The Usefulness of Data from Web of Science and Scopus Databases for Analyzing the State of a Scientific Discipline. The Case of Library and Information Science

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Abstract

Purpose/Thesis: Many countries increasingly use bibliographic databases while devising new scientific policies to analyze and diagnose the state of a scientific discipline. Previous studies on the suitability of data from Web of Science and Scopus databases for this purpose gave ambiguous results. Their authors did not always account for an important issue – the quality of data from these databases. The aim of the article is to analyze the quality of data downloaded in an automated manner from the resources of the mentioned databases.

Approach/Methods: The author used a qualitative method of data verification which consisted of automatic acquisition of data about journals from the Web of Science and Scopus databases, and then in their qualitative analysis. The analysis consisted of a comparison of data on journals representing of library and information science (LIS) retrieved from both databases and of the comparison between the qualitative data taken from the studied databases and the data from other, domain focused bibliographic databases; of comparing the acquired data with the information available on the websites of indexed journals and of the comparison of the method used by the producers of the abovementioned databases used to classify the journals as related of LIS, with the thematic scope of the discipline, as agreed upon by scholars.

Results and conclusions: It was found that in the case of the examined discipline, automated data acquiring poses a risk of obtaining a low credibility set of data. Most problems are caused by the incompleteness of data and errors in disciplinary classifying journals, articles and authors.

Originality/Value: It was shown that, contrary to the claims of the decision-makers of Polish science, in its present form, the studied bibliographic databases have only negligible usefulness for monitoring the state and development tendencies of LIS. Methodological problems created by both databases, presented in this article, may also have an impact on generating a reliable and objective picture of other scientific disciplines. The changes in the sphere of the functioning of WoS and Scopus, apparent for several years, have not dealt with the already existing problems and inconveniences.

Keywords

Bibliographic data. Qualitative analysis. Quantitative analysis. Scientific discipline. Scopus. Web of Science.

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1. Introduction

Systematic analysis and diagnosis of the state of science and of the directions of its development is one of the tasks of library and information science (LIS), a discipline has been joined with social communication and media sciences since 2019 by the Polish ministry's regulation. It is also a concern for the individual researchers. The analysis of the state of their discipline allows them to choose to publish in those journal, which will ensure that their work will be received by the widest possible audience with a potential interest in the themes of their work. It is also an important part of science management. An awareness of the topics in international research, of published studies and journals, as well as of active researchers and their research is a necessary research competence. A relatively high number of scientific institutions and researchers, as well as a massive amount of publications, together with the scattering of information, make it difficult for an individual to grasp the development of a given discipline in its entirety. Therefore, it is necessary that the specialists in LIS, in possession of suitable methods and research tools, systematically monitor the development of given scientific disciplines. They should also perfect methods for analysis and diagnosis of the scientific disciplines, so that they may be of use to the researchers and those in charge of science management. The gravity of the situation increases with the development of the science policy introducing the element of evaluation of the quality of research, which relies on the resources and tools historically designed to serve the researchers for the monitoring of a given scientific discipline, especially on bibliometric data and indicators. May such an evaluation be objective and thorough, considering the abundance of available data bases, as well as the functionality of tools, and their dynamic development?

The scientific literature concerned with this issue does not offer definitive answers to these questions. The dilemma has been explored in the work of Bjorn Hammarfelt and Alexander D. Rushforth (2017), where they focused on the use of bibliometrics to evaluate candidates for academic positions. They argued that the bibliometric indicators based on scientific publications and citations to these publications registered in Web of Science (WoS) and Scopus should be used only very carefully, as a supplement to an expert's assessment. They showed that easily available indicators, such as IF and h-index, do not consitute a sufficient basis for an assessment, because, depending on the discipline, these indicators may not correspond to the quality of the scientific output. Hammarfelt and Rushforth suggested that better results may be achieved with an aid of more sophisticated bibliometric indicators. A.A.M Prins, Rodrigo Costas, Thed N. van Leeuwen and Paul F. Wouters (2016) demonstrated that in case of the arts and humanities, the WoS database does not contain enough journals to make its bibliometric data useful for any assessment. Jorge Manana-Rodrigues (2015) questioned the choice to use the SCImago Journal & Country Rank indicator based on the data from the Scopus database, as there are serious gaps in the collections of the journals registered there. Elizabeth S. Vieira and Jose A.N.F. Gomes (2016) concluded that the assessment of candidates for academic positions based on bibliometric indicators brings the same results as the judgement based on a peer review of the candidates' scientific output in 75% of the cases considered. However, the authors did not verify the quality of the data from the abovementioned databases by comparing it with other sources of scientific information.

A study of the works on the topic of bibliometrics inspires several questions: What is the quality and reliability of the data from the largest bibliographic databases? Which of

these databases provides more reliable information where Library and Information Science is concerned? What methodological issues a user of these databases will face if they want to conduct an analysis and diagnosis of the development of a given scientific discipline? The author of this article decided to answer these questions, and to test and compare the usefulness of data from the two most popular bibliographic databases, Web of Science and Scopus, to analyze and diagnose the state of the Library and Information Science, within which he conducts his own research. Furthermore, the author set out to verify the quality of the data from the two databases by a comparison with other sources of scientific information.

Although scholars have already discussed faults of both databases such as favoring of the English language, domination of big publishers – especially those based in the Anglo-Saxon countries, errors in bibliographic descriptions, underrepresentation of journals based outside Northern America and Western Europe, insufficient usefulness for research of humanities and most social sciences, and so on, the author wished to see if this criticism provoked the producers of these databases to introduce any corrections to their operations. He was inspired by the recent news regarding the important changes to the process of creation and supplementation of the resources in these two databases, the number of the journals considered, and the functionalities made available to the users (e.g., in 2015 the list of sources indexed in Web of Science was extended as to include a group of regional journals; furthermore, Web of Science Core Collection was created, together with an index of Emerging Sources Citation; in 2016, the Clarivate Analytics company became independent from the Thomson Reuters conglomerate as an owner and the operator of WoS; in the same year, Scopus created a new evaluation metric, CiteScore). It seems that we should ask if these recent changes made the databases more efficient as tools for the analysis and diagnosis of science, and if the criticisms of these databases in scientific publications have been taken into account.

These databases have been chosen as the focus of this article because the research literature shows an increasing interest in the possibilities they offer for the analysis and diagnosis of the state of the science. Undoubtedly, it relates to the growth of their resources and the increasing popularity of these databases among the researchers, as well as their role in formulating of regulations in many countries and generating evaluations of research institutions and individual researchers. The act reforming Polish system of higher education introduced a rule that the articles published in the journals indexed in the major international bibliographic databases (Web of Science and Scopus) will be taken into consideration in the evaluation of scientific output. Therefore, the quality of data, as well as the resources and functionality of these databases became crucial for the research evaluation, and thus for the research itself.

2. The literature review

2.1. The Web of Science and Scopus databases

The review of literature shows that the analysis and comparison of the contents made available by Web of Science and Scopus enjoy a significant success. Ten years ago, Eric Archambault and others (2009) established that there is a high correlation between the

results of a comparison of a scientific output of an institution or a country based on the data from both databases. They concluded that the two databases' indicators of scientific productions and publication on the level of a country and of an institution show similar values. Around the same time, Elizabeth Vieira and Jose Gomes published a study (2009) comparing the data related to the scientific output of two typical Portuguese universities retrieved from Web of Science and Scopus. They found that 2/3 of the scientific publications searched is available in both databases. However, 1/3 of the scientific publications is available only in one of the two databases, even the texts that had a significant impact on the development of science. Mehmet A. Abdulhayoglu and Bart Thijs (2018) observed a similar trend, as they found that 74% of the articles indexed by WoS is indexed by Scopus; 92%, when only cited publications are considered.

However, recent studies increasingly focus on the faults of the two databases. Philippe Mongeon and Adele Paul-Hus (2016) established that both WoS and Scopus take into account only a small part of the existing scientific journals. In 2015, they compared these databases' resources with those of Urlich's (the most complete index of journals and serial publications in the world), and found that WoS included only 20% of all journals, and Scopus c. 30%. It was not a surprise that the bibliographic citation databases register only a part of all journals in the world, focusing on those whose quality, as indicated by bibliometric indicators, is highest. The problem lies in the suitability of the selection of the registered journals for representing a given discipline, a region or a country. Mongeon and Paul-Hus demonstrated that journals affiliated with humanities and social sciences were by far the worst represented, as these databases included only less than 20% of the journals indexed by Urlich's. The authors estimated that the situation had remained unchanged for a decade, and contributed to the databases' negligible usefulness for a bibliometric analysis of humanities and social sciences. Fiorenzo Franceschini, Domenico Maisano and Luca Mastrogiacomo (2016) established that in both databases, the bibliographic descriptions of the articles in the category of engineering-manufacturing contain as many as 10 thousand errors, which had a negative impact on the attempts to browse the articles and the data on their citation number. The authors observed that such errors and their effects might seriously harm the image of an output of an individual researcher, an institution, a discipline, or a country.

Diego Chayarro, Ismael Rafols and Puay Tang (2018) showed that the selection of the journals registered in the WoS database is dictated not only by universal criteria, applicable to every journal, such as the editing standards and the rules of scientific assessment. Considering the case of journals published in Spanish and Portuguese, they established that the selection is also influenced by particular criteria, such as the country and language of publication, as well as the discipline with which the journal is affiliated. The journals published in languages other than English, and affiliated with humanities and social sciences, were much less represented. The authors estimated that this phenomenon had a negative impact on the capacity of the data from WoS to represent many countries, languages, and disciplines.

Anne-Wil Harzing and Satu Alakangas (2016) compared the data from 2013–2015 regarding 146 researchers affiliated with five different scientific disciplines, as available in WoS, Scopus, and Google Scholar. They established that in case of the researchers affiliated with humanities and social sciences, Google Scholar provides information about a number of articles four times as high as the number found in WoS and Scopus, and an average number of citations more than ten times as high. They found that the works of humanities scholars

were cited much more rarely (between fifty and eight times less, depending on the source of data – the highest disparity occurring in the WoS database) than the works of those affiliated with life science and science. This difference was indicated by all bibliometric tools used in the study. Harzing and Alakangas highlighted that different sources of information provided different views of the relations between the disciplines.

Oi Wang and Ludo Waltman (2016) conducted an analysis of systems of disciplinary classification of journals employed in both databases, and estimated their accuracy. With a method of direct citation relations between journals, they established that in both databases, a big part of the journals belongs to either of the two groups: (1) classified as affiliated with a given discipline, but without a significant relation to it; (2) classified as not affiliated with a given discipline, but with a significant relation to it. They judged that both databases are insufficiently precise in its systems of disciplinary classification of journals, and that a big part of the journals in both databases, but especially in the Scopus database, seems to be associated with too many different disciplinary categories. Earlier studies by Abdullah Abrizah and others (2013) showed, that the abovementioned problem affects every fourth journal in the category of Information Science and Library Sicence (IS&LS) in WoS and Library and Information Science (L&IS) in Scopus.

Alberto Martin-Martin, Enrique Orduna-Malrea and Emilio D. Lopez-Cozar (2018) showed that a relatively high number of much-cited (as per Google Scholar) articles related to social sciences and humanities is not accounted for in WoS and Scopus databases. The gaps are serious enough to undermine the usefulness of these databases for formulating bibliometric indicators-based assessments regarding these scientific disciplines.

2.2. The discipline of library and information science in the Web of Science and Scopus databases

The bibliometric analysis of the scientific discipline of library and information science (LIS) enjoys a long tradition and persisting popularity. More than ten years ago, Lonkman Meho and Kiduk Yang's study (2007) showed that there are serious problems with generating rankings for this discipline. They established that the Scopus database, as compared to WoS, significantly alters the ranking of researchers, especially those in the middle of the list, and that to achieve a more precise and complete view of the impact various researchers have on the development of LIS a complementary use of both databases, and additionally, of Google Scholar, would be required.

Isola Ajiferuke and Dietmar Wolfram (2010) described the impact of a given researcher on the development of science by measuring the ch-index, i.e. a method of estimating author research impact using the number of citers per publication an author's research has been able to attract. They estimated that for LIS scholars, it is a more accurate indicator than the general citation number, or the h-index. William H. Walters and Esther I. Wilder (2016) demonstrated that the development of LIS has been significantly impacted by research from the disciplines of computer science and management, by scholars from the USA, United Kingdom, Spain, China, Canada, and Taiwan. According to the research of Yu-Wei Chang (2018), based on the data from the WoS database, LIS is becoming increasingly interdisciplinary. Articles written by at least one author affiliated with another discipline constitute almost a half of the discipline's scientific output.

Apparently, scholars affiliated with medical sciences are to have a significant impact on the development of LIS.

Carlos G. Figuerola, Francisco J. Garcia Marco and Maria Pinto (2017) reviewed the projects from the previous decade that relied on the quantitative data from the Library and Information Science Abstracts (LISA). The review showed that the dominant methods employed in quantitative research were the bibliometric analysis of citation and co-authorship, statistical data, and terms co-occurrence method. These methods were characterized by the automated manner of data collection and analysis. The article inspires questions regarding the quality and representative capacity of the data subject to analysis: Are automatically collected data complete and reliable? To what extent does the content of the data in the analyzed bibliographic database correspond with the actual output within the studied discipline? These questions become increasingly urgent as the number of scientific publications related to LIS grows, and the role of multi- and interdisciplinary research for the development of this discipline increases. Does the content of the bibliographic databases keep up with the swiftly accumulating publications? Do automated methods of data collection and analysis, and statistic techniques, account for the multi- and interdisciplinarity of research?

The review of literature shows that the verification of the quality of data from the WoS and Scopus databases has not received the attention it merits, at least not in the studies concerned with library and information science.

3. Methods and results of the study of the usefulness of the data from the WoS and Scopus databases for the assessing the state of library and information science

A definite majority of the studies using the bibliometric indicators and the largest bibliographic databases, relied on the automated methods of data collection and analysis. These methods are not immune to errors in bibliographic descriptions, or errors in the assignment of journals to disciplinary or subject categories, and in the result of errors in recognition of the proper scope of data acquiring. Therefore, the author employed the method of qualitative verification of the automatically collected data about journals from the Web of Science and Scopus databases (the full description of the considered journals is provided in Appendix), and following, of qualitative analysis. The qualitative analysis involved a comparison of datasets regarding the journals affiliated with the library and information science from both of the databases studied; a comparison of the quantitative data collected from the databases studied with the data collected from other, domain-focused bibliographic databases; a comparison of the data with the information available on the websites of the journals indexed, and a comparison of the categorization of the journals, articles and authors as affiliated with given disciplines, employed by the producers of the databases, with the research scope of LIS accepted by the researchers. The aim of the analysis was to establish the quality and completeness of the data, and to identify the problems with a systematic collection and employment of such data.

3.1. The journals: their number in the databases, publishers, languages, disciplines and recognition

The 2017 Journal Citation Report available in the Web of Science database includes 87 journals assigned to the category of Information Science & Library Science (IS&LS), and 11 journals, which WoS puts in different categories, but which are assigned to the category of Library and Information Science (L&IS) in the Scopus database. These journals have their ascribed impact factors (IF). Furthermore, the Core Collection database contains data regarding further 47 journals, without providing their IF, the articles from which are assigned to the IS&LS category, out of which WoS puts 24 in other categories, but which belong in the Scopus category of L&IS. To the journals in the last group the author added three open access journals published in Spanish and Portuguese, indexed in the SciELO Citation Index database, and four from the Medline database (life sciences). In total, 176 journals registered in the WoS database were subject to analysis.

It is impossible to collect data about the journals without an IF indicator in any automated manner. The author had to type the name of the journal into the search tool and choose the field "Publication Name". The result of such a search is a list of bibliographic data of the articles published in a given journal and a set of data: a citation number of each article published in a given year, the number of articles published according to the rules of the open access, the number of publications of a particular type (article, book review, editorial material, note), subject category of the articles, last names and institutional affiliations of the authors with a number of the articles. Unfortunately, in the case of interdisciplinary journals, the function showing the subject categories of the articles does not work properly, as almost every article is put in every category simultaneously, and there is no possibility of distinguishing those which are concerned with IS&LS. Of course, an analogous set of data is a result of a search for a journal with an IF measurement, but in the case of such a journal, its name is an active hyperlink to the following information: the IF for the last two and the last five years, scientific categories, ranking, publisher, ISSN.

Among the 176 journals studied, as many as 96 (54.5%) were published by ten great publishing conglomerates (Taylor & Francis – 28, Emerald – 21, Elsevier – 12, Springer – 12, SAGE – 7, Wiley-Blackwell – 5, IGI Global – 3, Palgrave Macmillan – 3, Walter De Gruyter – 3, Brill – 2). The definite majority of the journals included – 159 (90.5%) publishes articles in English (a few journals also publishes texts in other languages, mostly in French, Spanish, and German). The group of journals in languages other than English is dominated by Spanish (10) and Portuguese (6). Two journals publish texts in both of these languages. If we take into consideration where the publisher of the journal is based, two countries dominate: USA – 68 (38.5%) and Great Britain – 51 (29%), followed by the Netherlands – 11 (7%), Germany – 8 (5%), Spain – 8 (5%), and Canada – 5 (3%). In a dozen or so other countries, there operate only singular publishing houses registered at the WoS database.

Among 134 journals (76%) categorized as IS&LS (out of which 87 have the IF calculated, and 47 do not), 18 have been additionally included in the Management category (out of which one has been also assigned to Computer Science), three to Communication, three to Interdisciplinary / Multidisciplinary, three to Education, two to Computer Sciences, and on to each of the following categories: Biomedical, Ethics, Geography, History, History of Social Sciences and Law (in total, 35 articles has been assigned to one of these categories).

Among 42 journals (24%) which WoS does not classify in IS&LS, but which Scopus does classify as L&IS), 10 has been additionally assigned to the category of Computer Science (out of which two have been also categorized as related to Engineering, and two – to Chemistry), seven – Science Technology (out of which two have been also assigned to Social Sciences), three – History, three – Humanities Multidisciplinary, two – Communication, two – Literature, two – Education, two – Language, Linguistics, two – Music, two – Social Sciences Interdisciplinary, and one to each of the following: Asian Studies, Biology, Law, Mathematics + Psychology, Medical Ethics, Multidisciplinary; one more journal has not been assigned to any category.

The Scopus database makes it easier to find a full list of the journals affiliated with a given scientific discipline. It is sufficient to use the function Sources – Enter subject area and choose a specific discipline, which will provide the user with a list of journals from that discipline indexed at Scopus. 208 journals have been indexed in the category of Library and Information Science (as per data from March 2019). Additionally, 28 journals whose are indexed as relating to this discipline by the WoS database have been assigned to other categories. Therefore, 236 journals from Scopus have been taken into consideration by the present study. Only two journals indexed in WoS are not indexed at all by Scopus. Every journal included has calculated an indicator based on citations. The following data on every journals is available: title and publisher, ISSN, subject area, the number of citations, CiteScore, SJR and SNIP, a link to the website, an information regarding the employment of open access rules, the number of texts published within a given year with different types of texts distinguished (article, editorial, review, note, conference paper), titles and authors of the given texts, the authors and their affiliations. The tool supposed to distinguish the scientific discipline which a given article is related to does not function properly in Scopus when multidisciplinary journals are concerned, as it did not work in WoS; all articles are assigned to all categories. However, Scopus offers a possibility of retrieving articles by specific keywords, which WoS did not enable. It makes it easier to select articles according to their subject scope, and to select authors concerned with specific research questions.

Among the 236 journals, 118 (59%) is published by the big publishing group (Taylor & Francis – 45, Emerald – 23, Elsevier – 12, Springer – 12, SAGE – seven, Wiley-Blackwell – six, Palgrave Macmillan – four, Walter De Gruyter – four, IGI Global – three, Brill – two), with the rest published by universities and scientific societies. Here, too, English definitely dominates, featuring in 215 journals (91%), out of which only 19 also publishes texts in other languages (mainly French, Spanish, and German). The remaining 9% is published in Spanish, French, German, and Portugese (several journals publishes texts in several languages). When the question of where the publisher is based is concerned, as in WoS, USA – where 93 (39.5%) publishers are based and Great Britain – 59 (25%), dominate. The list of the countries that follow is similar to that at WoS as well: Netherlands – 15 (6.5%), Spain – nine (4%), Germany – nine (4%), France – six (2.5%) and Canada – six (2.5%). The position of France on the list is the first significant difference between the sets of journals from these databases, as WoS does not index any French journals associated with the discipline. The second difference is that Scopus features journals from more countries, where only several journals (between one and three) are published. It features 27 such journals, as compared to WoS's 15.

Among the 208 journals assigned to L&IS, only 67 (32%) publishes exclusively articles associated with this discipline. Other journals publish articles associated with several disciplines, out of which most often next to L&IS occurs additionally: Computer Science – 32, and 16 further assigned also to either Decision Sciences, Education, Law, Chemistry, Business, Management and Accounting, or Engineering; Business, Management and Accounting – nine, and further two also assigned to Computer Science; Education – nine, and further three assigned also to Computer Science; Medicine and Health Profession – six; Communication – five, and one further assigned also to History; History – four, and one further assigned also to Communication. Among the 28 journals which WoS assigned to LS&IS, and which Scopus does not assigned to L&IS, most is assigned to Computer Science, Business, Management and Accounting, Decision Sciences, Communication, or Engineering.

To estimate the overlap between the set of the journals in both databases assigned to the subject area of LIS, and the set of journals considered as related to library and information science published in the world, the data from other international bibliographic databases was used. The specialist database Library, Information Science & Technology Abstracts (LISTA) provided by Ebsco accounts for 470 peer-reviewed scientific journals (https://www.ebsco.com/products/research-databases/library-information-science-and-technology-abstracts). The analysis of publishers of these journals shows that the journals published by the large publishing groups, discussed above, constitute a much smaller part of all journals than it did at WoS and Scopus: they are only 39% of all journals (185). Therefore, LISTA classifies many more journals (285) published by university presses, small scientific publishing houses and scientific societies, than WoS (80) and Scopus (118), as scientific and meeting the standards of quality. It means that both databases neglect to index the majority of scientific journals related to the LIS discipline, which are published outside the large publishing groups. The second database specializing in LIS, Library and Information Science Abstracts (LISA), provided by the ProQuest company, features 440 journals published in 20 languages and 45 countries (http://proquest.libguides.com/lisa). The number of countries and languages suggests that WoS (which features journals from only 24 countries) and Scopus (34 countries) do not take into consideration a large amount of scientific activity and publications of LIS scholars. Hence, the information from LISTA and LISA confirms Philippe Mongeon and Adele Paul Hus's (2016) thesis that WoS and Scopus take into account, respectively, only every fourth and every third, scientific journal related to LIS.

In Poland, it has been a long held view that journals featured in the Journal Citation Reports of the WoS database, and ascribed an IF value, are more prestigious. Currently, a position in the Scopus database is becoming a similar mark of prestige, which further depends on the indicators based on the citation numbers. A question arises if the two databases agree where a given journal ranks, and therefore, how prestigious it is. To answer it, two rankings were compared: first, based on the IF indicator, and second, on CitesSore. To compare them, 60 journals with the highest CiteScore were considered – this limit was imposed because a large part of the journals below the 60th position is not ascribed the IF value in the WoS database. The comparison showed that among the 60 journals with the highest CitesScore at Scopus, there are eight who do not have an IF value ascribed by WoS, i.e., they do not belong to the 98 most prestigious journals indexed there. Therefore, there is a major disagreement when it comes to the prestige of the 13% journals from the studied group. The following nine journals (15%) are ranked very differently by the two databases,

positioned more than 10 places apart. 18 (30%) journals have a more or less similar position in both rankings (a difference between 6 to 10 positions), and 25 (c. 42%) are ranked very similarly (the difference is five or less). Therefore, it seems that both databases tend to agree when determining the prestige, as measured by their citability, of a given journal from the L&IS (IS&LS) subject area.

3.2. The disciplinary classification in the databases versus the real subject scope of the journals

As mentioned above, a big part of the Polish academic community, as well as those in charge of science management in Poland, is convinced that the most valuable texts are published in journals who are attributed an Impact Factor by the Web of Science database. Until 2018, there functioned a special list of the journals indexed by WoS, created by the Ministry of Science and Higher Education (the so-called "A-list"), publishing in which was considered more prestigious, and which allowed the author to score more points in the evaluation of individual researchers and research institutions. After the introducing of a new legislation, *Prawo o szkolnictwie wyższym i nauce* (Law on Higher Education and Research) on 20th of July in 2018, the select journals from the A-list were incorporated into a new ministry list of scoring journals, which also includes journals from the Scopus database, and a set of Polish journals, which score much fewer points. The value of publications is supposed to be determined by the IF and a set of indicators from the Scopus database – CiteScore, SNIP and SJR (Komunikat MNSW, 2019). In such a model of evaluation, scientific prestige and the estimation of the quality of scientific output are determined by bibliometric indicators which depend on the citation number the journal is attributed on the basis of citations by other journals from the given database. Therefore, to establish which researchers and institutions have the most valuable output and which articles contribute to it, one would have to analyze the data regarding the journals from the group with the highest IF, or the highest CiteScore. Here, however, we have to ask if these criteria allow an unproblematic evaluation of publications from the discipline of LIS. The differences and problems discussed above should raise our doubts. To answer this question, the journals with the high IF assigned to the IS&LS category were examined to see if they actually published texts related to the discipline. The classification of disciplines employed at WoS was verified by an analysis of guidelines for the potential authors published on the journals' websites. The information on the subject scope of a given journal was selected, and then compared with the subject scope accepted by the specialists within the studied discipline. The 20 journals with the highest score for 2017 (i.e., the first quartile, Q1, in the IS&LS category) were selected for the comparison. The system of disciplinary classification employed by WoS was compared with the analogous classification employed by Scopus.

The thematic scope for research within the discipline of LIS which served as a model for comparison was established basing on two articles. The first study (Milojević et al., 2011) presented the results of thematic analysis of more than 10 thousand articles published between 1988 and 2007 in 16 journals associated with the LIS discipline. It was established that this discipline studies five main areas: the functioning of libraries, the world of information, the use of bibliometrics for the evaluation of science, information behavior, and bibliography. The specific issues included: public and academic libraries, digital libraries,

information systems, information competences, online services, knowledge management, scientific publications, the productivity of the researchers, citing, bibliometric indicators, information retrieval, catalogues and databases, classifications and internet search engines. The second article is a result of the research of Barbara Sosińska-Kalata (2013). She conducted a thematic analysis of the articles published in the journals considered to be the most important for the information science (a part of LIS)[1]. She established that information science is concerned with the following issues: the analysis of the state and the development of information and knowledge resources within different branches and specializations; information architecture and usability of internet websites; digital archives, libraries, and repositories; user studies – information needs, information literacy, and information behaviors; information barriers; history and contemporary nature of the book and of the library; quantitative research of information use – bibliometrics, scientometrics, webometrics; library science; information economy; information ethics; scholarly communication; information in digital and social media; knowledge organization – folksonomy, indexing, metadata, ontology, theory of classification and knowledge organization; theory of information; methodology and terminology of information science; data mining and text mining; big data; systems for the automatic content identification and extraction; expert systems and artificial intelligence; technology of information processing and publishing; information services; digitization and visualization of information; information retrieval and evaluation; information management; information sources. This set of research interests was accepted by the Polish academic community, which showed when it became the basis for a textbook *Nauka o informacji* (*Information Science*) published in 2016 with Wiesław Babik as the head editor.

If we compare the information from the websites of the journals studied (Table 1) with this set of research interests, we find that only journals no. 2, 3, 11, 12, 14, 15, 17 and 21, i.e., 36% of the journals featured in the table, might be considered as distinctly concerned with the discipline. In the following three quartiles of the journals assigned to IS&LS, the proporions are reverse: 66% of the journals categorized by WoS shows a distinct relation to the discipline of library and information science, while the remainder mostly publishes texts on the technical, medical, educational and business applications of the digital solutions (devices, apps, and systems), and on business management, which are mostly assigned to Computer Science, Communication, and Management.

Although LIS is interdisciplinary to a large extent, it does have specific research problems. It conducts its research and describes results thereof with methods borrowed from other disciplines, however its specific methodologies and techniques often differ from that used by the other disciplines. A study of technological aspects of the functioning of a given database is a different process than a study of linguistic aspects of its indexing and searching tools. A study of the management of a given information resource as a basis for generating decisions in business practice is different from the study of the process of creating, processing and publishing such a resource as a specific information structure. The

[1] The research of B. Sosińska-Kalata was concerned with the journals considered to be the most representative for the information science, which is a part of the designated research area of the library and information science, i.e., *Journal of the American Society for Information Science*, *Journal of Information Science* and *Journal of Documentation* and *Annual Review of Information Science and Technology*, published until 2011.

same research object might feature in different studies and journals, which does not mean that these studies and the journals publishing their results belong to the same discipline. A superficial analysis of the names of the journals, articles and books might suggest a substantial thematic overlap between library and information science, and disciplines such as computer science, engineering, or management. However, it is often a mistaken impression. The disciplinary classification systems employed by the largest databases might be similarly misleading. Indexing a given article as related to LIS, as well as to computer science, might be justified in certain instances, but not in others. Therefore, relying on the disciplinary classification employed by WoS for the diagnosis and evaluation of research conducted in the discipline of LIS risks basing these diagnoses and evaluations on bibliographic data of publications which are not representative of the discipline.

Tab. 1. Subject scope of the journals assigned to the IS&LS category from the first quartile, as indicated on their websites in the guidelines for authors

No.	Journal title	Subject scope as indicated on the journal's website in the guidelines for authors	WoS classification	Scopus classification
1	2	3	4	5
1	MIS Quarterly	development of IT-based services, the management of IT resources, and the use, impact, and economics of IT with managerial, organizational, and societal implications	IS&LS, management	computer science, decision sciences, business, management and accounting
2	Journal of Information Technology	technology and the management of IT – including strategy, change, infrastructure, human resources, sourcing, system development and implementation, communications, technology developments, technology futures, national policies and standards	IS&LS, management	L&IS, business, management and accounting; computer science
3	International Journal of Information Management	information management in learning organizations, business intelligence, security in organizations, social interactions and community development, knowledge management, information design and delivery, information for health care, Information for knowledge creation, legal and regulatory issues, IS-enabled innovations in information, content and knowledge management, philosophical and methodological approaches to information management research	IS&LS	L&IS, computer science

1	2	3	4	5
4	Journal of Strategic Information Systems	strategic management, business and organizational issues associated with the introduction and utilization of information systems, and considers these issues in a global context; organizational transformation on the back of IT; information systems/business strategy alignment; inter-organizational systems; global issues and cross-cultural issues; the impact and significance of emerging IT	IS&LS, management	business, management and accounting, computer sciences, decision sciences
5	Journal of the American Medical Informatics Association	clinical care, clinical research, translational science, implementation science, imaging, education, consumer health, public health, and policy	IS&LS	medicine
6	Information Systems Journal	information systems – research, practice, experience; articles that integrate technological disciplines with social, contextual and management issues	IS&LS	computer science
7	Government Information Quarterly	intersection of policy, information technology, government, and the public; how policies affect government information flows and the availability of government information; the use of technology to create and provide innovative government services; the impact of information technology on the relationship between the governed and those governing; and the increasing significance of information policies and information technology in relation to democratic practices	IS&LS	L&IS, sociology and political science, law
8	Journal of Computer--Mediated Communication	social science research on communicating with computer-based media technologies; work by scholars in communication, business, education, political science, sociology, psychology, media studies, information science	IS&LS, communication	computer science
9	Information and Management	research in the information systems field and managers, professionals, administrators of organizations which design, implement and manage Information Systems Applications; to collect and disseminate information on new and advanced developments in the field of information systems	IS&LS, management	computer science, decision sciences, business, management and accounting

1	2	3	4	5
10	Telematics and Informatics	the social, economic, political and cultural impacts and challenges of information and communication technologies	IS&LS	law, communication, engineering, computer science
11	Journal of Informetrics	bibliometrics, scientometrics, webometrics, and altmetrics, studying informetric problems using methods from other quantitative fields	IS&LS	L&IS, computer science
12	Information Processing and Management	research in information science, information searching, human information behavior, the areas of web searching, online advertising, public relations, communication, management information systems, computational economics, computational advertising, web analytics, online news, bibliometrics, scientometrics, health informatics, experimental processes related to digital libraries, knowledge management systems, multimedia processing, human--computer interfaces	IS&LS	L&IS, engineering, decision sciences
13	International Journal of Computer--Supported Collaborative Learning	education, computer science, information technology, psychology, communications, linguistics, anthropology, sociology, and business, investigate how to design the technological settings for collaboration and how people learn in the context of collaborative activity	IS&LS, education	education, computer science
14	Social Science Computer Review	artificial intelligence, business, computational social science theory, computer-assisted survey research, computer-based qualitative analysis, computer simulation, economic modeling, electronic modeling, electronic publishing, geographic information systems, instrumentation and research tools, public administration, social impacts of computing and telecommunications, software evaluation, world-wide web resources for social scientists	IS&LS, interdisciplinary	L&IS, law, computer science
15	European Journal of Information Systems	European perspective on the theory and practice of information systems; a critical view on technology, development, implementation, strategy, management and policy	IS&LS	L&IS, computer science

1	2	3	4	5
16	Journal of the Association for Information Systems	the field of information systems – it inclusive in topics, level and unit of analysis, theory, method and philosophical and research approach, reflecting all aspects of information systems globally	IS&LS	computer science
17	Journal of the Association for Information Science and Technology	research that focuses on the production, discovery, recording, storage, representation, retrieval, presentation, manipulation, dissemination, use, and evaluation of information and on the tools and techniques associated with these processes	IS&LS	L&IS, computer sciences
18	Journal of Management Information Systems	forum for the presentation of research that advances the practice and understanding of organizational information systems; the gap between theory and practice of management information systems	IS&LS, management	business, management and accounting, decision sciences, computer sciences
19	Journal of Knowledge Management	HR, learning & organization studies, information & knowledge management	IS&LS, management	business, management and accounting
20	Journal of Enterprise Information Management	information & knowledge management in enterprise	IS&LS, computer science, management	computer science. decision sciences, business management and accounting
21	Research Evaluation	evaluation of activities concerned with scientific research, technological development and innovation	IS&LS	L&IS, education
22	Qualitative Health Research	health care and further the development and understanding of qualitative research in health-care settings	IS&LS Interdisciplinary biomedical	medicine

This risk might be lowered with the use of the Scopus database, which offers a more accurate disciplinary classification of scientific journals than WoS, most often according with the real subject profile of the particular journals. As many as 13 of the 22 journals included by WoS in the category of IS&LS are not featured in the analogous category, L&IS, by Scopus. The information from the websites of the journals considered shows that the Scopus classification corresponds much more closely to the actual content of these journals. Additionally, the database allows to filter by keyword, which allows a more precise browsing of articles.

3.3. The key researchers concerned with a given research area

The gravity of the methodological problems generated by the imprecise thematic classification of the journals becomes apparent with the attempts to identify the key researchers

in a given discipline. In the Web of Science database, such an attempt to identify the key researchers (i.e., those publishing the highest number of articles and cited most often, thus having the largest impact on the discipline) concerned with the issues of library and information science, began with the use of the "Advanced Search" function. The author searched for SU – Research Area: SU=Information Science & Library Science, with the limiting of the results to Document types = Article. The search yielded 142 272 records. The use of the function "Refine Results = Web of Science Categories" showed that a large part of the group of the articles was assigned also to at least one other category (Fig. 1). The elimination of the articles classified in other categories reduced the number of records to 65 199. However, there was no option to automatically analyze to what extent did the eliminated articles relate to Information Science & Library Science, and to what extend did they relate to other scientific disciplines. The comparative analysis of the categories in WoS and the real thematic scope of journals conducted earlier suggests that the articles in other categories, such as Computer Science, Communication, and Management, should be considered as related to IS&LS only after sufficient deliberation; however, the interdisciplinary nature of LIS justifies categorizing many articles related to it as related to other scientific disciplines as well, among them these just mentioned. To satisfactorily resolve this matter, the only solution is to examine the title and abstract of every article included in these categories, which in total number more than 77 thousand. This is impossible, not in the least because of the time constraints.

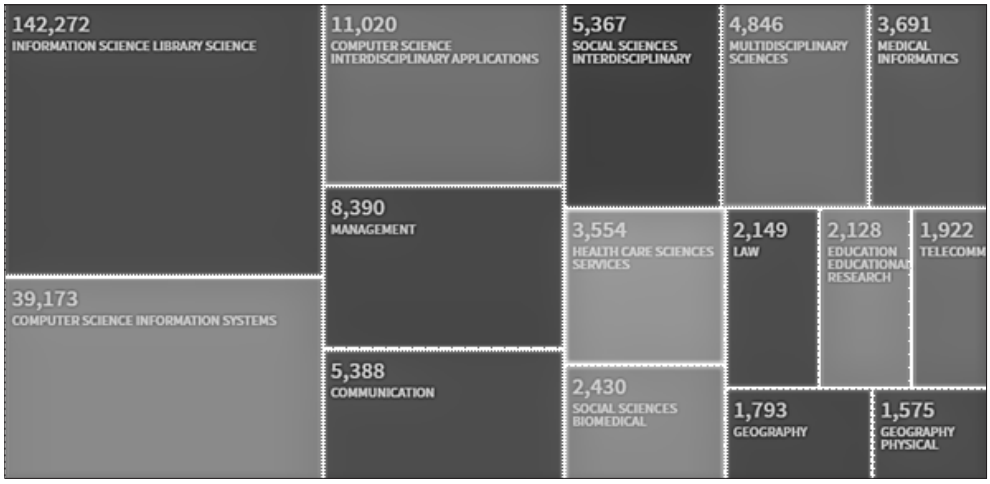

Fig. 1. The main categories to which the articles found as a result of the search SU=Information Science & Library Science are classified (Source: WoS)

The option to "Refine Result = Authors" allows to automatically show 100 authors who published the highest number of texts. The number of their publications, before elimination of the articles assigned also to other categories, is between 55 and 264 per author (25 authors who published the highest number of texts – Fig. 2).

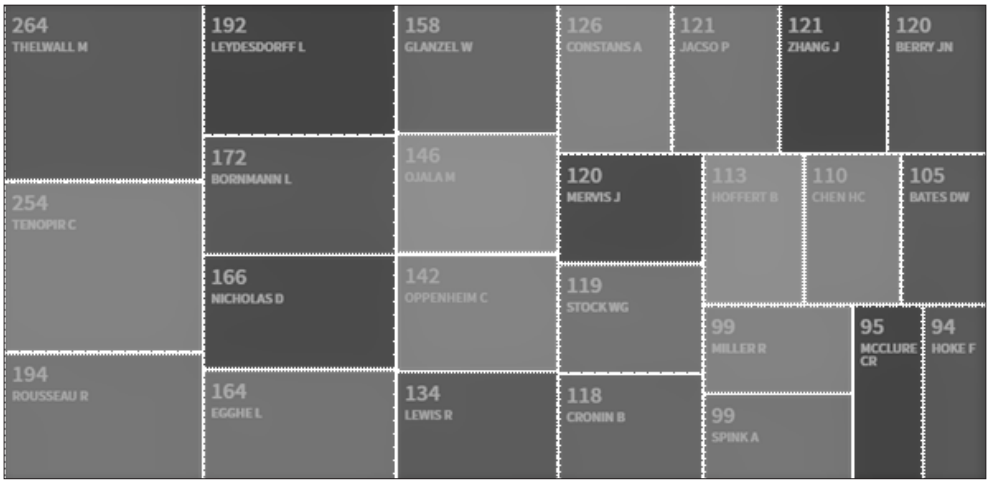

Fig. 2. The first 25 authors who published the highest number of texts in the journals in the category of Information Science & Library Science. The data before the elimination of the articles classified in other categories (Source: WoS)

After eliminating the articles assigned also to other categories, the number of the publications per author fell to a 28 – 216 range (Fig. 3). The members of the group change as well. Among the first 25 names, only eight recurs (C. Tenopir, J.N. Berry, W.G. Stock, B. Hoffert, M. Ojala, R. Miller, C.R. McClure, D. Nicholas), and the following two (M. Thelwall, C. Oppenheim) fall below 25th position, but remain above the 100th.

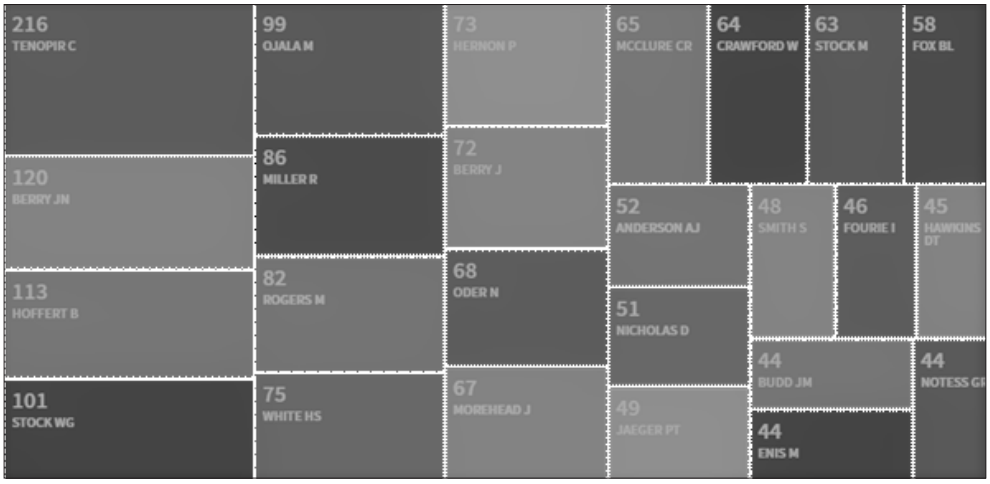

Fig. 3. The first 25 authors who published the highest number of texts in the journals in the category of Information Science & Library Science. The data after the elimination of the articles classified in other categories (Source: WoS)

WoS allows for a creation of a list of 500 authors who published the highest number of articles assigned to a given category. However, it is not obvious that whoever published the most articles is the leading researcher in a given discipline. The scientific position of an author might be verified by a study of the citability of their work.

To analyze the citations, a list of 100 authors with the highest number of publications was used, initially assuming that it would feature the authors with the largest impact, because of the citability of their work (additionally, WoS generates citability reports for sets of up to 10 thousand records). This list included 3993 articles, which were cited 15 400 times (14 246 without auto-citations) in 11 917 articles (11 247 without auto-citations) indexed in WoS Core Collection. It gives an average of 3.86 citation per article. WoS allows to rank given articles according to the number of their citations. The first 10 articles were cited between 111 and 463 times. The first 50 were cited 40 or more times; 100 – eight times; 1000 – three times. 911 articles had a number of citations above the average (4 and more). The most cited authors would be found in this group. Unfortunately, WoS does not enable such an automated search. The author had to create a set of publications by given authors (e.g. from the list of 100 with the highest number of articles published, or 100 whose articles had the highest citation numbers), and then to add up the citation numbers and to compare the average citation numbers of their work. A set of each author's publications was found with the use of the command AU=last name, first letters of the name. It was possible to generate a citation report for a thus generated set. The data on 25 authors who published the highest number of articles is presented in Table 2.

Tab. 2. Authors with the highest number of articles in the IS&LS category

No.	Author	Numbers of articles published	Citation number / without self-citations	h-index	Average citation number per article	Time of publishing
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Tenopir C.	216	999/928	15	4.63	1999–2018
2	Berry J.N.	120	53/53	5	0.44	1998–2017
3	Hoffert B.	113	44/43	3	0.39	1999–2018
4	Stock W.G.	101	68/49	3	0.67	1999–2018
5	Ojala M.	99	72/64	3	0.72	1993–2012
6	Miller R.	86	81/81	4	0.94	1994–2013
7	Rogers M.	82	31/31	4	0.38	1998–2017
8	White H.S.	75	290/271	9	3.82	1980–1999
9	Hernon P.	73	793/752	16	10.86	1992–2011
10	Berry J.	72	26/26	3	0.36	1988–2007
11	Oder N	68	73/73	5	1.07	1991–2010
12	Morehead J.	67	35/27	2	0.52	1976–1995
13	McClure C.R.	65	693/668	13	10.66	1993–2012

1	2	3	4	5	6	7
14	Crawford W.	64	60/59	3	0.94	1993–2012
15	Stock M.	63	1/0	1	0.02	1994–2013
16	Fox B.L.	58	28/28	2	0.48	1998–2017
17	Anderson A.J.	52	12/12	1	0.23	1979–1998
18	Nicholas D.	51	579/531	15	11.35	1998–2017
19	Jaeger P.T.	49	1918/1800	19	39.14	1999–2018
20	Smith S.	48	41/41	4	0.85	1999–2018
21	Fourie I.	46	134/108	7	2.91	1998–2017
22	Hawkins D.T.	45	323/303	10	7.18	1983–2002
23	Budd J.M.	44	456/449	12	10.13	1999–2018
24	Enis M.	44	3/3	1	0.07	2012–2018
25	Notess G.R.	44	49/47	3	1.11	1992–2003

The data makes clear that the number of publications of a given author does not correspond to their impact, as indicated by the citation number. Only seven authors from the list of 25 with the highest number of publications published articles with an above-average citability.

The authors with the highest impact might be identified by an analysis of the most commonly cited articles (Tab. 3). However, this method does not guarantee reliable results, either.

Tab. 3. The authors of the most commonly cited articles published in the journals classified as related to IS&LS (ranked according to the citation number of the most cited work)

No.	Author	Number of articles published	Number of citations / without self-citations	h-index	Average citation number per article	Time of publishing
1	2	3	4	5	6	7
1	Pawlak Z.	1	6622/6622	1	6622	1982
2	Layne K.	1	841/841	1	841	2001
3	Lee J.W.	8	852/848	3	106.5	2001–2016
4	Lee D.T.	3	618/618	2	206	1980–1984
5	Schachter B.J.	1	573/573	1	573	1980
6	Taylor R.S.	7	500/500	4	71.43	1996–2015
7	Bertot J.C.	43	1286/1238	14	29.91	1997–2016
8	Jaeger P.T.	49	1918/1800	19	39.14	1999–2018
9	Grimes J.M.	1	463/463	1	463	2010
10	Eppler M.J.	1	417/417	1	417	2004

1	2	3	4	5	6	7
11	Mengis J.	1	417/417	1	417	2004
12	van Dijk J.	4	419/419	3	104.75	2003–2017
13	Hacker K.	1	368/368	1	368	2003
14	Glanville J.M.	2	386/386	2	193	2006–2014
15	Lefebvre C.	4	409/405	3	102.25	2006–2014
16	Miles J.N.V.	1	367/367	1	367	2006
17	Belkin N.J.	2	375/374	2	187.5	1980–1987
18	Heeks R.	7	729/728	5	104.14	2002–2018
19	Savolainen R.	29	837/820	11	28.86	2001–2017
20	Boulos M.N.K.	3	346/346	2	115.33	2006–2009
21	Wheeler S.	2	339/339	1	169.5	2007
22	Gandomi A.	1	330/330	1	330	2015
23	Haider M.	1	330/330	1	330	2015
24	Lin J.C.C.	1	327/327	1	327	2000
25	Lu H.P.	2	366/366	2	183	1994–2000

This method of data collection from the WoS database is only minimally useful for the identification of the researchers crucial for the development of a discipline. Among the 25 researchers who published the most commonly cited articles, there are only three (P.T. Jaeger, J.C. Bertot, R. Savolainen), whose h-index indicated an above-average impact on other researchers. The remainder is found on the list because singular, but commonly cited works; these citations are not necessarily in texts in the category of IS&LS. It is unclear if these works had a real impact on library and information science. To verify this, the author analyzed their thematic scope, and publication. Below is the list of the first 10, excluding the three already mentioned.

(1) Pawlak Z.: Rouhh Sets. *International Journal of Computer & Information Sciences*, 6622 citations. An article on mathematical sciences, published in a journal related to widely understood information science, which is no longer published, and is not indexed neither in the Journal Citation Reports, nor in the Scopus database. In the 1980s, the journal was replaced by the *International Journal of Parallel Programming*, which is related to computer science.

(2) Layne K.: Developing Fully Functional E-government: A Four Stage Model. *Government Information Quarterly*, 841 citations – a description of the development of e-administration and a proposal for a model of its development stages, published in the journal assigned to IS&LS; however, it mostly publishes works concerned with political sciences and administration.

(3) Lee D.T., Schachter B.J.: 2 Algorithms for Constructing a Delaunay Triangulation. *International Journal of Computer & Information Sciences*, 574 citations – an article on mathematical sciences, published in the journal related to widely understood information science, but focused mostly on the issues of computer science; as discussed above, the journal is no longer published.

(4) Taylor R.S.: Question-Negotiation and Information Seeking in Libraries. *College & Research Libraries,* 476 citation – the article, as well as the journal where it was published, are representative of LIS.
(5) Eppler M.J., Mengis J.: The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines. *Information Society*, 417 citations – a review article concerned with the information overload, which is a research problem in LIS as well as in some other disciplines; however, it was published in a journal specializing mostly in political sciences, cultural studies, and computer science.
(6) van Dijk J., Hacker K.: The Digital Divide as a Complex and Dynamic Phenomenon. *Information Society*, 368 citations – a discussion of factors influencing the phenomenon of digital exclusion, which is a subject of interest in LIS as well as in some other disciplines; however, it was published in a journal specializing mostly in political sciences, cultural studies, and computer science.
(7) Glanville J.M., Lefebvre C., Miles J.N.V: How to Identify Randomized Controlled Trials in MEDLINE: Ten Years On. *Journal of the Medical Library Association*, 367 citations – the article, and the journal where it was published, are representative of LIS; the journal specializes in problems of medical information and medical librarianship.
(8) Belkin N.J.: Anomalous States of Knowledge as a Basis for Information-Retrieval. *Canadian Journal of Information Science – Revue Canadienne Des Sciences De L'Information*, 363 citations – the article, as well as the journal where it was published, are representative of LIS.
(9) Heeks R.: Information Systems and Developing Countries: Failure, Success, and Local Improvisations. *Information Society*, 342 citations – the article presents models and theories of functioning of information system in the developing countries, and the related problems; it belongs in the research area of LIS, however the article was published in a journal specializing in political sciences, cultural studies, and computer science.
(10) Boulos M.N.K., Wheeler S.: The Emerging Web 2.0 Social Software: An Enabling Suite of Sociable Technologies in Health and Health Care Education. *Health Information and Libraries Journal*, 339 citations – employment of social media in health care and health education is a subject within the research area of LIS, and the article was published in a journal assigned to IS&LS, focusing on the problems of health and medical information (accordingly, it was assigned to the category Medicine and health profession as well).

The search for the most cited articles in the IS&LS category indexed in WoS brought up only three articles with an undeniable connection to LIS (a study of information users and their information behaviors) and a significant impact on the discipline (articles no. 4, 7, and 8). Five articles had some connection to LIS, but were published in journals which in fact do not focus on the discipline's research problems (no. 2, 5, 6, 9, and 10). Two articles were published in a journal who has not been a platform for scientific communication of the LIS researchers for a long time.

Therefore, the application of the WoS function which allows for an automated search of the authors who published the highest number of articles, and for the articles which have the highest number of citations, is not always reliable, and does not give an accurate

view of the discipline studied. It is only when the detailed information regarding every author and article is studied that the researchers and articles most representative of LIS might be selected.

The function "Search (Documents, Authors, Affiliations, Advanced)" of the Scopus database does not allow for an automated search of the articles or authors related to a given scientific discipline. The author could only use the "Sources – Enter subject area" option and choose "Library and Information Sciences". However, as a result he received only a list of journals assigned to the category. To find the information on the authors in every journal requires a separate process. After selecting a journal known to be publishing articles related to the studied discipline, the "View all documents" function had to be selected. Among various data provided, Scopus showed a list of authors and a number of the works they published. The search by "Author name" limits the result to the works of the given author. To find the authors of the articles which had the largest impact on the given discipline, the author assumed that they would publish their works in the journals with the highest impact measurements. For the purpose of the current study, the author examined the authors from the journals with the highest CiteScore indicator, assigned to the L&IS category in Scopus and verified as representative of the discipline by an analysis of the content on their websites. The examination of every journal was performed with following commands: "View all documents", "Limit to – Subject area: Social Science", and then "Sort on: Cited by (highest)". Then, the "Author details" command was used to find the number of their texts in the Scopus database, among them those included in the Social Sciences category; their h-index; the part of their articles assigned to given categories. Table 4 presents the results of the search of 10 most commonly cited authors in the eight LIS journals with the highest CiteScore.

The data presented in Table 4 shows that it is impossible to distinguish the most influential authors from the set of the journals studied, as only two of them appear more than once – M. Thelwall and J.D. Roessner appear twice. It seems that every journal relies on their particular set of authors to supply texts for publishing. Searching for researchers with the greatest impact on the discipline among authors of articles most often cited in individual periodicals also proved to be problematic. This group of authors also includes researchers who published singular but highly cited texts, however in articles assigned to disciplines other than the one which the author or the journal publishing these texts represent. In the studied set, it was 11 of the 78 researchers in the analyzed group. Each of these researchers is attributed a low (single-digit) h-index by Scopus, which does not allow to identify any of them as an influential author. Furthermore, the authors who publish the most cited articles in the studied LIS journals rarely focus on this discipline in their research. According to the Scopus algorithms, only 16 out of 78 researchers studied focuses on social sciences (unfortunately, Scopus does not indicate whether it belongs to the more specific L&IS sub-category), and more than half, i.e. 44 authors focus mostly on computer science. As Chang observed (2018), the researchers from other disciplines who publish in the LIS journals most often use scientometrics to analyze trends occurring in the disciplines they are interested in; as well as explore problems related to information technology, information issues in economics, and information issues in medicine, which is generally confirmed by the data presented in Table 4.

Tab. 4. The authors of the most cited articles from the L&IS category
(ranked according to the citation number of the most commonly cited work)

No.	Journal title	Author	The number of the articles/ including the articles in the Social Sciences category	The citation number	h-index	The dominant category of the author's output as per Scopus
1	2	3	4	5	6	7
1	Journal of Information Technology	Baskerville R.L.	177/42	5953	36	computer science
		Wood-Harper A.T.	11/3	1040	7	computer science
		Chan Y.E.	53/20	2962	18	computer science
		Reich B.H.	45/10	3117	18	computer science
		Markus M.L.	74	7589	34	computer science
		Axline S.	3/1	546	3	computer science
		Petrie D.	3/1	546	3	computer science
		Tanis C.	2/1	826	2	computer science
		Jeyaraj A.	29/19	971	8	computer science
		Rottman J.W.	23/6	989	11	business, management and accounting
2	International Journal of Information Management	Lin J.C-C.	26/11	1816	14	computer science
		Lu H.	90/28	4366	28	computer science
		Gandomi A.	7/1	475	3	engineering
		Haider M.	19/10	671	8	engineering
		Sultan N.	23/13	806	7	social sciences
		Yates D.	52/12	1018	11	computer science
		Paquette S.	16/11	654	7	social sciences
		Edmunds A.	1/1	340	1	computer science 50%, social science 50%
		Morris A.	114/66	1823	20	social sciences
		Trkman P.	53/14	1592	19	computer science

1	2	3	4	5	6	7
3	Journal of Informetrics	Alonso S.	69/6	3314	22	computer science
		Cabrerizo F.J.	85/7	2623	23	computer science
		Herrera-Viedma E.	373/29	17088	67	computer science
		Herrera F.	589/32	38007	95	computer science
		Moed H.F.	116/74	4854	36	computer science
		Prabowo R.	9/5	371	6	computer science
		Thelwall M.	381/245	11187	55	computer science
		Wagner C.S.	37/21	506	15	social sciences
		Roessner J.D.	37/15	882	13	business, management and accounting
		Bobb K.	7/7	270	3	social sciences
4	Information Processing and Management	Salton G.A.	103/22	13317	33	computer science
		Buckley C.	42/10	9400	28	computer science
		Jansen B.J.	200/70	7953	40	computer science
		Spink A.H.	206/111	7496	42	computer science
		Saracevic T.	83/45	4880	25	computer science
		Sokolova M.V.	97/10	1424	12	computer science
		Lapalme G.	89/20	1682	15	computer science
		Radev D.R.	97/46	4633	32	computer science
		Jing H.	10/8	698	7	social sciences
		Styś M.	1/1	02	1	computer science 50%, social sciences 50%
5	Social Science Computer Review	Walther J.B.	90/56	8672	36	social sciences
		D'Addario K.P.	1/1	307	1	computer science 50%, social sciences 50%
		Crawford S.D.	15/6	761	10	medicine
		Couper M.P.	142/86	7116	45	social sciences
		Lamias M.J.	3/3	650	3	social sciences
		Zhang W.	18/17	617	10	social sciences
		Johnson T.J.	70/58	238	22	social sciences
		Seltzer T.	15/14	869	8	social sciences
		Bichard S.L.	14/11	579	8	social sciences
		Barrett L.F.	197/16	15291	60	psychology

1	2	3	4	5	6	7
6	European Journal of Information Systems	Walsham G.	84/34	6257	31	computer science
		Petter S.C.	41/10	2703	12	computer science
		Delone W.H.	28/7	11595	15	computer science
		McLean E.R.	70/11	11769	19	computer science
		Heijden H.V.D.	1/1	468	1	computer science 50%, social sciences 50%
		Verhagen T.	24/5	1197	14	computer science
		Creemers M.	2/1	509	2	computer science
		Zhu K.X.	33/9	4064	16	computer science
		Kraemer K.L.	150/68	10496	42	computer science
		Xu S.X.	26/6	2242	12	business, management and accounting
7	Journal of the Association for Information Science and Technology	Hamari J.	46/14	2556	20	computer science
		Sjoklint M.	4/1	246	4	computer science
		Ukkonen A.	40/1	670	11	computer science
		Costas R.	71/36	1381	20	computer science
		Zahedi Z.	12/6	347	5	computer science
		Wouters P.F.	54/31	1358	18	computer science
		Bornmann L.	292/188	6450	40	computer science
		Mutz R.	59/30	1699	20	computer science
		Thelwall M.	382/246	11260	55	computer science
		Peters I.	39/27	532	13	computer science
8	Research Evaluation	Aksnes D.W.	31/15	1164	15	computer science
		Laudel G.	31/26	833	14	social sciences
		Lissoni F.	40/12	2837	16	business, management and accounting
		Llerena P.	45/6	1182	13	business, management and accounting
		McKelvy M.	87/15	1185	15	business, management and accounting
		Sanditov B.	10/2	180	6	business, management and accounting
		Martin B.R.	84/31	4593	30	business, management and accounting
		Taxt R.E.	2/1	181	2	veterinary, agricultural and biological sciences
		Porter A.L.	248/85	4503	33	business, management and accounting
		Roessner J.D.	37/15	888	13	business, management and accounting

The study shows that the automatic data filtering functions in the Scopus and WoS databases are hardly useful for identifying key researchers in LIS. Without a tedious, immediate analysis of the texts of specific articles and the scientific output of the researchers, it is not possible to accurately classify their work as related to a given discipline, and to properly evaluate it.

4. Conclusion

The method of qualitative analysis employed in the study has limitations which might change the results of the study. The first limitation comes from the necessity of accepting a closed set of research interests as definitive of the LIS discipline. Modifications of this set will without a doubt change a part of the data. However, in the case of this interdisciplinary research area strongly affected by other disciplines and employing their research methods, it is difficult to avoid this problem. The author followed the classification of research fields in information science established in the study by Barbara Sosińska-Kalata (2013), not only because it is commonly accepted in Poland and in accord with the classification proposed by the team under the direction of Stas Milojević (2011) commonly employed in research. It was also important that it is sufficiently detailed, facilitating a classification of a thematic scope of particular journals and articles. This limitation did not have an impact on the realizing the primary goal of the current study, i.e., indicating methodological problems in the use of the WoS and Scopus databases, with their filtering and analytical tools, by researchers and those in charge of science management to evaluate the state of library and information science's development, as well as of the quality of the scientific output of the LIS researchers.

The second limitation comes from the quality of the data studied. As it has already been mentioned, Fiorenzo Franceschini, Domenico Maisano and Luca Mastrogiacomo (2016) established that bibliographic records contain multiple errors which disrupt the results of searches. We should also remember the studies of Qi Wang and Ludo Waltman (2016), and of Abdullad Abrizah and others (2013), which show that the producers of the most important multidisciplinary bibliographic databases make mistakes in assigning journals to scientific disciplines they are supposed to represent. The results presented in this article confirmed that mistakes had been made in assigning not only journals to disciplines, but also authors. Therefore, it is necessary to verify the data retrieved from the WoS and Scopus databases with qualitative methods, e.g. analysis of the thematic profile, or content, of the given authors' publications.

The third limitation comes from the quantity of data and the sample selection. In practice, the time constraints on the qualitative analysis, and the limits to an article's length imposed by the editing team, make it impossible to examine and discuss all data regarding the articles, authors, and citations. Therefore, the author had to narrow down the quantity of the analyzed data with a use of a formal criterium, i.e. selecting the most commonly cited publications. However, the attached risk is minimal in the case of the research focused on the identification of methodological issues, which is possible even with a small data sample.

Both databases studied offer an automatic search function, and the refinement and analysis of the search results, which the researchers conducting bibliometric and scientometric

analyses are happy to use, but which, as the study has shown on the case of LIS, do not ensure a collection of sufficiently representative and reliable datasets for such analyses. Only when the quantitative data is accompanied by a qualitative analysis based on the information from various sources, it is possible to conduct a reliable and holistic evaluation of the usefulness of the bibliographic databases for an analysis and diagnosis of the state of a scientific discipline. In the case of LIS, the author faced many obstacles to a collection of full and reliable information. Both databases offer only a very limited set of data to conduct a reliable analysis and diagnosis of the LIS discipline. The journals published by universities and scientific societies, or published outside the USA and the Great Britain, are definitely underrepresented. The WoS database does not enable an automated data acquiring of journals that do not have a measured IF. It is impossible to filter the articles published in multidisciplinary journals by their research area categories, because all articles are assigned to all disciplines the journals is associated with. A similar problem occurs in the Scopus database, but Scopus does enable a filtering of the articles by the keywords. WoS mistakenly classified a big group of journals as belonging to LIS. Neither database allows an automated, but still reliable identification of the researchers with the highest impact on the development of the discipline, which is made even more difficult by its interdisciplinary character. A similar problem occurs when the user searchers for the most commonly cited work closely related to the given discipline. Scopus does not allow for a precise assignment of a researcher to a research area category. Neither database enables an automated and reliable assignment of a researcher to particular research interests.

The results of the quantitative study of the state and development of a discipline reliant on the data acquired from the WoS and Scopus databases and processed automatically by filtering and statistical tools, should be approached only with great care. Without verifying if the journals, articles, authors and citations studied have a real relation to the given scientific discipline, or if the databases' system of disciplinary classification corresponds to the real subject scope of the journals included, the results might be false. In the case of LIS, it is very easy to receive data presenting an inaccurate view of the discipline, especially when using the WoS database, as its category of IS&LS is too broad, and includes many journals which have only a tangential relation to the discipline. There is no point of constructing a view of LIS on the basis of data acquired in the most part from the journals which publish texts concerned mostly, if not exclusively, with computer science, communication sciences, business, management and accounting. All lists of influential journals and authors, and measurements of publication numbers and their citability become unreliable as a result of confusing the data related to LIS with the data related to other disciplines. Because of the different citation models, number of researchers and frequency of publishing in the disciplines assigned to one category with LIS, the journals, articles and researchers which are actually crucial for LIS become invisible in the category containing less related data. It is worth mentioning that the studies discussed in this article additionally showed that the data from WoS and Scopus highlights the technological research paradigm in LIS, despite the development of other methodologies.

In their current state, the studied multidisciplinary databases, especially WoS, have only a negligible usefulness for the diagnosis of the state and development of LIS. The methodological issues discussed in this article may prevent generating an accurate and objective view of the discipline. The changes to the organization of resources and functioning of

WoS and Scopus, which have been taking place for a few years now, did not resolve the previously existing issues.

Appendix: The list of journals included in the study

Note: In the column "IF 2017" (impact factor) in the absence of calculated IF there was entered the information about indexing in the Core Collection (cc) or in another database included in the Web of Science. The "-" means that the database does not include a specific journal.

L&IS – Library and Information Science; IS&LS – Information Science and Library Science.

No.	Journal title	Cite-Score 2017	IF 2017	Publisher	Headquarters	Language of publication	Scopus system of disciplinary classification	WoS system of disciplinary classification
1	2	3	4	5	6	7	8	9
1	*Accountability in Research*	1.05	1.400	Taylor & Francis	United Kingdom	English	L&IS	medical ethics
2	*African Journal of Library Archives and Information Science*	0.30	0.286	Archlib & Information Services	Nigeria	English	education, medicine	IS&LS
3	*AIB Studi*	0.39	cc	Associazione Italiana Biblioteche	Italy	English Italian	L&IS	IS&LS
4	*American Archivist*	0.6	cc	Society of American Archivists	USA	English	L&IS	IS&LS
5	*Analecta Hibernica*	0.0	–	Irish Manuscripts Commission	Ireland	English	L&IS	–
6	*Anales de Documentacion*	0.32	cc	University of Murcia	Spain	Spanish Portuguese	arts and humanities	IS&LS
7	*Annals of Library and Information Studies*	0.39	cc	National Institute of Science Communication and Information Resources	India	English	L&IS	IS&LS
8	*Archival Science*	1.52	–	Springer	USA	English	history	–
9	*Archivaria*	0.51	Medline	Association of Canadian Archivists	Canada	English	L&IS	science technology, social sciences

1	2	3	4	5	6	7	8	9
10	*Archives*	0.00	cc	British Records Association	United Kingdom	English	L&IS	IS&LS
11	*Archives and Manuscripts*	0.52	cc	Taylor & Francis	United Kingdom	English	computer science	history
12	*Aslib Journal of Information Management*	2.01	1.461	Emerald	United Kingdom	English	L&IS	IS&LS
13	*Australian Academic and Research Libraries*	0.92	0.818	Taylor & Francis	United Kingdom	English	history	IS&LS
14	*Behavioral and Social Sciences Librarian*	0.8	–	Taylor & Francis	USA	English	L&IS	IS&LS
15	*Biblios*	0.08	cc	University of Pittsburgh	USA	English	L&IS	–
16	*BiD*	0.04	cc	Universitat de Barcelona	Spain	Portuguese Spanish	history	IS&LS
17	*Bilgi Dunyasi*	0.06	–	University and Research Librarians Association, Ankara	Turkey	English French Portuguese Spanish	L&IS	IS&LS
18	*Boletim do Arquivo da Universidade de Coimbra*	0.00	cc	Imprensa da Universidade de Coimbra	Portugal	English Turkish	communication	–
19	*Bottom Line*	0.24	cc	Emerald	United Kingdom	Portuguese	L&IS	history
20	*Bulletin des Bibliotheques de France*	0.01	–	Ecole nationale superieure des sciences de l'information et des bibliotheques	France	English	computer science	IS&LS
21	*Bulletin. John Rylands University Library of Manchester*	0.11	Medline	John Rylands University Library	United Kingdom	French	L&IS	–
22	*Canadian Journal of Information and Library Science*	0.42	0.243	University of Toronto Press	Canada	English	L&IS	science technology

1	2	3	4	5	6	7	8	9
23	*Canadian Journal of Program Evaluation*	0.3	cc	Canadian Journal of Program Evaluation	Canada	English French	general social science	IS&LS
24	*Cataloging and Classification Quarterly*	0.67		Taylor & Francis	USA	English French	L&IS	social sciences
25	*Ciencia da Informacao*	0.01	cc	Brazilian Institute for Information in Science and Technology	Brazil	English	L&IS	IS&LS
26	*Collection Building*	0.6	–	Emerald	United Kingdom	Portuguese Spanish	L&IS	–
27	*Collection Management*	0.27	cc	Taylor & Francis	USA	English	L&IS	IS&LS
28	*College and Research Libraries*	1.7	cc	Association of College and Research Libraries	USA	English	conservation	IS&LS
29	*College and Research Libraries News*	0.46	1.626	Association of College and Research Libraries	USA	English	L&IS	IS&LS
30	*College and Undergraduate Libraries*	0.57	–	Taylor & Francis	USA	English	business, management and accounting	–
31	*Communications in Information Literacy*	1.44	cc	Communications in Information Literacy	USA	English	L&IS	IS&LS
32	*Community and Junior College Libraries*	0.3	cc	Taylor & Francis	USA	English	L&IS	IS&LS
33	*Computers in Libraries*	0.25	–	Information Today	USA	English	arts and humanities	–
34	*Computers in the Schools*	1.06	–	Taylor & Francis	USA	English	L&IS	–
35	*Cuadernos.info*	0.43	cc	Pontificia Universidad Catolica de Chile	Chile	English	computer science	education
36	*Cybermetrics*	5.50 (2016)	SciELO	Centro de Informacion y Documentacion Cientifica	Spain	Spanish	L&IS	social sciences

1	2	3	4	5	6	7	8	9
37	*Data Base for Advances in Information Systems*	0.56	–	Association for Computing Machinery	USA	English	L&IS	–
38	*DESIDOC Journal of Library and Information Technology*	0.42	0.400	Defence Scientific Information & Documentation Centre	India	English	L&IS	IS&LS
39	*Development and Learning in Organizations*	0.21	cc	Emerald	United Kingdom	English	L&IS	IS&LS
40	*Digital Library Perspectives*	0.59	–	Emerald	United Kingdom	English	L&IS	–
41	*D–Lib Magazine*	0.86	cc	Corporation for National Research Initiatives	USA	English	business, management and accounting	IS&LS
42	*Document Numerique*	0.13	–	Lavoisier	France	English	L&IS	–
43	*Documentaliste: Sciences de l'Information*	0.02	–	Association des Professionnels de l'Information et de la Documentation	France	English French	L&IS	–
44	*East Asian Publishing and Society*	0.27	–	Brill	USA	English French	education	–
45	*EContent*	0.02	cc	Online Inc.	USA	English	L&IS	Asian studies
46	*Education and Information Technologies*	1.3	0.039	Springer	USA	English	education	IS&LS
47	*Education for Information*	0.55	cc	IOS Press	Netherlands	English	L&IS	education
48	*Electronic Library*	0.99	cc	Emerald	United Kingdom	English	education	IS&LS
49	*Ethics and Information Technology (55)*	1.62	0.800	Springer	Netherlands	English	L&IS	education
50	*European Journal of Information Systems (17)*	4.23	1.080	Palgrave Macmillan	United Kingdom	English	education	IS&LS

1	2	3	4	5	6	7	8	9
51	*Evidence Based Library and Information Practice*	0.29	3.197	University of Alberta	Canada	English	L&IS	IS&LS
52	*Fontes Artis Musicae*	0.03	cc	Music Library Association	Switzerland	English	computer science	ethics
53	*Gazette des Archives*	0.01	cc	Association des Bibliothecaires Francais	France	English French German	L&IS	IS&LS
54	*Government Information Quarterly*	5.82	–	Elsevier	United Kingdom	French	education, computer science	IS&LS
55	*Grey Journal*	0.11	4.009	GreyNet	Netherlands	English	L&IS	music
56	*Health Information and Libraries Journal*	1.02	–	Wiley–Blackwell	USA	English	communication	–
57	*Ibersid*	0.06	1.190	Universidad de Zaragoza	Spain	English	L&IS	IS&LS
58	*IC Revista Cientifica de Informacion y Comunicacion*	0.00	cc	Editorial Universidad de Sevilla	Spain	Spanish	Computer science,	–
59	*IEEE Transactions on Information Theory*	3.33	cc	Institute of Electrical and Electronics Engineers	USA	English Spanish Portuguese	Business, management and accounting	IS&LS
60	*IFLA Journal*	0.71	cc	Sage	USA	English	L&IS	IS&LS
61	*Informacao and Sociedade – Estudos*	–	cc	Univ. Federal Campina Grande	Brazil	English	L&IS	communication
62	*Informacion, Cultura y Sociedad*	0.13	0.159	Instituto de Investigaciones Bibliotecologicas	Argentina	Portuguese	business, management and accounting	computer science, engineering
63	*Informacios Tarsadalom*	0.08	SciELO	Infonia	Hungary	Spanish	L&IS	IS&LS
64	*Information – Wissenschaft und Praxis*	0.1	0.023	Walter de Gruyter	Germany	Hungarian	education, computer science	IS&LS
65	*Information and Culture*	–	cc	Univ. Texas Press	USA	German	L&IS	science technology, social sciences

1	2	3	4	5	6	7	8	9
66	*Information and Learning Science*	1.01	0.229	Emerald	United Kingdom	English	L&IS	IS&LS
67	*Information and Management*	5.24	cc	Elsevier	Netherlands	English	L&IS	IS&LS
68	*Information and Organization*	3.15	3.890	Elsevier	United Kingdom	English	communication	computer science
69	*Information Communication and Society*	4.09	1.857	Taylor & Francis	United Kingdom	English	L&IS	IS&LS
70	*Information Design Journal*	0.07	3.084	John Benjamins Publishing Company	Netherlands	English	communication, engineering	History of social sciences
71	*Information Development*	0.71	–	Sage	USA	English	L&IS	IS&LS
72	*Information Discovery and Delivery*	0.21	0.905	Emerald	United Kingdom	English	computer science	IS&LS
73	*Information Processing and Management*	4.23	cc	Elsevier	United Kingdom	English	L&IS	management
74	*Information Research – an International Electronic Journal*	0.84	3.444	University of Borås	Sweden	English	education	IS&LS
75	*Information Resources Management Journal*	0.39	0.762	IGI Global	USA	English	L&IS	management
76	*Information Retrieval*	2.18	cc	Springer	Netherlands	English	education, computer science	communication sociology
77	*Information Services and Use*	0.39	1.488	IOS Press	Netherlands	English	L&IS	–
78	*Information Society*	1.86	–	Taylor & Francis	USA	English	computer science	IS&LS
79	*Information Systems Journal*	4.22	1.889	Wiley–Blackwell	USA	English	L&IS	IS&LS

1	2	3	4	5	6	7	8	9
80	*Information Systems Management*	1.5	4.267	Taylor & Francis	United Kingdom	English	computer science	IS&LS
81	*Information Systems Research*	3.7	1.255	Institute for Operations Research and the Management Sciences	USA	English	L&IS	IS&LS
82	*Information Technology and Libraries*	0.88	2.301	Amer. Library Assoc.	USA	English	computer science	IS&LS
83	*Information Technology and Management*	1.79	0.968	Springer	USA	English	L&IS	computer science
84	*Information Technology and People*	2.35	1.635	Emerald	United Kingdom	English	L&IS	–
85	*Information Technology for Development*	1.66	1.639	Taylor & Francis	United Kingdom	English	music	IS&LS
86	*Informing Science*	1.04	1.387	Informing Science Institute	USA	English	L&IS	IS&LS
87	*Insights*	0.45	–	United Kingdom Serials Group	United Kingdom	English	history	computer science
88	*Interlending & Document Supply*	0.73 (2015)	cc	Emerald	United Kingdom	English	L&IS	IS&LS
89	*International Information and Library Review*	0.24	0.242	Taylor & Francis	USA	English	sociology and political science, law	management
90	*International Journal of Computer–Supported Collaborative Learning*	3.09	cc	Springer	USA	English	L&IS	IS&LS
91	*International Journal of Data Mining and Bioinformatics*	0.74	3.273	Inderscience Enterprises	Switzerland	English	L&IS	IS&LS

1	2	3	4	5	6	7	8	9
92	*International Journal of Geographical Information Science*	3.0	0.652	Taylor & Francis	United Kingdom	English	medicine,	management
93	*International Journal of Information Management*	5.78	2.370	Elsevier	United Kingdom	English	health professions	IS&LS
94	*International Journal of Information Science and Management*	0.26	4.516	Regional Information Center for Science and Technology	Iran	English	L&IS	IS&LS
95	*International Journal of Law and Information Technology*	0.53	–	Oxford University Press	United Kingdom	English	communication, computer science	–
96	*International Journal of Metadata, Semantics and Ontologies*	0.51	cc	Inderscience Enterprises	United Kingdom	English	L&IS	IS&LS
97	*International Journal of Multimedia Information Retrieval*	1.03	–	Springer	Germany	English	communication, cultural studies, linguistics and language	IS&LS
98	*International Journal of the Book*	0.07	cc	Common Ground Research Networks	USA	English	L&IS	science technology, social sciences
99	*International Journal on Digital Libraries*	1.67	–	Springer	Germany	English	computer science	IS&LS
100	*Internet Reference Services Quarterly*	0.89	cc	Taylor & Francis	USA	English	L&IS	education
101	*Investigacion Bibliotecologica*	0.23	–	Univ. Nacional Autonoma Mexico	Mexico	English	–	biology

1	2	3	4	5	6	7	8	9
102	*Issues in Science and Technology Librarianship*	0.36	0.212	Association of College and Research Libraries	USA	Spanish	L&IS	IS&LS
103	*JLIS.it*	0.00	–	Universita di Firenze	Italy	English	communication	geography
104	*Journal of Academic Librarianship*	2.32	cc	Elsevier	USA	English	L&IS	IS&LS
105	*Journal of Access Services*	0.34	1.459	Taylor & Francis	USA	English	computer science	–
106	*Journal of Archival Organization*	0.08	–	Taylor & Francis	USA	English	–	law
107	*Journal of Business and Finance Librarianship*	0.4	–	Taylor & Francis	USA	English	L&IS	–
108	*Journal of Chemical Information and Modeling*	3.9	–	American Chemical Society	USA	English	education, computer science	computer science
109	*Journal of Cheminformatics*	3.98	cc	Chemistry Central	United Kingdom	English	computer science, decision sciences, business, management and accounting	–
110	*Journal of Classification*	2.83	3.893	Springer	Germany	English	L&IS	IS&LS
111	*Journal of Computer–Mediated Communication*	5.97	1.214	Wiley–Blackwell	USA	English	business, management and accounting; computer science	–
112	*Journal of Digital Information Management*	0.24 (2016)	4.000	Digital Information Research Foundation	India	English	L&IS communication	IS&LS

1	2	3	4	5	6	7	8	9
113	*Journal of Documentation*	1.44	–	Emerald	United Kingdom	English	L&IS	–
114	*Journal of Education for Library and Information Science*	0.0	1.157	Association for Library and Information Science Education	USA	English	L&IS	IS&LS
115	*Journal of Educational Media and Library Science*	0.22	cc	Tamkang University	Taiwan	English	L&IS	IS&LS
116	*Journal of Electronic Resources in Medical Libraries*	0.51	–	Taylor & Francis	USA	English	L&IS engineering, decision sciences	–
117	*Journal of Electronic Resources Librarianship*	0.32	–	Taylor & Francis	USA	English	L&IS	–
118	*Journal of Enterprise Information Management*	3.59	–	Emerald	United Kingdom	English	L&IS	–
119	*Journal of Global Information Management*	1.44	2.482	IGI Global	USA	English	business, management and accounting	chemistry, computer science
120	*Journal of Global Information Technology Management*	0.72	0.613	Taylor & Francis	USA	English	L&IS	chemistry, computer science
121	*Journal of Health Communication*	1.97	1.000	Taylor & Francis	USA	English	computer science	mathematics
122	*Journal of Hospital Librarianship*	0.25	1.648	Taylor & Francis	USA	English	L&IS	psychology

1	2	3	4	5	6	7	8	9
123	*Journal of Information and Computational Science*	0.17 (2016)	Medline	Binary Information Press	China	English	computer science	IS&LS
124	*Journal of Information and Knowledge Management*	0.6	–	World Scientific Publishing	USA	English	computer science, political sciences, cultural studies	communication
125	*Journal of Information and Organizational Sciences*	0.55	cc	University of Zagreb	Croatia	English	computer science	–
126	*Journal of Information Ethics*	0.1	cc	McFarland and Company	USA	English	L&IS	IS&LS
127	*Journal of Information Literacy*	0.68	cc	CILIP Information Literacy Group	United Kingdom	English	computer science	IS&LS
128	*Journal of Information Science*	2.09	–	Sage	United Kingdom	English	L&IS	education
129	*Journal of Information Science and Engineering*	0.53	1.939	Academia Sinica	Taiwan	English	decision sciences, computer science	–
130	*Journal of Information Science Theory and Practice*	0.0	0.237	Korea Institute of Science and Technology Information	Korea	English	L&IS	–
131	*Journal of Information Technology*	3.83	–	Palgrave Macmillan	United Kingdom	English	computer science	–
132	*Journal of Information Technology Teaching Cases*	0.21	4.535	Palgrave MacMillan	Switzerland	English	business, management and accounting	IS&LS
133	*Journal of Informetrics*	3.52	–	Elsevier	Netherlands	English	communication	computer science, management

1	2	3	4	5	6	7	8	9
134	*Journal of Interlibrary Loan, Document Delivery and Electronic Reserve*	0.0	3.484	Taylor & Francis	USA	English	computer science	IS&LS
135	*Journal of Knowledge Management*	3.12	–	Emerald	United Kingdom	English	L&IS	IS&LS
136	*Journal of Librarianship and Information Science*	1.2	2.551	Sage	United Kingdom	English	computer science	IS&LS communication
137	*Journal of Library Administration*	0.77	1.098	Taylor & Francis	USA	English	computer science, public administration	none of the results
138	*Journal of Library and Information Services in Distance Learning*	0.42	cc	Taylor & Francis	USA	English	L&IS	–
139	*Journal of Library Metadata*	0.43	–	Taylor & Francis	United Kingdom	English	L&IS	science technology, social sciences
140	*Journal of Management Information Systems*	3.22	–	Taylor & Francis	United Kingdom	English	L&IS	computer science
141	*Journal of Map and Geography Libraries*	0.72	2.744	Taylor & Francis	USA	English	L&IS	IS&LS
142	*Journal of Organizational and End User Computing*	1.47	cc	IGI Global	USA	English	education, computer science	–
143	*Journal of Scholarly Publishing*	0.46	0.744	Univ. Toronto Press	Canada	English	L&IS	IS&LS

1	2	3	4	5	6	7	8	9
144	*Journal of Strategic Information Systems*	3.82	0.447	Elsevier	Nether-lands	English	computer science, biochemi-stry	computer science
145	*Journal of the Ameri-can Medical Informatics Association*	4.11	4.313	Oxford Univ. Press	United Kingdom	English	L&IS	–
146	*Journal of the Asso-ciation for Information Science and Technology*	3.36	4.270	Wiley–Blackwell	USA	English	geography, computer science	IS&LS manage-ment
147	*Journal of the Asso-ciation for Information Systems*	4.14	2.835	Assoc. Informa-tion Systems	USA	English	L&IS	–
148	*Journal of the Australian Library and Information Association (Australian Library Journal)*	0.52	2.839	Taylor & Francis	USA	English	computer science	IS&LS
149	*Journal of the Medical Library Association*	1.14	0.500	Medical Library Assoc.	USA	English	L&IS	–
150	*Journal of Web Libra-rianship*	0.69	1.541	Taylor & Francis	USA	English	decision sciences, business, manage-ment and accounting	IS&LS manage-ment
151	*Knowledge Cultures*	0.00	cc	Addleton Acade-mic Publishers	USA	English	L&IS	IS&LS
152	*Knowledge Manage-ment Re-search and Practice*	1.51	–	Palgrave Mac-millan	United Kingdom	English	law	IS&LS
153	*Knowledge Organiza-tion*	0.57	0.864	Ergon–Verlag	Germany	English	L&IS	–

1	2	3	4	5	6	7	8	9
154	*Language Documentation and Conservation*	0.50	0.59	University of Hawaii Press	USA	English German	computer science	–
155	*Language Resources and Evaluation*	1.15	cc	Springer	Netherlands	English	L&IS	IS&LS management
156	*Law Library Journal*	0.45	0.656	American Association of Law Libraries	USA	English	engineering, computer science	IS&LS
157	*Learned Publishing*	1.12	0.583	Wiley–Blackwell	USA	English	L&IS	IS&LS management
158	*Lecture Notes in Control and Information Sciences*	0.36	1.632	Springer	USA	English	history, literature and literary theory, communication	IS&LS
159	*Legal Reference Services Quarterly*	0.21	cc	Taylor & Francis	USA	English	L&IS	IS&LS management
160	*LIBER Quarterly*	0.73	–	Association of European Research Libraries	Netherlands	English	L&IS	IS&LS
161	*Library*	0.41	–	Oxford University Press	United Kingdom	English	L&IS	IS&LS
162	*Library and Information Science*	0.07	cc	Mita Soc. Library Information Science	Japan	English	L&IS engineering	IS&LS
163	*Library and Information Science Research*	1.7	0.300	Elsevier	USA	English Japanese	L&IS conservation, computer science	IS&LS
164	*Library Collections, Acquisition and Technical Services*	0.25	1.372	Taylor & Francis	United Kingdom	English	L&IS	IS&LS
165	*Library Hi Tech*	0.9	0.333	Emerald	United Kingdom	English	education	IS&LS
166	*Library Hi Tech News*	0.33	0.759	Emerald	United Kingdom	English	L&IS	–
167	*Library Journal*	0.02	–	Reed Business Information	USA	English	L&IS	IS&LS management

1	2	3	4	5	6	7	8	9
168	*Library Leadership and Management*	0.23	0.458	American Library Association	USA	English	L&IS	IS&LS
169	*Library Management*	0.76	–	Emerald	United Kingdom	English	business, management and accounting	language
170	*Library Philosophy and Practice*	0.33	cc	University of Idaho Library	USA	English	L&IS	linguistics
171	*Library Quarterly*	1.02	–	Univ. Chicago Press	USA	English	chemistry, computer science	computer science
172	*Library Resources and Technical Services*	0.43	0.913	Amer. Library Assoc.	USA	English	L&IS	IS&LS
173	*Library Review*	0.94	0.657	Emerald	United Kingdom	English	chemistry, computer science	law
174	*Library Trends*	0.4	cc	Johns Hopkins Univ. Press	USA	English	L&IS mathematics decision sciences, psychology	IS&LS
175	*Libres*	0.46	0.474	Curtin University of Technology	Australia	English	computer science	computer science, engineering
176	*Libri*	0.52	cc	Walter De Gruyter	Germany	English	L&IS	–
177	*Logos*	0.08	0.500	Brill	Netherlands	English German	computer science, business, management and accounting	–
178	*Malaysian Journal of Library and Information Science*	0.6	cc	Univ. Malaya	Malaysia	English	L&IS	humanities multidisciplinary
179	*Manuscripta Orientalia*	0.33	0.425	Thesa Publishers	Russia	English	computer science	IS&LS

1	2	3	4	5	6	7	8	9
180	*Masaryk University Journal of Law and Technology*	0.17	–	Masaryk University	Czech Republic	English	L&IS	IS&LS
181	*Medical Reference Services Quarterly*	0.79	–	Taylor & Francis	USA	English	education	IS&LS
182	*Methis*	0.00	Medline	University of Tartu Press	Estonia	English	L&IS conservation, archeology, computer science	IS&LS
183	*MIS Quarterly*	8.33	–	Univ. Minnesota	USA	English	L&IS	–
184	*MIS Quarterly Executive*	1.6	5.430	Indiana Univ.	USA	German	health	IS&LS
185	*Music Reference Services Quarterly*	0.18	1.862	Taylor & Francis	USA	Russian	L&IS	–
186	*New Review of Academic Librarianship*	1.18	–	Taylor & Francis	United Kingdom	Estonian	computer science	IS&LS
187	*Notes*	0.14	–	Music Library Association	USA	English	computer science. decision sciences, business management and accounting	–
188	*Notes and Queries*	0.04	cc	Oxford University Press	United Kingdom	English	business management and accounting,	IS&LS
189	*Online Information Review*	2.01	cc	Emerald	United Kingdom	English	decision sciences,	IS&LS
190	*Pakistan Journal of Information Management and Libraries*	0.19	1.675	University of the Punjab	Pakistan	English	computer sciences	IS&LS

1	2	3	4	5	6	7	8	9
191	*Papers of the Bibliographical Society of America*	0.11	–	Bibliographical Society of America	USA	English	computer science, decision sciences	IS&LS
192	*Performance Measurement and Metrics*	0.51	cc	Emerald	United Kingdom	English	L&IS communication, public health	IS&LS
193	*Perspectivas em Ciencia da Informacao*	0.24	cc	Escola de Ciencia da Informacao da UFMG	Brazil	English	L&IS	IS&LS
194	*Portal: Libraries and the Academy*	1.31	cc	Johns Hopkins Univ. Press	USA	English	medicine	humanities multidisciplinary
195	*Preservation, Digital Technology and Culture*	0.02	1.473	Walter de Gruyter	Germany	English	L&IS	IS&LS
196	*Proceedings of the Association for Information Science and Technology*	0.46	–	John Wiley and Sons	USA	English	computer science	–
197	*Profesional de la Informacion*	1.17	–	El Profesional de la Informacio	Spain	Portuguese	L&IS	–
198	*Program – Electronic Library and Information Systems*	1.30	1.318	Emerald	United Kingdom	English	computer science	science technology, social sciences
199	*Prologue*	0.02	1.170	National Archives and Records Administration	USA	English	L&IS	–
200	*Public Library Quarterly*	0.43	cc	Taylor & Francis	USA	English	computer science	IS&LS management
201	*Public Services Quarterly*	0.34	cc	Taylor & Francis	USA	Spanish	L&IS	IS&LS management
202	*Qualitative Health Research*	2.22	–	Sage	USA	English	philosophy	–

1	2	3	4	5	6	7	8	9
203	*Records Management Journal*	1.18	2.413	Emerald	United Kingdom	English	L&IS	–
204	*Reference and User Services Quarterly*	0.42	cc	Amer. Library Assoc.	USA	English	L&IS	music
205	*Reference Librarian*	0.58	0.377	Taylor & Francis	USA	English	computer science	literature
206	*Reference Services Review*	1.2	–	Emerald	USA	English	L&IS	IS&LS
207	*Research Evaluation*	2.79	cc	Oxford Univ. Press	United Kingdom	English	computer science	–
208	*Restaurator – International Journal for The Preservation of Library and Archival Material*	0.29	2.449	Walter De Gruyter	Germany	English	L&IS	humanities multidisciplinary
209	*Revista Cubana de Informacion en Ciencias de la Salud*	0.29	0.344	Centro Nacional De Informacion De Ciencias Medicas	Cuba	English	computer science,	IS&LS
210	*Revista Espanola de Documentacion Cientifica*	0.83	SciELO	Consejo Superior Investigaciones Cientificas	Spain	English	decision sciences	IS&LS
211	*Revista General de Informacion y Documentacion*	0.23	0.632	Universidad Complutense de Madrid	Spain	English	L&IS	IS&LS
212	*Revue Francaise d'Histoire du Livre*	0.00	cc	Librairie Droz SA	France	English	business, management and accounting; computer science	–
213	*School Library Media Research*	0.27 (2016)	–	American Library Association	USA	English	L&IS	–
214	*Science and Technology Libraries*	0.58	–	Taylor & Francis	USA	Spanish	education	IS&LS

1	2	3	4	5	6	7	8	9
215	*Scientific Data*	6.08	cc	Nature Publishing Group	United Kingdom	Spanish	L&IS	IS&LS
216	*Scientist*	0.03	5.305	Labx Media Group	Canada	Spanish	computer science	computer science
217	*Scientometrics*	2.72	0.537	Springer	Netherlands	French	L&IS	history
218	*Scire*	0.09	2.173	Universidad de Zaragoza	Spain	English	business, management and accounting	IS&LS
219	*Script and Print*	0.17	cc	Australian and New Zealand Student Services Association	Australia	English	L&IS	–
220	*Scriptorium*	0.16	–	Centre d'Etude des Manuscrits	Belgium	English	L&IS	IS&LS Interdisciplinary biomedical
221	*Serials Librarian*	0.42	cc	Taylor & Francis	USA	English	public administration	IS&LS
222	*Serials Review*	0.35	cc	Taylor & Francis	United Kingdom	English	L&IS	IS&LS
223	*Slavic and East European Information Resources*	0.07	0.310	Taylor & Francis	USA	Spanish Portuguese	L&IS	–
224	*Social Science Computer Review*	2.96	–	Sage	USA	English	business, management and accounting, decision sciences, computer sciences	IS&LS
225	*Social Science Information*	0.52	3.253	Sage	United Kingdom	French German Spanish Italian	L&IS	IS&LS
226	*Technical Services Quarterly*	0.12	0.571	Taylor & Francis	USA	English	business, management and accounting,	IS&LS
227	*Telecommunications Policy*	2.14	cc	Elsevier	United Kingdom	English	computer sciences	science technology

1	2	3	4	5	6	7	8	9
228	*Telematics and Informatics*	4.33	2.087	Elsevier	Netherlands	English	education,	IS&LS
229	*Terminology*	0.42	3.789	John Benjamins Publishing Company	Netherlands	English	engineering	IS&LS
230	*Transactions of the Cambridge Bibliographical Society*	0.0	0.389	Cambridge Bibliographical Society	United Kingdom	English French	business, management and accounting,	–
231	*Transinformacao*	0.33	–	Pontificia Universidade Catolica Campinas	Brazil	English	computer sciences, decision sciences	–
232	*Tuna*	0.00	0.255	Eesti Arhivaaride Uhing	Estonia	English	medicine	IS&LS
233	*VINE Journal of Information and Knowledge Management Systems*	1.27	cc	Emerald	United Kingdom	English	L&IS	multidisciplinary
234	*Vjesnik Bibliotekara Hrvatske*	0.15	cc	Hrvatsko Knjiznicarsko Drustvo	Croatia	English French Spanish	computer sciences	IS&LS multidisciplinary
235	*VOEB–Mitteilungen*	0.05	–	Universitätsbibliothek Graz	Austria	French	computer science	IS&LS
236	*Weblogy*	0.77	–	University of Aix–Marseille	France	Portuguese	L&IS	
237	*World Patent Information*	0.88	–	Elsevier	United Kingdom	English	L&IS	IS&LS
238	*Zeitschrift für Bibliothekswesen und Bibliographie*	0.08	cc	Vittorio Klostermann	Germany	Estonian	medicine	

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Przydatność danych pochodzących z baz Web of Science i Scopus do analizowania stanu dyscypliny naukowej. Przypadek dyscypliny library and information science

Abstrakt

Cel/Teza: Wykorzystywanie baz bibliograficznych do analizowania i diagnozowania stanu nauki coraz częściej stanowi stały element polityki naukowej wielu państw. Dotychczasowe badania przydatności danych z baz Web of Science i Scopus do tego celu nie dały jednoznacznych wyników. Ich autorzy nie zawsze odnosili się do ważnej kwestii – jakości danych pochodzących ze wspomnianych baz. Celem artykułu jest analiza jakości danych pobieranych w sposób zautomatyzowany z zasobów wymienionych baz.

Koncepcja/Metody badań: Autor posłużył się metodą jakościowej weryfikacji danych polegającą na początkowo zautomatyzowanym pobraniu danych o czasopismach z baz Web of Science i Scopus, a następnie na poddaniu ich analizie jakościowej. Analiza ta polegała na: wzajemnej konfrontacji danych o czasopismach reprezentujących Library and Information Science pobranych z obu baz; skonfrontowaniu danych ilościowych pobranych z badanych baz z danymi pochodzącymi z innych, tematycznych baz danych bibliograficznych; porównaniu pobranych danych z informacjami dostępnymi na stronach WWW indeksowanych czasopism oraz na skonfrontowaniu przyporządkowywania czasopism, artykułów i autorów do dyscyplin naukowych, stosowanego przez redakcje wspomnianych baz, z przyjętym przez badaczy zakresem tematycznym dyscypliny Library and Information Science.

Wyniki i wnioski: Ustalono, że w przypadku badanej dyscypliny automatyczne pobieranie danych stwarza ryzyko uzyskania zbioru o niskiej wiarygodności. Najwięcej problemów stwarza niski poziom kompletności danych oraz błędy w kategoryzowaniu czasopism, artykułów i autorów.

Oryginalność/Wartość poznawcza: Wykazano, że wbrew twierdzeniom decydentów polskiej nauki, w obecnym kształcie badane bazy bibliograficzne jedynie w niewielkim stopniu przydatne są do monitorowania stanu i tendencji rozwojowych badanej dyscypliny naukowej. Wykazane w niniejszym artykule problemy metodyczne stwarzane przez obie bazy mogą rzutować także na generowanie rzetelnego i obiektywnego obrazu innych dyscyplin naukowych. Zmiany w obszarze funkcjonowania WoS i Scopus, obserwowane od kilku lat, nie rozwiązały istniejących już wcześniej problemów i niedogodności.

Słowa kluczowe

Analiza ilościowa. Analiza jakościowa. Dane bibliograficzne. Dyscyplina naukowa. Scopus. Web of Science.

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