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SHYLIUK O. I.

Scientific Library, Yuriy Fedkovych Chernivtsi National University (Chernivtsi, Ukraine),  
e-mail o.shylyuk@chnu.edu.ua, ORCID 0000-0003-4387-3402

**BUKOVINA: AUTHORS, JOURNALS, RESEARCH ISSUES  
(SCIENTOMETRIC ANALYSIS ON WOS BASIS)**

**Objective.** The goal of research was to study publications containing researches and studies related to the topic of Bukovina using the bibliometric analysis. **Methods.** Materials on the regional topic published within the period 1970 – 2018 were obtained from the Web of Science database (as of May 15, 2019). The obtained records were analyzed for citation characteristic, including the distribution of publications over languages, countries, journals and authors. The selection by keywords: (bukovina) OR (bucovina) OR (bukowina) OR (bukovyna) identified 304 materials published in different publications. For the period from 2008 until 2019 there has been observed the significant increase of materials published on this issue. **Results.** The analysis of the most citable publications allows to distinguish three clusters of research topics: geology, environment and natural resources of the region; ethnic studies; the Holocaust and acts of force during the World War II. **Conclusions.** This study provides the systematic review of productivity and clearness of the Bukovina's studies and can be used for organization and identification of priorities for further regional studies.

*Keywords:* Bukovina; bibliometric analysis; citation analysis; scientometrics

**Introduction**

Scientometric analyses outline the research output in a field and, therefore, help researchers and funding agencies to focus more on underinvestigated areas. The absence of quantitative data regarding published studies on regional topics has determined this work performance. The aim of this study was 1) to perform a scientometric analysis to characterize the status of the research and publications in the field of regional investigations and 2) to identify the most effective actors (authors, countries, and journals) and to examine their role in the development of science using a bibliometric analysis.

**Methods**

This study was conducted from November 2017 to February 2018 and updated during May 2018. It is descriptive and also employs a quantitative approach to identify the main characteristics of the researches related to the topic of Bukovina, as well as its evolution to highlight potential trends for future studies. The research is characterised as scientometric and bibliometric, based on articles indexed in the Web of Science (WoS) database.

**Results and Discussion**

The Web of Science Core Collection (hereinafter referred to as “WoS”) of “Clarivate Analytics” company (Web of Science, (n.d.)), the reference research resource, was chosen as the information source; its scientometric apparatus provides publications’ citation indexing with the retrospective review starting from 1898 (for natural and social sciences), and starting from 1975 for humanities sciences.

Results of scientometric analysis are useful for: 1) measuring and understanding the study field of a given subject; 2) providing a solid view of the field’s historical evolution; 3) presenting a thematic and technological analysis; and 4) providing evidence and a basis for future research.

Based on these methodological procedures, the present study proposes three steps, which are described in the following:

Step 1 – Delimitation of analysis scope and article selection: the articles were searched on the WoS database in a single search, from 1970 to 2018, using the boolean operator “OR”. Because of the multiples definitions still used in this field, the papers were selected using the following terms in the keyword field: (BUKOVINA), (BUCOVINA), (BUKOWINA), (BUKOVYNA). This search resulted in 304 results, which constitute the corpus of the present study.

Step 2 – Descriptive analysis of papers: the following analyses were performed: (1) number of papers published per searched term; (2) average growth of authors’ activity; (3) most published authors; (4) most published sources; and (5) countries analyzed.

Step 3 – Interpretation and discussion of results: we carried out a joint interpretation and discussion of the results in steps 2 to identify the main research trends and gaps within the fields of study.

In total 304 publications in different editions were found: ARTICLE; PROCEEDINGS PAPER; BOOK REVIEW; BOOK CHAPTER; EDITORIAL MATERIAL etc.

Prior to 2008 only single publications are traced by this topic in the scientometric base. For the period 2008-2018 the average growth of authors’ activity amounts to 10-20 publications per year. Since app. 25% of total publications are only book reviews; it was decided, in order to analyze the research work on this topic itself, to confine to only the following documents: ARTICLE; PROCEEDINGS PAPER; BOOK CHAPTER – only 230 publications.

The structure of publications in the field evidences that the study on “Bukovina” topic are related to mainly social, humanities and natural sciences: HISTORY; LITERATURE; ARTS HUMANITIES; AREA STUDIES; BUSINESS ECONOMICS; LINGUISTICS; GOVERNMENT LAW; ENVIRONMENTAL SCIENCES ECOLOGY; GEOLOGY; SOCIAL SCIENCES.

*Table 1. Regional studies*

No	Research lines	Number of publications	In % of total amount
1.	HISTORY	64	27.8 %
2.	AREA STUDIES	23	10.0 %
3.	GOVERNMENT LAW	18	7.8 %
4.	LINGUISTICS	17	7.4 %
5.	BUSINESS ECONOMICS	16	6.9 %
6.	LITERATURE	16	6.9 %
7.	GEOLOGY	16	6.9 %
8.	ARTS HUMANITIES	15	6.5 %
9.	ENVIRONMENTAL SCIENCES ECOLOGY	14	6.0 %
10.	SOCIAL SCIENCES	11	4.7 %

The systematization of selected publications by edition names allowed to determine 172 names, including 101 journals.

*Table 2. The distribution of journals names by publications' number is 4 and more*

No	Edition name	Total number of articles	In % of total amount
1	RUSIN	16	8.8 %
2	TRANSYLVANIAN REVIEW	15	8.2 %
3	OSTEUROPA	5	2.7 %
4	EAST EUROPEAN POLITICS AND SOCIETIES	5	2.7 %
5	NATIONAL ACADEMY OF MANAGERIAL STAFF OF CULTURE AND ARTS HERALD	5	2.7 %
6	VRACHEBNOE DELO	4	2.2 %

As evidenced by the data indicated in the table, the obvious leaders by number of published articles is the RUSIN and TRANSYLVANIAN REVIEW, this journal falls under Q4 in the “Regional Studies” category.

Having selected 50 of the most citable articles we obtained the list of editions, where such materials are most commonly published.

*Table 3. Journals with the most cited articles*

No	Edition name	Number of publications
1	RUSIN	7
2	CASOPIS ZA SUVREMENU POVIJEST	2
3	ENVIRONMENTAL ENGINEERING AND MANAGEMENT JOURNAL	2
4	JOURNAL OF SEISMOLOGY	2
5	TRANSYLVANIAN REVIEW	2

The total amount of publications represents 26 countries. The publication distribution analysis allowed to discover the core of the most advanced among them, accounting for over 75 % of publications. Among them are Romania (36.5 %), Ukraine (14.8 %), Russia (6.5 %), Germany (4.3 %), Hungary (4.3 %), USA (4.3 %) and Austria (3.9 %). The clear leader by number of documents with “Bukovina” keyword is Romania – 84 publications.

The informational value for bibliometric studies is considered to be the creative activity and leadership of scientists - authors of publications. In order to trace this index the WoS provides the possibility to browse certain digital indices of author publication activities. Moreover, using another Clarivate Analytics tool, the author and reviewers identification system *Publon* it is possible to obtain such information as possible author name, list of author's place of employment, number of publications, years of publication activity, the year of entering the database, field of study, citations to main contributing authors, total number of citations, editions published the author, etc (Publon, (n.d.)).

Among 350 authors studying the issue related to Bukovina were established leaders by number of publications (4 and more publications).

*Table 4. Authors*

No	Authors	Number of publications	Field of study	In % of total amount
1	SULYAK S. G.	9	HISTORY	3.9 %
2	POPA M.	6	GEOSCIENCES; PHYSICS	2.6%
3	RADULIAN M.	6	GEOSCIENCES; PHYSICS	2.6%
4	BORLEANU F.	5	GEOSCIENCES; PHYSICS	2.1 %
5	CHIRITA V.	4	GEOSCIENCES; ECOLOGY	2.3 %
6	CLIPA O.	4	EDUCATION EDUCATIONAL RESEARCH	1.7 %
7	FISHER G.	4	GOVERNMENT LAW HISTORY	1.7 %
8	KERN Z.	4	GEOLOGY PALEONTOLOGY	1.7 %
9	MINDRESCU M.	4	GEOLOGY ECOLOGY	1.7 %
10	SCHARR K.	4	HISTORY; POLITICAL SCIENCE	1.7 %

The absolute interest is paid to the structure of scientific institutions actively studying this issue. The obvious leader among 160 institutions may be considered STEFAN CEL MARE UNIVERSITY SUCEAVA.

*Table 5. The first ten places by number of publications (5 and more publications)*

No	Institution	Number of publications	In % of total amount
1	STEFAN CEL MARE UNIV SUCEAVA	22	9.5 %
2	ROMANIAN ACADEMY OF SCIENCES	12	5.2 %
3	YURI FEDKOVYCH CHERNIVTSI NATIONAL UNIVERSITY	11	4.7 %
4	ALEXANDRU IOAN CUZA UNIVERSITY	9	3.9 %
5	BABES BOLYAI UNIVERSITY FROM CLUJ	9	3.9 %
6	TOMSK STATE UNIVERSITY	9	3.9 %
7	BUKOVINIAN STATE MEDICAL UNIVERSITY	8	3.4 %
8	NATIONAL INSTITUTE FOR EARTH PHYSICS NIEP	8	3.4 %
9	EOTVOS LORAND UNIVERSITY	5	2.2 %
10	HUNGARIAN ACADEMY OF SCIENCES	5	2.2 %
11	POLISH ACADEMY OF SCIENCES	5	2.2 %

The vast majority of materials – 143 (62 % of total amount) are published in English, although are publications in German (26), Russian (28), Romanian (13), Ukrainian (9), French (4), Polish (3), Croatian (2), Czech (1) and Slovak (1).

The separate analysis of the most citable publications allowed to determine 10 of them for further more thorough evaluation.

*Table 6. Most citable publications*

Article	Author	Edition name	Year of publication	Total number of citations	Average number of citations per year
Sedimentology of Badenian (middle Miocene) gypsum in eastern Galicia, Podolia and Bukovina (West Ukraine)	Peryt, T.M.	SEDIMENTOLOGY	1996	40	1,67
Fluid evolution in the nepheline syenites of the Ditrau Alkaline Massif, Transylvania, Romania	Fall, Andras; Bodnar, Robert J.; Szabo, Csaba; Pal- Molnar, Elemer	LITHOS	2007	28	2,15
The importance of a border: Medical, veterinary, and wild food ethnobotany of the Hutsuls living on the Romanian and Ukrainian sides of Bukovina	Soukand, Renata; Pieroni, Andrea	JOURNAL OF ETHNOPHARMACOLOGY	2016	25	6,25
The Rusins of Bessarabia in the 19th-beginning of the 20th Centuries: The Question of Numbers	Sulyak, S. G.	RUSIN	2015	11	2,20
New and Little Known Earthworm Species from Peripheral Areas of the Romanian Carpathians (Oligochaeta, Lumbricidae)	Szederjesi Timea; Pop, Victor V.; Csuzdi Csaba	ACTA ZOOLOGICA ACADEMIAE SCIENTIARUM HUNGARICAE	2015	11	1,83
Mental Herbals - a Context-Sensitive Way of Looking at Local Ethnobotanical Knowledge: Examples from Bukovina (Romania)	Kolodziejska- Degorska, Iwona	TRAMES-JOURNAL OF THE HUMANITIES AND SOCIAL SCIENCES	2012	9	1,29
Evaluation of Quality Parameters and of Natural Radionuclides Concentrations in Natural Mineral Water in Romania	Calin, M. R.; Ion, A. C.; Radulescu, I.	JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY	2015	10	2,00

Table 6. Most citable publications(continuation)

Article	Author	Edition name	Year of publication	Total number of citations	Average number of citations per year
Soil Structure and Water-Stable Aggregates	Statescu, Florian; Zauca, Dorin Cotiusca; Pavel, Lucian Vasile	ENVIRONMENTAL ENGINEERING AND MANAGEMENT JOURNAL	2013	9	1,29
The role of the universities in a regional innovation system - A comparative A'WOT - analysis	Nastase, Carmen; Kajanus, Miika	AMFITEATRU ECONOMIC	2008	9	0,75
Patterns of violence - The local population and the mass murder of Jews in Bessarabia and northern Bukovina, July-August 1941	Solonari, Vladimir	KRITIKA-EXPLORATIONS IN RUSSIAN AND EURASIAN HISTORY	2007	9	0,69

According to topic of the most citable publications, the interest of researches was directed to studying of geology, environment and natural resources of the region (soil, animal world, mineral waters, etc.); ethnic studies (in particular, ethnomedicine and ethnopolitics); the Holocaust and acts of force during the World War II; the impact of educational institutions on the development of the region. It was observed that the majority of the most citable materials were published during the last decade (2007-2016).

### Conclusions

It should be noted that the above findings were based on the analysis of the publications stored in the WoS database. A similar or dissimilar set of findings might emerge if another database such as SCOPUS was used.

We summarize past research results and identify the challenges and opportunities for of the regional theme “Bukovina” research. The findings aimed at providing valuable information related to these fields, such as 1) the characterization of publications, 2) most relevant references cited, 3) major journal sources and 4) main countries active in this particular research field.

A qualitative discussion is provided identifying main research areas and further research directions. This review may help practitioners and researchers by providing a better understanding of the current state of the regional theme “Bukovina” research field and serve as a starting point for future studies. The research gaps can serve as a motivation to research on the researches related to the topic of Bukovina. This study provides researchers and practitioners an

extensive and intensive understanding of the salient research themes and trends of research the region.

Further the interest shall be paid to the scientometric analysis of certain fields of study regarding the Bukovina.

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ШИЛЮК О. І.

Наукова бібліотека, Чернівецький національний університет ім. Юрія Федьковича (Чернівці, Україна), e-mail o.shylyuk@chnu.edu.ua, ORCID 0000-0003-4387-3402

### **БУКОВИНА: АВТОРИ, ЖУРНАЛИ, ПРОБЛЕМАТИКА (НАУКОМЕТРИЧНИЙ АНАЛІЗ ДОСЛІДЖЕНЬ ЗА БАЗОЮ WOS)**

**Мета.** Відсутність кількісних даних щодо опублікованих досліджень за регіональною тематикою зумовило виконання цієї роботи. Метою дослідження є вивчення публікацій із дослідження Буковини із використанням бібліометричного аналізу. **Методика.** Матеріали за регіональною тематикою, опубліковані в період між 1970 і 2018 рр., було виокремлено з бази даних Web of Science Core Collection (станом на 17.05.2019). Отримані записи проаналізовано за характеристиками цитування з розподілом публікацій за мовами, країнами, журналами та авторами. За вибіркою ключових слів «bukovina» або «bucovina» або «bukowina» або «bukovyna» було виявлено 304 матеріали, опубліковані в різних типах видань. Із 2008 до 2019 р. включно спостерігається значне збільшення кількості опублікованих матеріалів цього спрямування. **Результати.** Аналіз найбільш цитованих публікацій дозволяє виділити три кластери дослідницьких тем: геологія, навколишнє середовище та природні ресурси регіону (грунти, тваринний світ, мінеральні води тощо); етнографія, зокрема етномедицина та етнополітика; голокост і насильство під час Другої світової війни. **Висновки.** Це дослідження дає систематичний огляд продуктивності й наочності досліджень Буковини і може служити відправною точкою для майбутніх краєзнавчих досліджень.

*Ключові слова:* Буковина; бібліометричний аналіз; аналіз цитування; наукометрія