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Unlocking the hidden realms: analysing the Ukrainian journal landscape with Ulrichsweb

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Abstract: Although Ukraine is one of the leading countries in Central and Eastern Europe in terms of its number of scholarly journals, most of these journals are not widely recognized by the scientific community. This paper presents an in-depth analysis of scholarly journal publishing in Ukraine, using data from the Ulrichsweb Global Serials Directory. The study aims to provide insights into the quantity and characteristics of Ukrainian journals, with a specific focus on historical context, publisher diversity, language of publication, and subject distribution. The findings reveal that Ulrichsweb encompasses details on over 1,500 active Ukrainian journal titles, some tracing their origins back to the 19th century. Notably, 85% of these journals are disseminated by academic institutions, including universities and research organizations. This study exemplifies the utility of Ulrichsweb as a valuable tool for investigating national scholarly journals underrepresented in other databases.

Keywords: academic journal publishing, local journals, scholarly communication, Ukraine, Ulrichsweb

INTRODUCTION

Core citation databases, which grant researchers access to current scientific information, index thousands of titles from scholarly journals worldwide. However, global scholarly communication is happening on a much larger scale than we can assess, for example, with Scopus or Web of Science (WoS) (Khanna et al., 2022). Beyond the complex network of influential international journals, there exist numerous national or local journals that are concealed or unknown to the broader scientific community, but which are important for 'a wide range of global and local topics, studied from different epistemic and methodological approaches, inspired by various schools of thought and expressed in a variety of languages' (Giménez Toledo *et al*., 2019). The large number of these obscure journals creates an information gap that challenges our overall understanding of the current scholarly communication ecosystem, as scientists often choose to examine the scientific frameworks of developed countries, English-language journals and the operations of intellectual centres rather than scientific peripheries (Cope & Kalantzis, 2014). In addition to disseminating and transmitting scientific knowledge, 'hidden' local journals hold potential to offer unique and valuable information towards understanding the influence of historical, cultural and socio-economic factors on the development of scientific institutions and academic publishing within specific regions.

In this study, using data from the Ulrichsweb Global Serials Directory (Ulrichsweb), I attempt to investigate the main quantitative characteristics and evolutionary trends of national journals in the case of Ukraine. My focus is specifically on journals within the national context of Ukraine, aiming to shed light on aspects

that may not be adequately reflected in prominent international reference databases.

The main research questions of this paper are as follows:

Q1: Can Ulrichsweb data be utilized effectively to scrutinize the quantitative characteristics of national journals?

To address this inquiry, the study will assess the suitability and reliability of Ulrichsweb data in examining the quantitative attributes of national journals (using the example of Ukrainian journals).

Q2: Can Ulrichsweb data be used for an in-depth study of the historical development of national systems of publishing local journals?

In response to this question, the research will evaluate the applicability of Ulrichsweb data in elucidating the historical evolution and development of national systems involved in publishing local journals (using the example of Ukrainian journals).

The structure of this paper includes an introductory section, wherein the research begins with an exploration of sources relevant to the study of national academic journals. Subsequently, the investigation delves into the intricacies of Ukrainian academic journal publishing, encompassing a historical overview, the contemporary national reality, and quantitative analyses. The following section delineates the research methods used in this study, while the subsequent part presents the results of the examination of Ukrainian journals through the lens of Ulrichsweb. A comprehensive discussion of the research findings and concluding remarks that encapsulate essential insights, address limitations, and delineate implications derived from the study conclude the paper.

Key points

- Ulrichsweb provides information on 1,590 Ukrainian scholarly journals, of which 1,559 are currently active.
- 84% of Ukrainian journals were founded after the country's independence in 1991.
- Academic institutions publish the majority of Ukrainian journals.
- Ukrainian, English and Russian are the main languages in which journals are published, with Ukrainian being the most dominant at 90%.

BIBLIOGRAPHIC DATA SOURCES FOR RESEARCH OF NATIONAL JOURNALS

Commencing an investigation into the national journal publishing landscape with a focus on publisher geography necessitates the availability of a fitting source database. Interesting cases are provided in previous studies of the state of national journals in small countries, including Croatia (Grgić, 2014) and Lithuania (Gudinavičius et al., 2023). The number of these journals is relatively small and information about them is available on national resources that are easy to process, so there is no need to use data from international databases. When there is a need to study larger volumes of journal titles for which there are no comprehensive national data sources, researchers turn to international databases. Hedlund and Rabow (2009) studied the general publishing landscape and its main problems related to local languages in the Nordic countries (Denmark, Finland, Iceland, Norway, Sweden, and Finland). For this purpose, they used data from Ulrichsweb, WoS and the Directory of Open Access Journals (DOAJ). Jamali et al. (2022) used Ulrichsweb to describe the nature and extent of scholarly journal publishing in Australia (651 journals) with the help of data from a number of international databases: Scopus, WoS, DOAJ, and the national Excellence in Research for Australia list. For a complete analysis of journal publishing in China, Wang et al. (2018) used data from the national China Academic Journal Network Publishing Database in addition to WoS and SCImago Journal and Country Rank (based on Scopus data). For the analysis of the journal publishing market in Africa, Smart (2009) used the international Ulrichsweb, WoS and Medline, and the African Journals OnLine platform. Also noteworthy are recent extensive studies on small and medium-sized publishers of journals publishers by Stephen and Stahlschmidt (2022), utilizing the Crossref open database, and Laakso and Multas (2023), combining data from Ulrichsweb with data from other specialized databases and directories.

It is also worth mentioning another common approach to studying 'national journals', which are contrasted with 'international journals', when journals are evaluated not by the geography of the publisher, but by bibliometric indicators based on their national orientation; that is, how many authors (co-authors) of the journal are affiliated with countries and/or researchers from which countries cite this journal. A seminal study by Zitt and Bassecoulard (1998) delves into this aspect, utilizing data from the Science Citation Index, now known as the Science Citation Index Expanded (as part of WoS). Based on the country of location of the publisher, Gazni (2015) uses WoS data to investigate changes in the international orientation of national publishers' journals over time. Similarly, later, Moed et al. (2020) use Scopus data and Index of National Orientation (INO) for this purpose. Although this approach does not directly include, it does not ignore the concept of the country of scientific or commercial origin of the journal, as it is often the country of national orientation. It should be noted that these studies are also based on WoS and Scopus data, which provide convenient tools for measuring citation-based bibliometric indicators, but have a limited scope and do not take into account numerous publications outside these databases.

FEATURES OF UKRAINIAN JOURNAL PUBLISHING

A brief look into the history of Ukrainian journals

The inception of academic journals began in the latter half of the 17th century; however, the substantive proliferation of scholarly periodicals occurred predominantly during the 19th century, owing to the emergence of numerous nascent research domains (Fyfe et al., 2022). Over the course of these centuries, Ukraine was bereft of independent statehood, with its territories subsumed within diverse imperial entities. Notwithstanding the formidable challenges posed by this protracted lack of political autonomy, Ukrainians have demonstrated resilience, in particular, by establishing and disseminating scholarly knowledge through the publication of journals. The *Ukrainskyj Vesnik*, founded at Kharkiv University in 1816, is considered the first literary, artistic, academic and socio-political journal in Ukraine, followed by the *Ukrainskyj Zhurnal* in 1824 (Zhyvotko, 1999). Given that there were other universities in Ukraine at that time (in Kyiv, Lviv and Ostroh), it can be assumed that there were other academic periodicals as well. In 1873, Ukrainian intellectuals founded the Shevchenko Scientific Society in Lviv (Rohde, 2019; Shevchenko Scientific Society, 1949). One of the achievements of the Society was the publication of the journal *Collection of the Mathematical and Natural Sciences and Medicine Section of the Shevchenko Scientific Society*.

The epoch during which Ukraine was absorbed by the Soviet Union had a profound influence on the research landscape of the nation. This impact was discernible primarily due to the alignment of research endeavours with the imperatives of the communist production system, characterized by centralized planning, state-sponsored financial backing, regional specialization, ideological predisposition (Shchepetylnykova, 2023), and deliberate isolation from the outside world (Kuzhabekova, 2020). The Soviet academy played a crucial role in the country's political and economic system, especially after the Second World War. Until the 1960s, researchers in the natural sciences tended to have a higher degree of privilege and freedom in their research, unlike other fields that required loyalty to the communist regime (Yegorov, 2009). The subsequent Era of Stagnation in Soviet history, characterized by the conservative and bureaucratic policies of an ageing leadership, had a negative impact on all aspects of public life, including the academy (Bacon, 2002). Sibirny (2016) notes that in the 1970s, there was an unofficial but tacit recommendation in the USSR for researchers to publish in domestic journals, preferably in Russian. Zitt and Bassecoulard (2005) also mention the national orientation of journals in the USSR at that time, characterized by the exclusive connection of domestic author publications with domestic publishers and the Russian language.

Upon attaining independence in 1991, Ukraine found itself presented with a unique opportunity to cultivate its indigenous education and science systems, a prospect that extended to the advancement of academic publishing within the nation. The main goal of the transformation of the research system in post-Soviet Ukraine in the 1990s and early 2000s, was to reorient activities from military to civilian purposes (Yegorov, 2009). These years were characterized by a reduction in funding for scientific activities, which led to the obsolescence of equipment, an increase in the average age and a significant reduction in the number of researchers, in particular due to emigration, especially of specialists in mathematics, physics and biology. The social sciences and humanities have had a much more difficult time integrating into the global research environment, and the reorganization of these areas has been much more difficult due to their particular influence of Soviet communist ideology (Nazarovets et al., 2019).

Current Ukrainian national requirements for journals

Ukraine inherited the Soviet tradition of awarding academic degrees (Hladchenko, 2023). On 25 February 1992, the Higher Attestation Commission of Ukraine (HACU) was established on the model of the one that existed in the USSR (Idrisov, 2012; President of Ukraine, 1992), which exercised centralized supervision over the certification of research and teaching staff in relation to the awarding of academic degrees and academic titles in Ukraine. In 1997, the HACU made a decision to require the publication of the main content of the dissertation in the form of articles in Ukrainian or international journals prior to the defence (HACU, 1997b). In order to comply with this decision, the Lists of Professional Publications of Ukraine (LPPU) were approved, which initially included 322 journals and 160 collections of scientific works (publications that could be periodicals, non-periodicals and continuing[1]), in which the main content of the dissertation could be published (LPPU) (HACU, 1997a). In the 2010s, the practice of evaluating the results of scientific activities of Ukrainian researchers and institutions was expanded by assessing the availability of articles 'in foreign or Ukrainian journals indexed in international databases' since November 2012 (Hladchenko, 2023), and articles in 'scientific periodicals of other states' since December 2012 (Nazarovets & Nazarovets, 2018), and later – bibliometric indicators from the international databases Scopus and Web of Science (Mryglod & Nazarovets, 2019), although the tradition of evaluation by indicators of publication activity in local LPPU journals was also not abandoned.

The official Ukrainian lists and requirements for journals have undergone several revisions over time (Hladchenko & Moed, 2021; Nazarovets, 2020; Nazarovets, 2022; Nazarovets et al., 2019). In the past, the requirements for inclusion in these lists were mostly formal and focused on quantitative measures, which did not effectively regulate the quality of publications (Yatskiv & Radchenko, 2012). In 2018, the Ministry of Education and Science of Ukraine (MES of Ukraine, 2018) introduced new requirements for the LPPU, which aimed to address many of the shortcomings of the previous system. The journals included in the

[1]https://archive.chytomo.com/standards/vydannya-osnovni-vydy-terminy-ta-vyznachennya-dstu-301795.

LPPU are now divided into two categories – 'A' and 'B'. Category A includes Ukrainian journals that are indexed in WoS and/or Scopus, meaning that the responsibility for verifying these journals is transferred to a third party. Category B journals are subject to a number of new, but still mostly formal, requirements, including measures for the online presentation of the journal, registered digital object identifier (DOI), information on the peer review procedure, appropriate composition of editorial boards, and others. Although further research is needed to determine the effectiveness of these requirements in improving the quality of scholarly communication in Ukraine, it should be acknowledged that this was a significant move towards changing the country's scholarly publishing landscape towards internationalization.

Funding for Ukrainian journals

Although this paper does not thoroughly address the issue of financial support for the functioning of Ukrainian journals, it should be noted that neither the MES of Ukraine, when setting the requirements for journals, nor any other government research agency has considered in previous years, and is not currently considering, the issue of full or at least partial coverage of publishing expenses, as, for example, the Croatian Ministry of Science and Education does for the journals it selects according to six criteria (Horvat & Velagić, 2020). Also, in countries of Central and Eastern Europe, the national foundations in Bulgaria, Poland, Serbia, Slovenia and Romania announce annual calls for journal publishing funding (Laakso & Multas, 2023). Or, for example, the substantial financial support of local journals by the councils of the Nordic countries (Hedlund & Rabow, 2009). Thus, the issue of financing lies entirely on the shoulders of Ukrainian publishers without any state guarantees.

Also, despite the fact that Ukraine has adopted several regulatory documents on open science and open access (OA) policies since its independence, most recently the National Plan regarding Open Science (Nazarovets, 2022), there are no significant requirements for publishing OA journals in the country. However, there is a requirement for LPPU category B journals to submit electronic copies of issues to the 'Scientific Periodicals of Ukraine' portal of the Vernadskyi National Library of Ukraine, where they are made publicly available online, and to the National Repository of Academic Texts[2] (MES of Ukraine, 2018). The DOAJ indexes a relatively small number of Ukrainian journals, so previous known studies based on this data indicate a few OA journals in Ukraine – 359 (Laakso & Multas, 2023). At the same time, as of September 2023, the Directory of Open Access scholarly Resources (ROAD[3]) contains information on a much larger number of Ukrainian OA journals – 980.

[2]At the time of writing this paper, the repository does not provide any information about the journals that are included in it.

[3]https://road.issn.org/.

Quantitative studies of Ukrainian academic journals

Previous studies of Ukrainian journals have mainly focused on understanding their place in global communication and their ability to serve as an international communication channel, limiting their evaluation to citations data, specific subject areas, or searching for an optimal journal evaluation system. For instance, Hladchenko and Moed (2021) found that Ukrainian journals indexed in Scopus have a very high level of national orientation and therefore cannot be considered as high-quality means of international exchange of academic research results. Kavunenko et al. (2006) conducted a comparative analysis of Ukrainian journals in social sciences and humanities, with journals in these areas from other countries indexed in WoS. Based on the comparison, they came to the disappointing conclusion that Ukrainian journals often fail to fulfil their function as a quality communication channel due to the lack of clear-cut subject areas. Vlokh (2010) conducted a series of studies on existing journal evaluation systems and proposed a system for evaluating Ukrainian journals based on their own criteria, including in particular the indexing of journals in Scopus, WoS and other databases and other formal characteristics.

An important source of information on Ukrainian journals is the Ukrainian-language paper by Yatskiv and Radchenko (2012), which analyses the journals presented on the 'Scientific Periodicals of Ukraine' portal. At the time of Yatskiv and Radchenko's study, 918 journals were available on the portal. By comparing the periodicity with the average number of articles in each issue, the authors raised concerns about the possibility of attracting the appropriate number of reviewers and editorial board members to ensure the proper quality of so many journals. It is worth noting that the number of journals on the portal had more than tripled, to 2,931, by 10 December 2023. In contrast, the number of research institutions and scientists engaged in research and development in Ukraine has halved since that time due to Russian military aggression (Nazarovets & Teixeira da Silva, 2022). Therefore, the issue of the real number of scholarly journals in Ukraine and their quality remains unresolved.

Exploring Ukrainian journals through Ulrichsweb

The MES of Ukraine provides two resources for accessing information on Ukrainian journals: the LPPU, which is continuously updated and available on the Ministry's website in PDF format, and the information and reference system the 'REGISTER of scientific professional editions of Ukraine' (Bogatel & Popov, 2019). Additionally, the State Scientific and Technical Library of Ukraine supports the Open Ukrainian Citation Index (OUCI), a search engine and database of citations from all publications that use Crossref open data and support the Initiative for Open Citations[4] (Mryglod et al., 2021). As mentioned above, the Order of the Ministry of Education and Science also requires LPPU category B

[4]https://i4oc.org/.

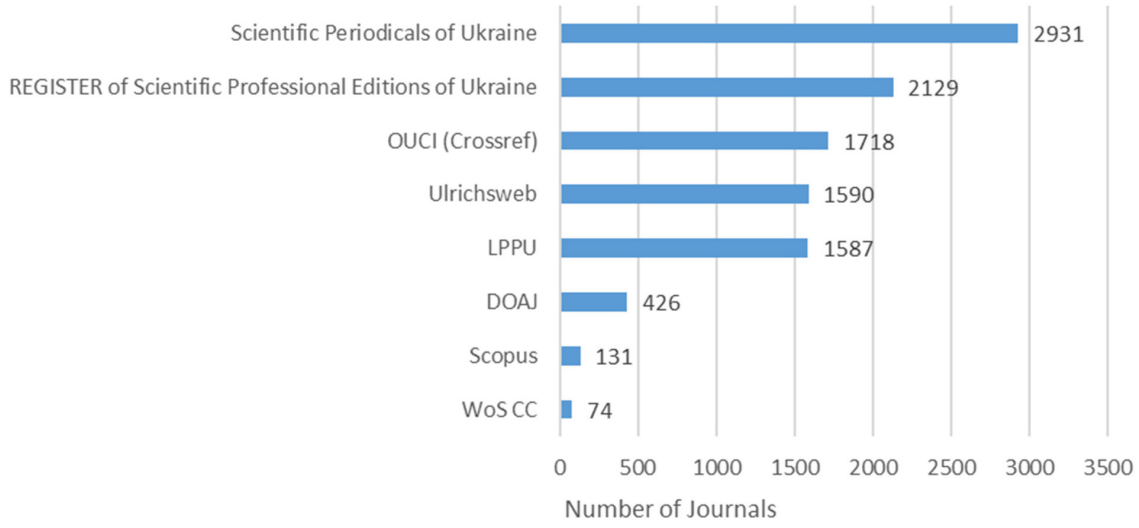

FIGURE 1 Comparison of selected data sources for coverage of Ukrainian journals (as of May 2023).

journals to place electronic texts in the National Repository of Academic Texts (MES of Ukraine, 2018). However, the repository itself does not offer the possibility to view the journals available there and was therefore not included in this study. The Vernadsky National Library of Ukraine manages two information sources: the Portal 'Scientific Periodicals of Ukraine' and the abstract database 'Ukrainica Scientific' (which was not considered in this study due to the lack of possibility to obtain data at the journal level).

After a preliminary analysis of journal databases based on their capabilities and limitations, including the amount of data available for processing (the coverage of Ukrainian journals by bibliographic sources is summarized in Fig. 1, and detailed in Supplementary Table S1), it was decided to start researching the Ukrainian scholarly journal landscape using data obtained from Ulrichsweb as the source containing the largest amount of diverse data and offering the possibility of its convenient processing. The main advantage for choosing this resource for this preliminary analysis is that, as Wang et al. (2017) argue, Ulrichsweb provides sufficient information, firstly, to study the current portrait of academic publishing in the countries and, secondly, its historical changes. None of the other reviewed sources offer such possibilities, as they are limited either by the number of indexed journals (Scopus, WoS, DOAJ, OUCI), and/or by the amount of information available about journals (especially such important information as the ISSN or the year of the journal's foundation [LPPU, 'REGISTER of Scientific Professional Editions of Ukraine']), and/or by the ability to process records other than manually (the Portal 'Scientific Periodicals of Ukraine').

Ulrichsweb is one of the most complete and consistent global sources providing information on serials of all types, including peer-reviewed, scholarly, and academic journals with or without an ISSN (Gu & Blackmore, 2016; Kaplan et al., 2012; Meeks, 2018). In total, Ulrichsweb contains 230,734 records for journals of the content type 'Academic/Scholarly', including 123,315 in print format, 95,996 in online format and other formats. According to the Ulrichsweb website, the database tracks and updates abstracting and indexing coverage data from more than 400 sources worldwide (Ulrichsweb, n.d.). Although it may not be exhaustive, it can be considered as the most complete source of information available.[5]

To shed light on the nature and extent of scholarly journal publishing in Ukraine, this study used several key indicators available from Ulrichsweb data: change in the number of journals over time, breakdown of journals by type of publisher, language preference, and research area.

METHODS

The present study partially adopts the methodology proposed by Jamali et al. (2022) in their investigation of the state of scholarly journal publishing in Australia. The following procedure was used to collect and analyse the data:

1. A search was conducted in Ulrichsweb for all 'Scholarly/Academic' journals with Ukraine as the 'Country of Publication'.
2. The received data were cleaned and structured using OpenRefine and Microsoft Excel. The received data required further processing, as there are usually multiple records for one journal title, as the records for the print and online forms are created separately, and data come from different sources (Mongeon & Paul-Hus, 2016).

[5]It should be noted that a request sent to 'ulrichs@proquest.com' on 14 March 2023 to clarify the sources from which Ulrichsweb obtains data on Ukrainian periodicals was not answered. Upon repeated request on 11 December 2023, the author received a reply from Ulrich's Editorial ('pq-ulrichs@clarivate.com'), which only informed that the data contained in Ulrich come from publishers and that both publishers and Ulrichsweb subscribers can request the correction of data.

3. After additional verification, the following records were excluded from the list:
   a. Titles with non-journal formats (*bulletin*, *monographic series*, *newsletter*, *newspaper*, *magazine* and no format information) – 13 in total.
   b. Titles with a stated format of journal, but which are in fact popular science magazines and literary and arts magazines – 4 in total.
   c. Titles founded after 2015 in the temporarily occupied territories of Ukraine, which Ulrichsweb classifies (in accordance with international law[6]) as published in Ukraine, but which, according to the information on the journal's website, do not contain any information about Ukraine as a country of publication – 16 in total.
4. For each journal, the following information was recorded and reported:
   a. The start and end year, as recorded in Ulrichsweb.
   b. The publisher type was classified into four groups, following the classification scheme of Navas-Fernández et al.' (2018) for Spanish journals:
      (i) Private non-profit: including professional associations, community organizations, and charity foundations.
      (ii) Academic: including academies, universities, and institutes (both public and private), and scientific societies.
      (iii) Government agencies: including organizations dependent on public administration (other than those listed in the previous category).
      (iv) Commercial: including publishing companies and individuals who publish for profit.
   c. Language(s) of publication.
   d. Distribution by Ulrichsweb general subject area.

FINDINGS

Number of Ukrainian journals

Ulrichsweb contains 3,562 records with Ukraine listed as the country of publication. The majority of these records, 2,756 in total, belong to the content type 'Academic/Scholarly'. The other content types are 'Consumer' (255), 'Trade' (80), 'Government' (27), 'Bibliography' (16), and 'Corporate' (1). 427 records have no specified content type. Within the 2,756 'Academic/Scholarly' records, 1,590 unique journal titles were identified, of which 1,559 (98%) were active at the time of data collection on 3 May 2023. A very small number of titles were marked as ceased – 2% (30 titles), and only one title indicated that it had been merged/incorporated. 1,496 (94%) Ukrainian journals have a print version and 1,190 (75%) have an online version. The majority of journals (1,101 or 69%) are published in both print and online formats.

[6]United Nations General Assembly Resolution 68/262 https://undocs.org/Home/Mobile?FinalSymbol=A%2FRES%2F68%2F262&Language=E&DeviceType=Desktop&LangRequested=False.

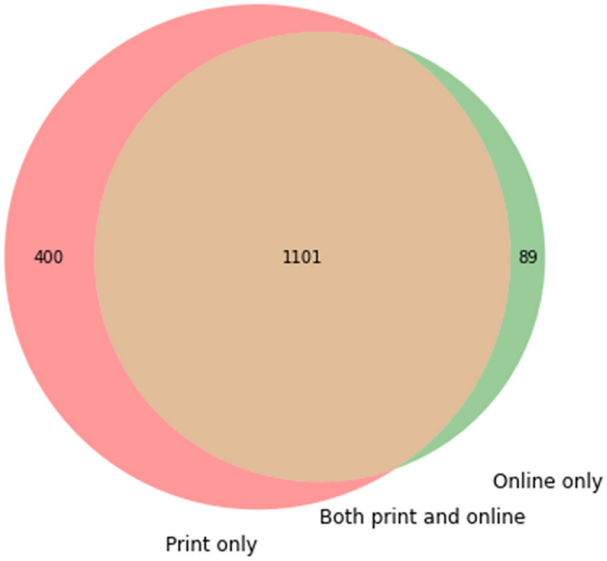

FIGURE 2 Distribution of Ukrainian Journals by print and online formats based on Ulrichsweb data.

Meanwhile, 400 journals (25%) are only available in print and 89 journals (5%) are only available online (Fig. 2).

The absence of foundation years for a significant proportion of both online and print journals, as well as limited data on cessation of publishing, makes it difficult to determine the temporal distribution of Ukrainian scholarly journals vis-à-vis the Ministry's 2018 requirements. Additional research is warranted to ascertain the presence of online versions among the supposedly active journals that are only available in print.

Distribution by years

Given the lack of founding year information for all versions (print and/or online) of all titles of Ukrainian journals, their analysis by year of publication was conducted only for those titles for which founding year information was available for at least one of the versions, and the founding year of the older version was taken into account. Thus, this specific study of the distribution of journals by year was conducted not for the entire number of titles found (1,590), but for 1,544 titles.

Some journals were founded more than a century ago (11; less than 1%) (Fig. 3). Between 1921 and 1962, from 1 to 7 new titles appeared in Ukraine every year, a total of 53 new titles. In the mid-1960s, the number of new journals appearing each year markedly increased, with significant peaks in 1964–1965 (34 and 29 respectively). Between 1966 and 1990, the number of new Ukrainian journals appearing each year decreased again, ranging from one to 13 titles per year, with a total of 151 new titles. After the declaration of Ukraine's independence, from 1991 to 2022, a total of 1,334 new Ukrainian journal titles were published, which is 84% of all titles. However, since 2019, the number of new titles has been very low.

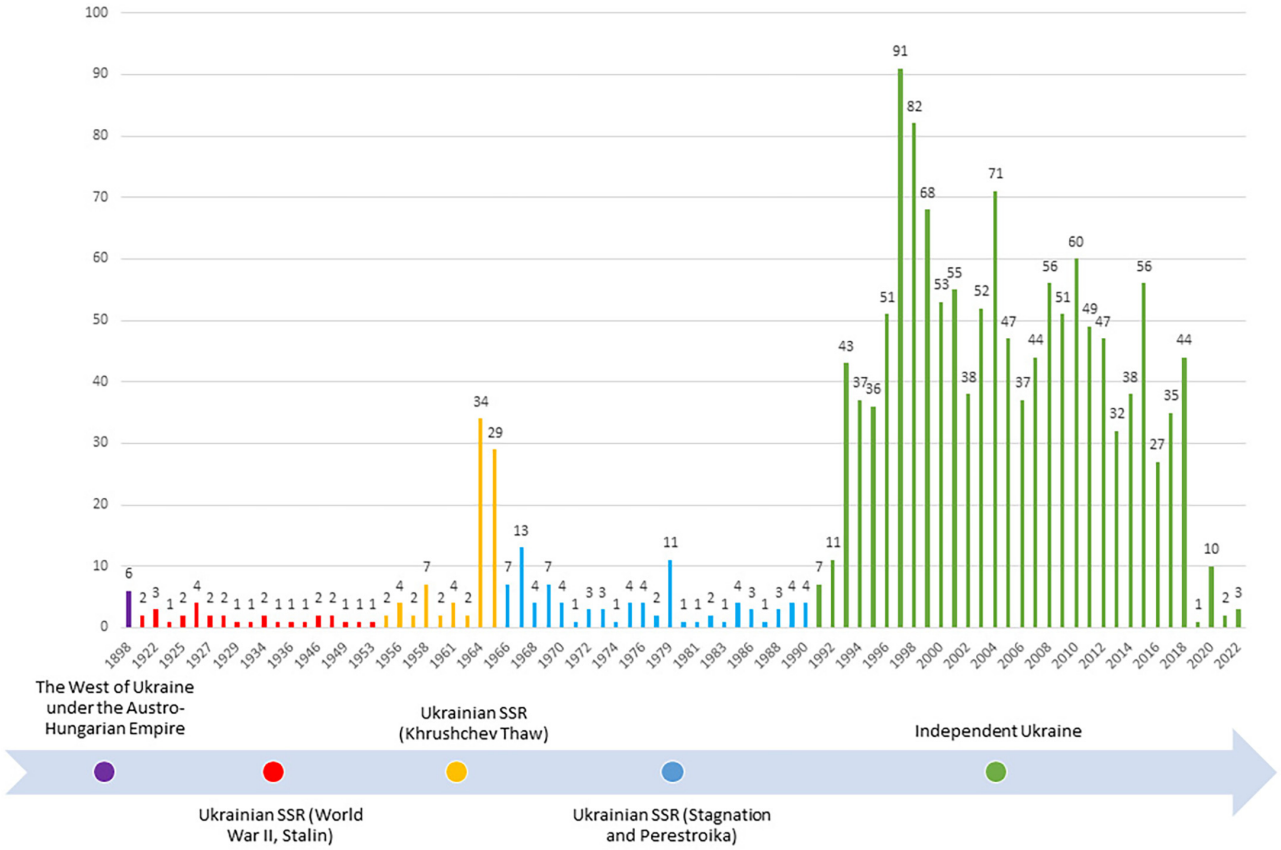

FIGURE 3 Distribution of new Ukrainian journal titles in chronological order based on Ulrichsweb data.

Publishers

Academic publishers dominate the Ukrainian journal market, accounting for 85% of the total number of journals (Table 1). There are 135 universities among the 360 academic publishers. Universities publish 934 journals, which is more than half: 59% of all journals and 69% of those published by the Academic type of publishers. 134 (8% of the total) journals are published by various institutes of the National Academy of Sciences of Ukraine; 28 (2%) by the National Academy of Agrarian Sciences of Ukraine; 21 (1%) by the National Academy of Medical Sciences of Ukraine; and 19 (1%) by the National Academy of Pedagogical Sciences of Ukraine. The remaining 214 (14%) journals are published by other academic institutions. Academic institutions publish between 1 and 49 journals per year.

Commercial publishers publish only 11% of the total number of Ukrainian journals. There are 62 such publishers, and they publish from 1 to 15 journal titles. That is, according to the definitions made earlier (Laakso & Multas, 2023; Stephen & Stahlschmidt, 2022), we can conditionally (since they can publish not only academic journals) classify them as 'small'.

Private non-profit organizations and *government agencies* (although they, along with academic institutions, are subjects of scientific and technical activity) are relatively minor players in the Ukrainian journal market, accounting for only 3% and 1% of the total number of journals, respectively. They publish between 1 and 4 titles.

TABLE 1 Distribution of Ukrainian journal titles by type of publisher based on Ulrichsweb data.

Publisher type	Number of publishers	Number of journals	Percentage of journals
Academic	360	1,350	85%
Commercial	62	175	11%
Private non-profit	39	47	3%
Government agencies	15	18	1%
Total	476	1,590	100%

Language of publication and subject area distribution

The language of publication is the language in which manuscripts are written and accepted for publication by journals. A journal can have more than one language of publication (from 1 to 9).

The vast majority of journals—1,438 (90%)—publish articles in *Ukrainian* (Fig. 4). Moreover, 429 (27%) journals are Ukrainian-only. 152 (10%) journals do not publish articles in Ukrainian.

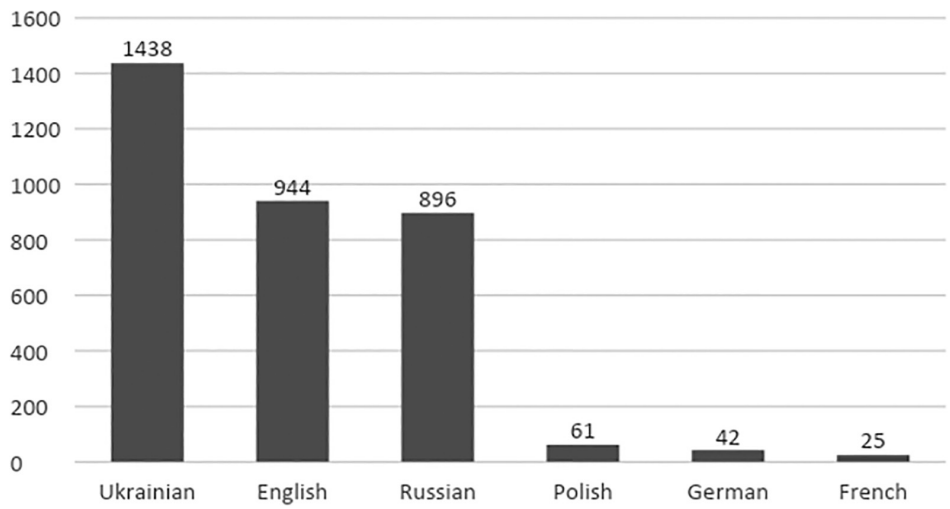

FIGURE 4 Distribution of the number of journals by language of publication (predominant languages) based on Ulrichsweb data.

TABLE 2 Distribution of the number of journals by language of publication (other languages) based on Ulrichsweb data.

Language[a]	Number of journals	Percentage
Italian	6	0.4%
Czech	5	0.3%
Spanish	5	0.3%
Bulgarian	4	0.25%
Belorussian	3	0.2%
Slovak	3	0.2%
Romanian	2	0.1%

[a] Only languages with at least 0.1% are shown.

944 (59%) journals indicated that they would publish articles in *English*. 87 (5%) journals are English-only. 896 (56%) journals indicated that they publish articles in *Russian*. 50 (3%) journals – Russian-only.

The following languages are less popular for publication: *Polish* – 61 (4%) journals (all of which also publish articles in Ukrainian), *German* – 42 (3%) journals, and *French* – 25 (2%) journals. Other languages for publication in Ukrainian journals are very rare: between 0.06% and 0.4% (Table 2).

The distribution of Ukrainian journals is made according to the list of general subject areas, 16 of which are identified in Ulrichsweb (Fig. 5). A journal can belong to several subject areas (from 1 to 5). *Social Sciences and Humanities* (405 journals), *Technology and Engineering* (304 journals) and *Medicine and Health* (295 journals) are the top subject areas in terms of the number of journals. In contrast, Ulrichsweb indexes significantly fewer Ukrainian journals in *Chemistry* – 47 journals, *Mathematics* – 62, and *Physics* – 74.

An analysis of the distribution of publication languages by subject area shows that Ukrainian is used by journals in all subject areas: from 70% to 100% of journals in an area. English is less popular, but is also used in almost all areas (except for two journals in Ethnic Studies, Gender, and Lifestyle, where only Ukrainian is indicated), from 46% to 86%. Similarly, Russian is used in almost all areas, from 39% to 70%. In Chemistry, Mathematics, and Sports, Hobbies, and Recreation, manuscripts in languages other than these three are not accepted. The other languages listed above are represented sporadically and very unevenly by areas. The most multilingual are several journals in the subject areas: Arts and Literature, Government, Law, and Public Administration and Social Sciences and Humanities (Supplementary Table S2).

DISCUSSION

Ulrichsweb data has given an idea of the number of active Ukrainian journals – 1,559. This number seems quite significant, as Laakso and Multas (2023) note that Ukraine is the second-largest country in Central and Eastern Europe in terms of number of journals, just behind neighbouring Poland. Investigating the extent to which the needs of Ukrainian researchers are adequately addressed by theses globally lesser-known journals, and assessing the capacity of Ukrainian academic publishers to uphold the content quality, ensure rigorous peer review processes for manuscripts, furnish requisite technical support, among other considerations, constitutes a crucial avenue for future scholarly inquiry.

An intriguing observation arises when comparing the number of journals across different sources. Ulrichsweb's count of 1,559 active journal titles is almost identical but slightly lower than the 1,587 listed in the latest LPPU. This raises suspicions about the criteria used by LPPU, warranting further investigation into the similarities between these lists. The lack of comprehensive data in the LPPU (including ISSN and links to official journal websites)

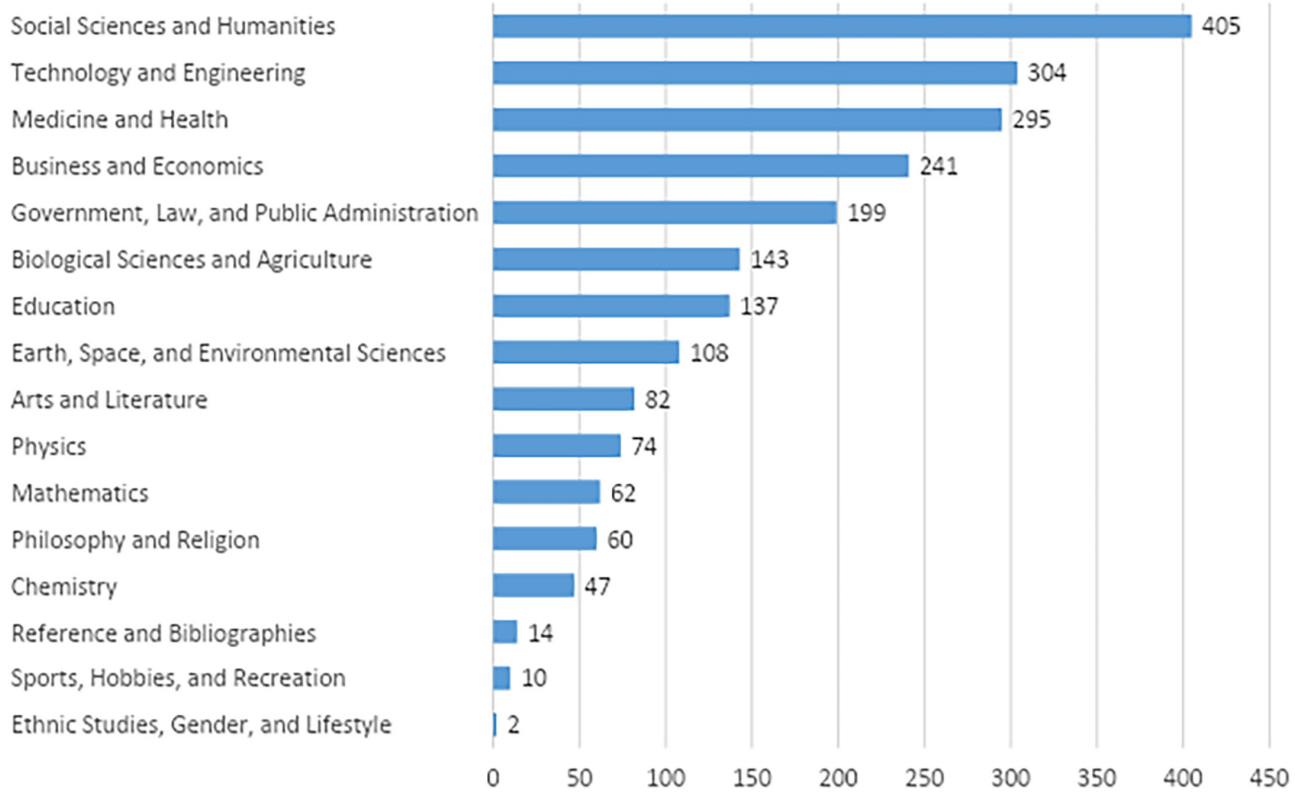

FIGURE 5 Distribution of Ukrainian journals by general subject areas based on Ulrichsweb data.

adds complexity to this task, necessitating the use of additional sources with manual verification of each journal title. Contrastingly, OUCI, relying on Crossref DOI data, includes 1,718 Ukrainian journals, and the 'Scientific Periodicals of Ukraine' portal reports a higher count of 2,931. Discrepancies in these numbers require careful examination, especially considering that DOIs and archiving in 'Scientific Periodicals of Ukraine' are mandatory for LPPU journals. This brings us back to the question raised in the Introduction section about the source of the data on Ukrainian journals used by Ulrichsweb, and suggests that the actual number of Ukrainian journals may be even higher.

The next important conclusion to be drawn from the Ulrichsweb data is that academic institutions publish the vast majority of Ukrainian journals. Although this situation is not typical of national publishing around the world, it is not unique to Ukraine. A significant dominance of academic publishers is also observed in some other countries, for example in South Korea – 95.61% (Shin, 2012), and in Finland – 89% (Hedlund & Rabow, 2009). The under-representation of commercial publishers of scholarly journals in Ukraine can be attributed to the definition of a journal founder contained in the latest requirements for LPPU journals. According to them, only subjects of scientific and technical activity are entitled to establish an LPPU journal. Although this refers to the founder and not the publisher, potential discrepancies with the law and the inability to meet the LPPU requirements, along with other conditions, may act as a deterrent to potential commercial publishers.

An attempt to conduct a chronological analysis of the emergence of new Ukrainian journal titles based on Ulrichsweb data was only partially successful, but provides a rough context for understanding the growth and development of scholarly publishing in the region, highlighting the complex relationship between political and historical events and scholarly publishing activity. While Ulrichsweb allows searching for journals published since 1665, information on the first Ukrainian journals is only available from the end of the 19th century. According to Ulrichsweb the oldest are six[7] journals that were published by the Shevchenko Scientific Society (Naukove Tovarystvo imeni Shevchenka – title transliterated from Ukrainian in Ulrichsweb) in 1898. Although these journals are historically significant for Ukrainian science and nationhood, they were not in fact the first scholarly journals in Ukraine (see Section 3.1). At the same time, the start year of their publishing is available only for two of them on the Portal 'Scientific Periodicals of Ukraine' and missing in other data sources in Table S1. Consequently, while Ulrichsweb data aren't comprehensive for a complete and accurate chronological analysis, they do offer more information compared to other sources.

[7]In fact, there are five, but one of the journals is recorded twice under different titles: '*Naukove Tovarystvo imeni Shevchenka. Pratsi. Likars'kyi Zbirnyk*' and '*Naukove Tovarystvo imeni Shevchenka. Pratsi. Medical Sciences*' and with various supporting data, such as ISSN, link to the journal's website, language of publication, and so forth.

Although the accuracy of the information is difficult to establish due to the lack of founding years for most online versions of Ukrainian journals in the Ulrichsweb database, it appears that the vast majority of both print and online versions of journals appeared after Ukraine gained independence in 1991. From 1991 to 2022, 84% of all titles began to be published. The year 1997 marked the peak of this period, with 91 new journal titles founded by 53 different publishers, including six institutions of the *National Academy of Sciences of Ukraine*. It can be assumed that this sharp increase may be due to the development and use of new technologies in journal publishing. However, it is somewhat inconsistent with global trends, according to which the main bursts of new journal titles in the world mostly occurred in the 1970s and 2000s (Wang et al., 2017). In contrast, for Ukrainian journals, we see such spikes in the 1960s and 1990s, which is more in line with the socio-political situation in the country. The increase in the 1990s, in particular, may reflect a need for change in the research environment and indicate that both Ukrainian academic institutions and individual researchers gained greater autonomy and freedom from ideological constraints after the country gained independence (Shchepetylnykova, 2023). Wang et al. (2017) also note these spikes in the emergence of Ukrainian-language journals in these years, describing the growth dynamics of non-English-language journals in the world. It can be assumed that such an increase at this time is a common feature for many post-Soviet countries that became independent in the 1990s, such as for journals in Russia (Wang et al., 2017) and Lithuania (Gudinavičius et al., 2023).

Starting in 2019, the number of new journal titles has dropped significantly, from 1 to 10 titles per year, which can also be attributed to socio-political reasons: regulatory government changes and disruptions caused by the global COVID-19 pandemic and Russia's full-scale military invasion of Ukraine. Technical reasons should also not be ruled out, such as the possibility that the Ulrichsweb database was not updated quickly enough, as mentioned earlier by Sally Morris (2007).

Since the Russian military invasion in February 2022, Ukraine has become a focal point in the global information landscape (Nazarovets & Teixeira da Silva, 2022). The situation in the country is constantly worsening due to the rapid population decline caused by migration and irreversible human losses (about 30% between 1991 and 2023) (Libanova, 2023), large-scale destruction of infrastructure and loss of cultural heritage. It is to be expected that this situation will also have an impact on the scholarly communication products produced in the country.

The data from Ulrichsweb show, on the one hand, that Ukrainian journals are unevenly distributed across subject areas. *Social Sciences and Humanities*, *Technology and Engineering*, and *Medicine and Health* are the most represented areas, with significantly fewer journals in areas such as *Chemistry*, *Mathematics* and *Physics*. However, as the general fields used by Ulrichsweb are considered separately, such as *Sports*, *Hobbies and Recreation*, but combine numerous different *Social Sciences and Humanities*, this difference should be treated with caution. Further research using other sources is needed to determine whether there is indeed a significant imbalance between different fields in Ukrainian journals.

The language of publication is another important aspect of the research findings. While Ukrainian is the dominant language in which papers are published in Ukrainian journals, the inclusion of English and other languages reflects an attempt to strike a balance between cultural identity and global engagement. The predominance of the Ukrainian language is natural, as it allows local researchers to participate in national research activities and reach target audiences (Li, 2023; Salager-Meyer, 2014). The use of national languages in publications is important for the humanities and social sciences, which require a high degree of linguistic accuracy and sophistication to reduce the risk of ambiguity or misunderstanding (Hedlund & Rabow, 2009). Exploring the dynamics of language use, especially the role of Russian after a long period of Russification and subsequent major geopolitical events, such as Ukraine's independence, Russia's annexation of Crimea and the full-scale invasion, is another potential area for future research.

CONCLUSIONS

Drawing upon the example of Ukrainian journals, this study has demonstrated the utility of Ulrichsweb as a tool for investigating national journals, albeit with acknowledged limitations. At the same time, however, Ulrichsweb provides valuable insights into the journals' characteristics. This research underscores the imperative of addressing data constraints for conducting more expansive research to gain a comprehensive understanding of the obscured national scholarly publishing landscape and its formative processes. Concurrently, even within the confines of incomplete data, this study illuminates clear influences of external factors, encompassing socio-cultural and historical dimensions, on the state and dynamics of scholarly communication within countries that remain underrepresented in widely acknowledged international citation databases.

One limitation of this study is that during the processing of the Ulrichsweb data on journals, numerical discrepancies with the actual state of affairs at the time of the research were found, for example, journals were found that are no longer published and are marked as active in Ulrichsweb, or outdated/incorrect/confusing information about the publisher or a link to the journal's website, and so forth was provided. The analysis is significantly complicated by the presence of different spellings of the titles of journals and publishing institutions (transliteration from Ukrainian and Russian into the Latin alphabet, translation from Ukrainian into English, typos, *etc.*). Another important limitation is the lack of some data, in particular the ISSN and the year of foundation of journals (mostly online versions).

AUTHOR CONTRIBUTIONS

Maryna Nazarovets: conceptualisation, data collection, writing – original draft, review and editing.

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DATA AVAILABILITY STATEMENT

The research dataset is freely available on Figshare https://doi.org/10.6084/m9.figshare.22758563.v1.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Table S1. Description of the data sources used for the study of Ukrainian journals (as of May 2023).

Table S2. Distribution of Ukrainian journals by language in subject areas based on Ulrichsweb data.

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