowledge users' knowledge needs into account in health: An evidence synthesis framework	Health Policy and Planning	2016	20
8	C. Simon	Individual genetic and genomic research results and the tradition of	Journal of Medical Ethics	2012	19

		informed consent: Exploring the US review board guidance			
9	D. Ibdah	Why Should I Read the Privacy Policy? I Just Need the Service: A Study on Attitudes and Perceptions Toward Privacy Policies	IEEE Access	2021	18
10	J. Kaur	A comprehensive keyword analysis of online privacy policies	Information Security Journal	2018	18
11	M. Brondani	A Pan-Canadian narrative review on the protocols for reopening dental services during the COVID-19 pandemic	BMC Oral Health	2020	15
12	M.E. Bradbury	Summary annual reports: length, readability and content	Accounting and Finance	2020	13
13	B. Williams-Jones	Conflict of interest policies at Canadian Universities: Clarity and content	Journal of Academic Ethics	2008	13
14	M. Bardus	Data Management and Privacy Policy of COVID-19 Contact-Tracing Apps: Systematic Review and Content Analysis	JMIR mHealth and uHealth	2022	12
15	L. Jiang	Policy Uncertainty and Textual Disclosure	Accounting Horizons	2022	11
16	M.K. Paasche-Orlow	National survey of patients' bill of rights statutes	Journal of General Internal Medicine	2009	11
17	S. Walfish	Readability level of the health insurance portability and Accountability Act notices of privacy practices utilised by academic medical centres	Evaluation and the Health Professions	2005	11
18	E. Robinson	'To be understood as to understand': A readability analysis of public library acceptable use policies	Journal of Librarianship and Information Science	2020	10
19	H.M. Lamonica	Privacy practices of health information technologies: Privacy policy risk assessment study and proposed guidelines	Journal of Medical Internet Research	2021	9
20	Z.R.S. Rosenberg-Yunger	Transparency in Canadian public drug advisory committees	Health Policy	2014	9

At the top of the list is J.M. Robillard, whose work on the 'Availability, Readability, and Content of Privacy Policies in Mental Health Apps' has garnered 72 citations since its publication in the Internet Intervention Journal in 2019. The substantial number of citations received by this recently published article is evidence showing growing interest that focuses primarily on addressing the transparency of privacy policies, health literacy, and document accessibility. Following closely is A.K. Massey, whose 2013 work on 'Automated Text Mining in Policy Documents' 2013, in the 21st IEEE International Requirements Engineering Conference, RE 2013 - Proceedings, has received 66 citations. This trend further reflects an increasing reliance on computational methods in exploring the complexity of policy language and its analysis.

The citations decreased significantly after the top two authors. For example, the work conducted by C.G. Mandic in 2012, published in the Journal of Special Education on the topic of 'Readability of Special Educational Procedural Safeguards' garnered 47 citations. Then, A. Antón's analysis in 2007 on 'HIPAA's Effect on Web Site Privacy Policies', which was retrievable from the IEEE Security and Privacy Journal, received 39 citations. Despite lower citations, both studies emphasised the significance of readability in assuring adherence to rules and regulations and comprehension within this research context.

The remaining authors have citation counts ranging from 9 to 32 citations from multiple journal publications, further contributing to a wide range of topics related to readability in policy documents, including health literacy, privacy policies, risk assessment, textual disclosure, and consent material, among others. Table 3 continues the list by having F. Hill-Briggs' methodology for evaluating health information readability criterion among the 5th graders in 2012 received 32 citations, and V.W. Simonds' study on health literacy in informed consent materials for comprehensibility in 2017 accumulated 25 citations. Both were published in the Journal of Medical Care and the Journal of Health Communication, respectively, showcasing collective efforts to align medical information with the comprehension level of the public.

The overall pattern of citations in Table 3 highlights the significant contributions of these authors to understanding readability in policy contexts. It indicates a growing interest in the literature emphasising the necessity for clear, accessible, and readable policy documents, particularly in health-related domains, ensuring that various parties, such as professionals, academicians, and the public, can engage with policies effectively and meaningfully.

Recent citation patterns reveal a strong focus on health and data-privacy texts, reflecting bibliometric surveys that most readability research are within medicine and digital governance (Dubey et al., 2023). Although these studies employ varied methods from automated text mining to narrative reviews, the thematic scope remains narrow. Finance, environmental regulation, and social-policy documents are absent, highlighting opportunities for new research that links readability to service delivery across underserved domains (Hassan & Duarte, 2024).

The Most Popular Subject Areas in Readability in Policy Documents

Figure 3 and Table 4 below present the readability publication trend and the number of published documents according to their subject areas, respectively. Leading the highest percentage division of the 12 most prominent research domains related to readability in policy documents is Medicine (35.9%), with 14 articles. Social Sciences is the second highest study field, representing 25.6% with 10 papers, followed by Nursing subject (7.7%) with three articles. Notably, the top three subject areas focus on health-related fields and societal dynamics, i.e., Medicine, Nursing, and Social Sciences. These suggest significant scholarly activities and a strong focus on the readability of policy document relationships between the healthcare sector and society.

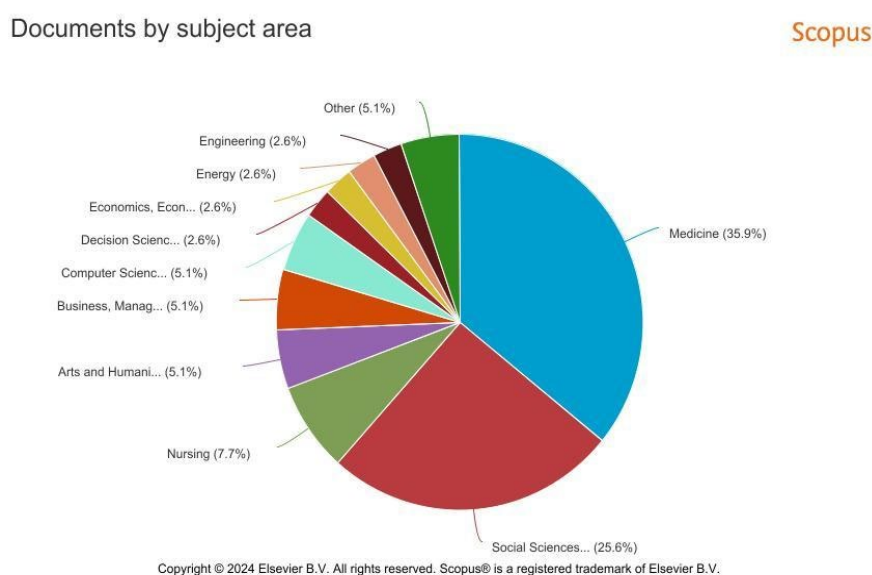


Figure 3: Trend in readability publications according to subject area

Following this, as shown in Table 3, Arts, Business Management, and Computer Sciences are the next focused subject areas in the readability of policy documents, with two (2) published documents per area, contributing 5.1% per subject and further followed by the remaining categories which constitute 2.6% in Fig. 3, for instance, Decision Sciences, Economics, Engineering, and Energy, for each account for one article per subject field. This scenario thus proposes a less prominent yet still significant subject in the research context related to readability in policy documents.

Table 4: Number of published articles on readability by subject area

Subject Area	Documents
Medicine	14
Social Sciences	10
Nursing	3
Arts and Humanities	2
Business, Management and Accounting	2
Computer Science	2
Decision Sciences	1
Economics, Econometrics and Finance	1
Energy	1
Engineering	1
Environmental Science	1
Multidisciplinary	1

Health-related documents dominate readability research. Consent forms, patient leaflets and privacy notices would be revised to be written in a plain language in clinical settings (Dubey, et al, 2023). Since two of the identified studies in section Business and management focus on readability of the ESG disclosure statements and sustainability reports, it shows that it is also an emerging and marginal topic in corporate readability (Adhariani & du Toit, 2020). This disciplinary prejudice highlights the needs for broader domain of genres mapping demand (Öztürk et al., 2024).

Countries that published the most articles on readability in policy documents

Figure 4 compares the number of published articles on readability in policy documents according to the countries. Ten (10) leading countries from diverse regions are listed, and a range of academic papers was produced, ranging from one (1) to eight (8). The United States hit the highest record with eight (8) publications on the readability domain, followed by Canada with six (6) articles. While the United Kingdom and Australia published four (4) and three (3) articles, respectively, Hong Kong, Ireland, Lebanon, the Netherlands, and New Zealand also contributed minimally with a single publication from each country.

Figure 4 also highlights the notable observation that the North American and European nations dominated the top three of the publication lists, emphasising that developed countries are more actively engaged in research on the readability of policy documents. This suggests powerful insight that these nations must clearly communicate policies to the public by focusing on the readability level in enhancing understanding and accessibility. On the other hand, the relatively lower engagement countries outside these regions potentially propose that they give different priorities concerning the issue of policy readability, which will soon follow the research trend of the developed areas.

A majority of the readability studies are conducted by North-Atlantic high income countries (Dubey et al., 2023). Two forces shape this gap. First, the plain-language and privacy statutes in these countries draw funding and legal priorities toward clarity (Robillard et al., 2019). Second, most of the journal networks in English dominate Scopus, so works written in other languages are often

overlooked (Öztürk et al., 2024). Big economies such as India, Brazil, and South Africa are under-researched, highlighting the need for financial support, multilingual databases, and cross-border collaboration (Hassan & Duarte, 2024).

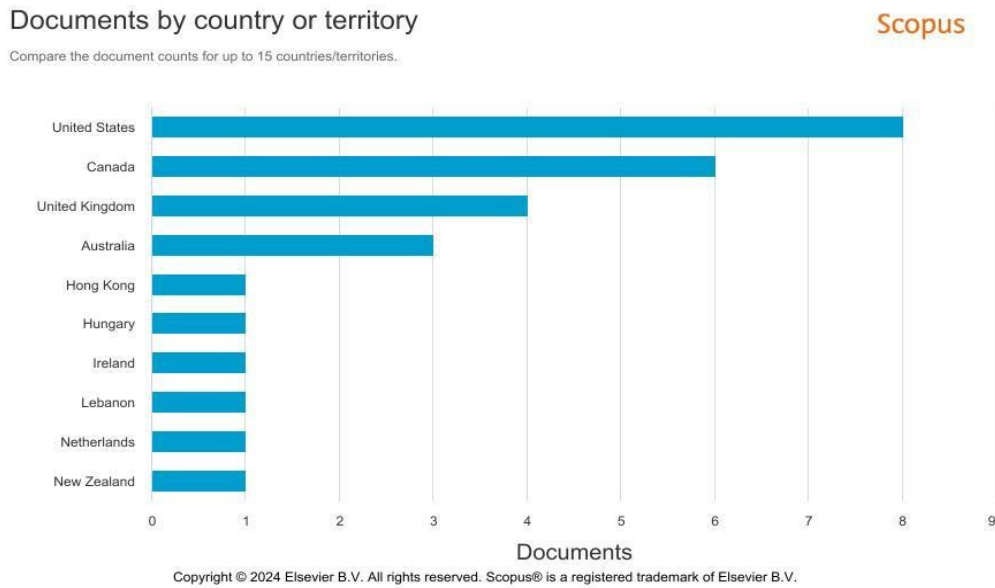


Figure 4: Trend in readability publications according to country or territory

The most popular research themes in readability in policy documents

Figure 5 depicts the networking image of prominent keywords or thematic structure of the readability in policy documents. According to the co-occurrence analysis performed on the keywords, only nine keywords appear in more than 20 publications. The co-occurrence analysis revealed that the keywords were grouped into only two (2) main clusters or themes: article and human. The keywords in the clusters provide information regarding related research topics of interest (Goksu, 2021).

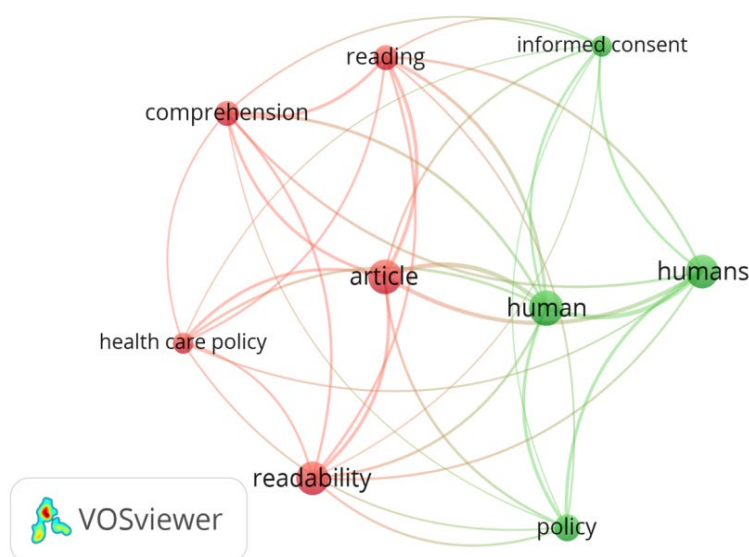


Figure 5: Network visualisation map of keyword co-occurrences in readability

As seen in Figure 6, the largest cluster was in the red cluster with five (5) keywords. Words like article, comprehension, healthcare policy, readability, and reading were highlighted under this first cluster of keywords or themes in the readability domain, representing a group of keywords that habitually appear together. The green was the second cluster with four (4) keywords. These include human, humans, informed consent, and policy, indicating specific research themes and focus on readability areas. Nodes connecting several clusters, such as ‘article’ and ‘human’, represent important terms that link topics such as ‘healthcare policy’, ‘comprehension’, and ‘informed consent’, showcasing their strong relationship and widespread importance in the readability field.

Moreover, in the density visualisation of keyword co-occurrences, as shown in Figure 5 below, the keywords related to “article” and “human” appear in yellow, showing that these are the most widely explored and focal topics in the readability field. On the other hand, a term like “informed consent” is in green, suggesting that this keyword is a less popular but still relevant theme in readability research. The visualisation reveals that while articles and humans dominate the field, a topic like informed consent is emerging and could be explored further.

Overall, these findings propose the importance of readability in policy documents and its necessity and role in enhancing comprehensibility, especially in health-related fields and informed decisions among the public.

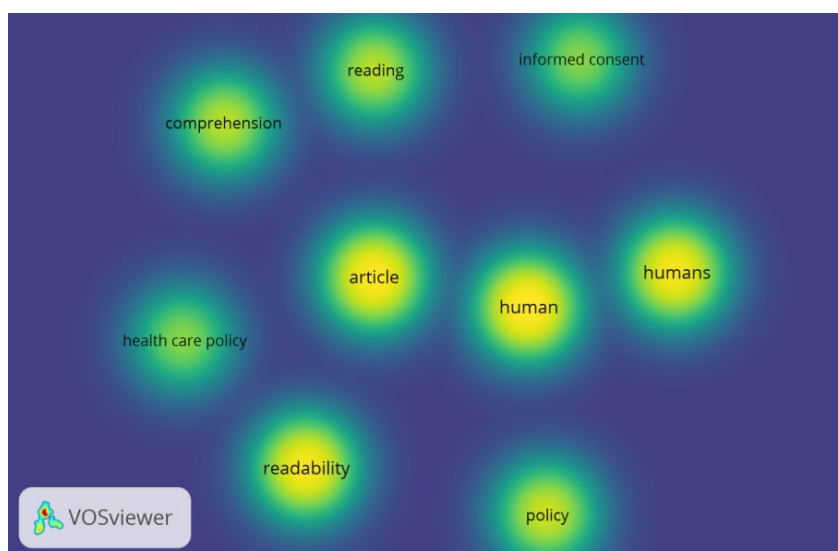


Figure 6: Density visualisation of keyword co-occurrences in readability

The polarity between red and green clusters aligns with the both agendas outlined in the previous section which are optimising the language of policy documents and the ethical imperative to ensure citizen understanding (Ferguson et al., 2021). On the other hand, the lack of sector-specific terminology of engineering, energy or environmental policy strengthens the thematic limitation underlined by Hassan and Duarte (2024). Collectively, the co-occurrence map reveals that health-related readability has matured as a sub-field but also leaves room for a widening such as work that combines domain-specific jargon analysis and user-testing methodologies in under-represented policy domains.

The co-occurrence of countries' collaboration in the readability of policy documents

Figure 7 presents the network visualisation map of bibliographic coupling among countries in the readability of policy documents. Larger nodes in red, such as the United States and Canada, reveal

that these countries are the most active in readability-related research, regularly citing standard references across their publications. A solid coupling between these two countries, as seen through a steady, thick red link, implies that these nations are frequently involved in similar or overlapping research areas in readability, quoting and mentioning the same publications and sources, and potentially serving as a hub for cross-country academic exchange or as a major contributor of influential studies in this field.

On the other hand, a smaller node in green for the United Kingdom indicated less coupling with the international research network, due to a growing focus on local research initiatives or greater participation in the broader academic group. This visualisation shows the strong connections and networking in publications between top research countries and highlights patterns in regional or thematic collaborations.



Figure 7: Network visualisation map of bibliographic coupling among countries in readability

The thinly connected cluster, which is dominated by one-way relations, underlies data with reduced level of international cooperation. Not a single multi-continent teams and only 12 % of the studies with authors from several countries (Hassan & Duarte, 2024) are observed. The high similarity between the U.S.–Canada undoubtedly is a result of having similar privacy laws as well as English-language journals that encourage co-citations (Dubey et al., 2023). The U.K., however, is an outlier, and Asia, Africa, and Latin America are underrepresented, revealing an Anglophone bias (Öztürk et al., 2024). Boosting South–South cooperation and multilingual citations is also important.

DISCUSSION

This study has presented an analysis of research trends in the readability of policy documents within twenty years (2004-2024). The analysis has provided insights into publication patterns, subject areas, geographical contributions, thematic focuses, and international collaboration.

Key Findings

The publication pattern has shown significant peaks since 2010, especially after the COVID-19 pandemic. This reflects how global crises can catalyse research activities contributing to the high number of publications in this topic. In addition, the surge of publications also demonstrates the recognition of the need for accessible policy documents to the public. The citation pattern also indicates a focus on readability and practical implications, particularly in the domains of health and education policy. This reflects collaborative efforts in addressing the challenges of policy

communication, allowing opportunities for research on emerging areas such as readability of policy documents and linguistic considerations. Subject areas such as policy accessibility, public engagement, and the intersection of readability with digital communication platforms are among the prominent topics examined in the area of readability. The diverse subject areas imply that readability offers adaptability for interdisciplinary collaborations. The analysis highlights that research on the readability of policies is highly concentrated in developed regions, i.e. North America and Europe. This is probably due to the governmental initiatives or policies for transparency (Barczuk, 2015). This indicates a gap and research opportunities for those under-represented countries like Hong Kong and Lebanon. The analysis of keywords underscores the trends and emerging areas of interest in policy readability research. It shows the dominance of human-centric and textual themes. The former includes education, policy implementation, and health communication and accessibility, while the latter involves analysis of text complexity, policy context and style. This information can inform the landscape of readability research, giving input on the gaps and topics that warrant investigation. Finally, the bibliographic coupling analysis highlights the patterns of top international collaboration. The input can inform the gaps in global networking, opening opportunities to link with less-represented regions.

Implications

The study's findings have highlighted the growing concerns regarding the need for clear and readable policy documents, particularly for effective governance and public trust. The results indicate opportunities for researchers to study readability from broader perspectives, like interdisciplinary research that combines language studies, technology, and public policy. For policymakers, understanding publication trends and keyword clusters can provide some guidance on how to improve the clarity of policy documents, particularly for those with lower literacy skills. In addition, the concentration of research in developed regions suggests a need for more inclusive collaboration with regions where policy readability research is limited.

Limitations

This study is limited in terms of the sample size. Although the 25 articles were carefully selected, they may not represent the entire work on policy readability. In addition, the analysis was limited to documents indexed in the Scopus database. This excluded relevant research published in non-indexed platforms. Thus, the findings should not be generalised based on the analysis of the 25 articles alone.

Future Research

Future studies could expand the scope to capture broader regional perspectives. This may include other databases such as Web of Science or Google Scholar. In addition, new methods, including computational linguistics and natural language processing, could also be explored to analyse the readability of policy documents.

CONCLUSION

The findings have given insights into the landscape of readability research in policy documents. The trend shows an emerging interest in accessible policy communication across various disciplines. However, there have been gaps in concentrated regions and an international network that can open further work. Future research can aim to explore emerging keywords, expand collaboration beyond dominant areas, and address the readability of policy documents in underrepresented contexts to ensure inclusivity and broader societal impact.

Based on these research findings and bibliometric analysis, future research on readability in policy documents should prioritise expanding the scope of studies geographically to understand different cultures and norms, which might give new insight into the various challenges different populations face in readability and create more understanding of global policy communication. Other research areas also need to be explored, such as education, law, finance and insurance, in which a clear understanding of readability in policy documents and public communication is crucial yet often lacking.

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AUTHORS' CONTRIBUTIONS

Nordin, N.M. planned the entire study and was in charge of the write-up of the manuscript. Ariffin, K. contributed to the supervision of the research and the write-up. All authors provided critical feedback and were responsible for shaping the research and analysing the data.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Author's and Co-Author's original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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