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**UNIVERSITY LIBRARY
AT A NEW STAGE OF SOCIAL
COMMUNICATIONS
DEVELOPMENT**

CONFERENCE PROCEEDINGS

No. IV (2019)

**Dnipro
2019**

Dnipro National University of Railway Transport
named after Academician V. Lazaryan

Дніпровський національний університет залізничного транспорту
імені академіка В. Лазаряна

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No. IV (2019)

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UNIVERSITY LIBRARY IN THE DEVELOPMENT OF DIGITAL INFRASTRUCTURE OF SCIENCE AND EDUCATION

Presented a new 4 (2019) issue of conference proceedings “University Library at a New Stage of Social Communications Development”

Keywords: university library; conference proceedings

Dear readers, authors, colleagues!

Today we are presenting the new (IV) issue of Conference Proceedings journal *University Library at a New Stage of Social Communications Development* (UniLibNSD). New in all respects – in terms of format, editorial board, and the ability to integrate into the global information space.

This is a publication about communication and for communication, the papers for which were selected by Scientific Committee of the UniLibNSD International Conference and recommended by the Editorial Board.

The International Conference was initiated by Scientific and Technical Library of Dnipro National University of Railway Transport named after Academician V. Lazaryan (DNURT Library; <https://library.diit.edu.ua>) and took place on October 3-4, 2019 in the DNURT Conference Hall (Dnipro, Ukraine; http://confliib.diit.edu.ua/Conf_univ_Library).

Active co-organizers of the Conference are the Scientific Library of the Belarusian National Technical University, the Republic of Belarus (Director Inna Yurik) and the Nazarbayev University Library, the Republic of Kazakhstan (Director Asemgul Temyrxanova). Strategic Partner is Ukrainian Library Association.

Field of science and issues in focus: The conference proceedings present the latest achievements in practice and research in the field of library and information science – revealing emerging trends and new ideas before they appear in peer-reviewed journals. Conference proceedings offer broad coverage of new ideas, methodologies and projects in fast-moving areas of research related to the activity of university libraries in education, science and culture.

Libraries in the age of transition to the digital economy and digital society are often pioneers in their universities in organizing and implementing digital scholarly and educational communication initiatives. Deciding to strengthen their position at universities, they are not afraid to experiment, challenge the status quo, and launch new services to meet the needs of new users and new strategies for developing their institutions (Bains, 2017; Kolesnykova & Matveyeva, 2019).

The theme of the UniLibNSD 2019 Conference is “University Library in the Development of Digital Infrastructure of Science and Education”.

The main issues proposed for discussion: • Strategic partnership; • Management and marketing of higher institution libraries; • Library collections: traditional and electronic resources; acquisition; scientific processing; using; digitization and digital preservation of collections;

• Library services to support university science: digital library publishing; open access repositories; copyright and open access problems; evaluation of scientific resources: bibliometrics, scientometrics, new and emerging metrics; • Change of roles: from information providers to teachers; • The contribution of theory and research to the libraries transformation

The Conference Proceedings Journal *University Library at a New Stage of Social Communications Development* provides direct open access to its content, based on the following principle: free open access to research results enhances global knowledge sharing.

The international editorial board appreciates the contribution of each author. We sincerely thank our readers for their interest in UniLibNSD, our reviewers for their competence, delicacy and goodwill.

We sincerely wish our partners and readers success and confidence in tomorrow! We invite you to cooperate.

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БІБЛІОТЕКА УНІВЕРСИТЕТУ В РОЗВИТКУ ЦИФРОВОЇ ІНФРАСТРУКТУРИ НАУКИ І ОСВІТИ

Було представлено новий 4 (2019) випуск матеріалів конференції “University Library at a New Stage of Social Communications Development”

Ключові слова: університетська бібліотека; матеріали конференції

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**GÖTTINGEN STATE AND UNIVERSITY LIBRARY (GERMANY)
AS A MODEL FOR SUCCESSFUL SYMBIOSIS OF MUNICIPAL
AND UNIVERSITY LIBRARY**

Objective. The article informs about Göttingen State and University Library (Germany) as about a place, where specific features of public and scientific library are taken into account. **Methods.** The article is based on personal impressions of a visit to the library of one of the authors. **Results.** The library keeps its centuries-old traditions and is modern space for individual and group work. **Conclusions.** The article was an attempt to describe the library's digital and paper resources as an accumulation of experience that could be embodied in the university libraries of Ukraine.

Keywords: Göttingen State and University Library; Germany; databases; electronic resources; archive; digital project

Introduction

Göttingen is a medieval town located in the south of Lower Saxony. The city is considered to be the fifth largest city and is a university city, with Göttingen having a total population of 320,000. Of these, two-thirds are students, and the other one-third are either teaching or serving. The university was founded in 1734 and at the same time a library was founded. The Göttingen State and University Library (German Niedersächsische Staats- und Universitätsbibliothek Göttingen) is the central scientific library of Göttingen University, one of the largest universal libraries in Germany. In this library there are more than 7 million copies, 3,100 incunabula and, most importantly, it was formed then on an innovative principle: on content, as opposed to picking by the rarity or value of the cover ("Göttingen State and University Library", 2019; Kind-Doerne, 1986).

Most of the books were purchased with the generous donation of the Hanover statesman Gerlach Adolph von Münchhausen, who was its founder and curator. The library became the basis of the private library of Joachim von Bulow (1650-1724) and the curator of the library sought to give it the historical name "Bibliotheca Buloviana". This name has not come to our day. Each year, the University has allocated money to buy new books, and now the entire historical part of the fund is stored in the Pauline Church. The directors at the libraries were impressive and all were philologists. Thus, its first director, Johann Matthias Gesner, had extensive scholarly connections with European scholars, and this provided numerous gifts, including a complete edition of the writings of Cardinal Angelo Maria Quirini (†1755), the Bishop of Brescia and later director of the Bibliotheca Vaticana. Although there is no record of the addition of Gesner's library, by the year of his death the stock was estimated at more than 50,000 volumes. The second director of the library, Christian Heine, organized an interlibrary loan for scientists, a catalog system for orientation in the fund and during his time the collection increased from 60 thousand storage units to 200 thousand units. From 1830 to 1837, Jacob Grimm, and in fact the Grimm brothers operated this library. Although working at the library, Wilhelm Grimm commemorated his visit to the University of Göttingen by becoming a scholarly discipline at the University at his initiative.

In Germany, this fact is remembered. On the contrary, professional discipline was read by the author of the largest and most complete dictionary of German. By the way, textbooks on German grammar, a book on German mythology and the judicial system of ancient times were written in Göttingen (Göttingen State and University Library, 2019a; Mittler, 2000).

Methods

The article is based on personal impressions of a visit to the library of one of the authors.

Results and Discussion

The library consists of several buildings, namely:

- Central Library;
- forestry library;
- cultural library;
- medical library;
- Library of the Faculty of Physics;
- Faculty of Economics and Sociology;
- Waldweg Library;
- and the Reading Room in the Faculty of History.

The library also stores several archives and archival collections, such as

- collection of maps;
- a collection of German printed editions of the 18th century from 1701 to 1800;
- collection of mathematical heritage.

The library also has digital collections, the editions are freely available over the Internet and intranets. For example, out of 3,100 incunabula, 2,000 were digitized (Göttingen State and University Library, 2019b; Bargheer & Ceynowa, 2005).

Of the digital collections, <https://gdz.sub.uni-goettingen.de/> is a very interesting one. This is the address of the Göttingen Digital Centre, which has a collection of about 15 million digitized pages, printed and handwritten. The Library also has access to the Central Register of Digitized Prints, <http://www.zvdd.de/en/start/>, which stores digital copies of print media from the 15th century. There is a private portal of collections of the University of Göttingen <https://sammlungen.uni-goettingen.de/> of various subjects. For scholars there is access to theses of the university. There is also hosting of licenses, which is useful for scientists. The Library provides access to German databases that may be of use to scholars or students. For example, there is a digital database of manuscripts or a digital database of the heritage of monasteries, colleges and church collections since Roman times. It is also called *Germania sacra*, there are also professional virtual libraries. For example, <https://geo-leo.de/> is a library of both visualizations and repositories. The University has its own archive of publications and photocopying is free of charge. The University has been engaged in digitization since 1997, but in a systematic and strategic way.

It also has its own publishing house for publishing textbooks for students and scientists <https://www.univerlag.uni-goettingen.de/>. Reading online is free, you have to pay for printing. Books, namely anthologies, collections of materials of conferences, monographs are published in five languages. Most are German, but there are both Arabic and Persian as well.

The University of Göttingen Library supports Open Science and Open Access. Librarians are teaching and providing students with courses in research methods, Citavi and Zotero software, finding the right sources. The library has its own media resources for learning and teaching. The lectures and excursions last from 30 to 90 minutes and are conducted in English.

The new library building, or as it is called the Central Library, was commissioned in 1986. Information on the Library and the Terms of Use is available in English and German. Special computers with navigation are also bilingual. There are giant signs of silence, and a full library of people and no librarian. The silence is truly complete and the library does not make mass events.



But if a group of students seeking communication gathers, they occupy a special place with sound absorbing screens and study together. The library is full of zones and spaces for independent work of students. The library is fully computerized and fulfils all the operations through the electronic catalogue: accounting, issuance, etc.





The books are issued and returned by the readers themselves with the use of a reader card. A card reader is also required to use lockers for personal effects and clothing. Reading rooms are closed by glass sound-absorbing walls. You can sit on chairs or on fitballs. It is a good idea: one is studying and training at the same time. Photocopiers, scans and all other operations students do on their own (you can find detailed reference books for this on the library's website, there is also a video), the scanner specifically has a holder for books to prevent them from being destroyed.



Navigation is laid on the floor, so everything is clear. All shelves have autonomous lighting, diode lamps are mounted on the previous shelf from below and everything was visible even to me. The decorations in the library are decorated in medieval style. The citizens of Göttingen are

very proud of their city! Bronze figurines span the entire history of the city from its inception. But instead of horses, a herd of bicycles stand waiting for their owners.



And the entrance to the library is striking: it is completely covered with billboards of events that will be of interest to the locals and students.

Conclusions

The article was an attempt to describe the library's digital and paper resources as an accumulation of experience that could be embodied in the university libraries of Ukraine.

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НИЖНЬОСАКСОНСЬКА ЗЕМЕЛЬНА Й УНІВЕРСИТЕТСЬКА БІБЛІОТЕКА В ГЕТТІНГЕНІ (НІМЕЧЧИНА) ЯК ВЗІРЕЦЬ УСПІШНОГО СИМБІОЗУ МУНІЦИПАЛЬНОЇ ТА УНІВЕРСИТЕТСЬКОЇ БІБЛІОТЕКИ

Мета. Основною метою статті є характеристика Нижньосаксонської земельної й університетської бібліотеки в Геттінгені (Німеччина) як такої, де враховано особливості функцій публічної та наукової бібліотек. **Методика.** Викладену у статті інформацію отримано однією з авторок під час відвідування Нижньосаксонської земельної й університетської бібліотеки. **Результати.** Установлено, що досліджувана бібліотека зберігає вікові традиції і є сучасним простором для самостійної та групової роботи. **Висновки.** У статі висвітлено інформацію про цифрові й книжкові ресурси аналізованої бібліотеки як акумуляцію досвіду, можливого для втілення в університетських бібліотеках України.

Ключові слова: Нижньосаксонська земельна й університетська бібліотека; Німеччина; бази даних; електронні ресурси; архів; цифровий проект

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EFFICIENCY OF MANAGING THE RESOURCE POTENTIAL OF UNIVERSITY LIBRARY

Objective. The paper investigates the resource potential of higher education institution libraries as a tool for effective management of their activity. **Methods.** The author pays attention to the difference between the concepts of "resource pool" and "resource potential", which is in involving the latter in the process of library information production and service. **Results.** The composition of the university library's resource potential is determined. It is stated that the effective management of the resource potential requires the managers to fully evaluate the factors of the internal and external environment of the library functioning. Characterization of individual components of the university library resource potential is given, and the need for their integrated use is emphasized. Much attention is paid to library staff as a leading resource of the management system, the formation of their cognitive potential. **Conclusions.** It is stated that the efficiency of the activity of the modern library of the higher education institution is largely determined by the available resource potential aimed at the achievement of scientifically and educationally significant goals and objectives of strategic character. The main results of the research can be used in the process of managing the activities of the university library.

Keywords: library; higher education institution; resource potential; management

Introduction

Sustainable development of the library of higher education institutions in the conditions of rapid and powerful technological, organizational, service transformations depends directly on effective management and requires finding ways to solve certain significant problems concerning the efficient use of their resource potential. In modern circumstances, we observe different models of adaptation of university libraries to the rapidly changing educational and information space: from traditionally functioning book depository with minimal level of service to active innovative strategies for implementing information and communication technologies, forming a qualitatively new resource base in the digital space, mastering mobile forms of information service.

Problem statement. Uneven pace of modernization of libraries of higher education institutions in Ukraine requires finding ways and mechanisms to overcome such a situation, the identification of factors that affect the effectiveness of library and information activities in the electronic information space of science and education. This involves directing efforts to master the modern methods of managing the university library's resource potential in accordance with changes in the concept of libraries' tasks, their role and place in the infrastructure of a higher education institution.

Methods

The resource potential of a university library is a multifaceted concept and is broadly defined as the set of resources and capabilities that an institution can use to achieve certain goals (Svirgun, & Sokolovska, 2012). In the scientific works of representatives of library-specific knowledge, this problem was investigated only at the level of its individual components: management of technical and technological, personnel, material, information, financial and management resources.

The vast majority of research is devoted to the analysis of technical and technological resources as the main tool for presenting a scientific library in the electronic environment. Thus, K. Lobuzina (2012) made a systematic analysis of the problems of adaptation, implementation and administration of modern automated library-information systems, analyzed the issues of management of technical and technological resources in the processes of creating electronic catalogues, full-text databases, activities on complex automation of library processes. The high technological level of modern university library is a factor of its successful modernization. This opinion is substantiated in the scientific researches of T. Kolesnykova (2015, 2019), I. Lobuzin (2017), O. Marina (2017) and D. Solovianenko (2007). Analyzing the role and place of the library in the modern system of social communications, O. Marina (2017) notes that "for most libraries in different countries of the world, nowadays technology is connected with approbation of new communication realities of digital space".

Scientific intelligence on managing the library's technological potential is complemented by works that analyze human resources. Researchers emphasize the importance of improving qualitatively the management of library staff, which directly ensure the appropriate level of technological processes, quality of information products and services. First of all, it involves the quality of library and information education as an important component of the quality of personnel resources of the libraries of higher education institutions (Solianik, 2013). Of particular importance for understanding the problem of resource potential of the university library is the study of issues of managing their activities. These aspects of the problem in the professional scientific environment are considered both within the framework of the innovative development of libraries and the formation of their innovation policy (Davydova, 2014), modern management technologies (Nikolaenko, 2014, 2015), and within the implementation of a balanced scorecard as the basis of strategic library management (Brui, 2015).

Thus, an analysis of the results of research on the resource components of the university library shows that the conceptualization of this important issue, both in theoretical and in practical terms, has not reached the required level of generalization in library science yet.

Purpose of the article. The main purpose of the research is to identify the components of the resource potential of the university library, to outline modern approaches to managing its effective use.

Results and Discussion

The resource potential of the library of a higher education institution is characterized by its cumulative ability in solving certain tasks that arise in the course of functioning of the university book depository. It integrates the resources of the institution that significantly affect the priority activities of both the university as a whole and its most important infrastructure component – the library. Today, the library should take a leading role in the development of the university's digital infrastructure by supporting science and the educational process. The main focus is on the creation of modern electronic search systems, full-text databases, the provision of innovative library services, including information support for scientific activities, scientometric research, the creation of publicly available archives of scientific information and user service through mobile devices.

Effective management of a library's resource potential must be based on a systematic approach and begin with the identification of its components. In the study, we propose to consider the resource potential of a library not only as a set of resources at its disposal, but also as the ability of employees and managers of all levels of management to use the resources to produce information products and services. Thus, the resource potential of the library characterizes not all the diversity of specific resources, but only that part of it, which is involved

in the process of library-information production and service, taking into account available information needs, scientific, educational and economic expediency, technological advances of scientific and technological progress. What is important is that effective resource management is focused not only on the library's existing system of resources, but also covers new (possibly alternative) resources and their sources that set the boundaries of current and future development.

The components of the university library resource potential are both material and immaterial resources:

- Employees and managers at all levels of management (demographic indices - age, gender; employee qualifications - education; cognitive capabilities - the desire for change; the ability to adapt to new requirements; cognitive abilities; cognitive development);
- Material and technical resources (library buildings, furniture, computers, telecommunication equipment, development opportunities);
- Technological resources (technologies of traditional and modern digital library-information production);
- Financial (availability and adequacy of financing; the amount of own and borrowed financial resources available to the library to meet current and future expenses);
- Information (arrays and flows of documents on printed media; own-produced and borrowed databases; digital content; management information; effective system of external and internal communications).

Specialists also consider a set of resources that are necessary for the implementation of the management process in the institution - resources of the management system, the components of which may be: resources of the organizational structure of the management system, management personnel, information resources, management techniques, management technologies (Fedulova, 2007). Each of these types of resources represents a set of opportunities to achieve the goals of the institution.

Effective management of the resource potential of a higher education institution's library requires management's ability to assess both internal factors affecting the status of the resource potential and external ones, as well as to apply appropriate countermeasures when needed. For example, global technological changes, the development of networked information space, the evolution of high-tech communication tools have contributed to the increased impact of technological resources on all spheres of library activity and led to changes in the technical paradigms of library information production. The rapid emergence of new hardware, software, telecommunications and communications channels has accelerated the obsolescence of existing technological processes. In these conditions, the libraries of higher education institutions quickly assessed the potential of technological changes and intensified their work in the field of technological innovations, and mastered the possibilities of reengineering.

Reengineering of library-information processes is a set of technical-technological, innovative methods and means intended for cardinal improvement of the basic library performance indices through modeling, analysis and redesign of existing library-information processes. From an economic point of view, reengineering is understood as a fundamental reframing and radical redesign of an enterprise and its essential processes in order to achieve a significant improvement in the quality of operation.

The reengineering of library-information processes is aimed at separating and substantially improving of those key areas of activity that can provide a particular information institution with competitive advantages. It can be a rational organization of the technological process, which allows to minimize the costs of creating high quality products, the introduction of personnel management that effectively directs people's activities in the right direction, thus achieving the goals of the institution, the marketing policy, which increases the competitiveness of the product.

At the same time, adequate restructuring of other parts of the management system must be ensured, which is the essence of the reengineering concept. Such an approach, when applied, allows stabilizing the resource potential of the university library as an open system in a state of dynamic equilibrium with the external environment.

It is important to note that increasing the competitive capacity of the library, its dynamic and holistic development are ensured not by one of its elements, but by the close interaction of all components of the resource potential. Efficiency of management of this system is conditioned by the available management technologies and the extensive system of communications. The quality of information interaction between the subject and the object of management significantly influences the making of the optimal management decision, which is possible due to the comprehensive analysis of processes and problems of production, economic, marketing, financial and other activities with a focus on interests, strategic goals of the institution. The quality of management as a resource potential of the university library is influenced by the style of management, the degree of knowledge of causes and consequences, a clear understanding of the relations within the scope of information available.

Nowadays, in the conditions of diversification of the information service, the cognitive-communication mission of the university library is strengthened, its cognitive capacity is growing, which envisages the following activities: stimulating knowledge growth; selection and accumulation of information from external sources; preservation, classification, transformation, accessibility, dissemination and sharing of knowledge; its use in decision-making processes; translating knowledge into the production of information products, services, databases; assessment and protection of knowledge. Accordingly, the formation of the library cognitive potential is based on two interconnected components of the knowledge reproduction cycle: knowledge replication (simple knowledge reproduction), which involves the transfer and assimilation of already generated knowledge; and the production of knowledge (advanced knowledge reproduction) in which new knowledge is acquired.

With regard to university libraries, it should be noted that prior to the active development of information processes their documentary and information activities involved mainly knowledge replication. But in today's globalized environment, competitive advantage is first and foremost ensured by their production. Information professionals in the age of the Internet and multimedia technologies are becoming "knowledge workers" who create new material and intellectual products and an important place in these processes belongs to library workers. The need to solve cognitive problems poses certain requirements to the individual-communication features and professional qualities of librarians, in particular to the level of their professional potential. It should be emphasized that among the requirements for the professional qualities of library specialists, their level of communication competence has a special place due to the fact that the profession of librarian belongs to socio-economic types of work, where communication, which accompanies work activity and is an integral part of the library-information service, becomes a professionally significant component.

Conclusions

Thus, it can be stated that the efficiency of the activity of the modern library of a higher education institution is largely determined by the available resource potential aimed at achieving scientific and educational goals and objectives of strategic character. The main areas of further research should include the analysis of innovative technologies of the university library resource potential management, the development of measures for the organization and control of tasks to determine the strategy for the development of university library resource potential.

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ЕФЕКТИВНІСТЬ УПРАВЛІННЯ РЕСУРСНИМ ПОТЕНЦІАЛОМ БІБЛІОТЕКИ УНІВЕРСИТЕТУ

Мета. У статті поставлено за мету дослідити ресурсний потенціал бібліотек закладів вищої освіти як інструмент ефективного управління їх діяльністю. **Методика.** Автор звертає увагу на різницю між поняттями "ресурсний пул" та "ресурсний потенціал", що полягає в залученні останнього до процесу виробництва та обслуговування бібліотечної інформації. **Результати.** Визначено склад ресурсного потенціалу університетської бібліотеки. Зазначено, що ефективне управління ресурсним потенціалом вимагає від керівників усебічної оцінки факторів внутрішнього та зовнішнього середовища функціонування бібліотеки. Надано характеристику окремих компонентів ресурсного потенціалу університетської бібліотеки та наголошено на необхідності їх комплексного використання. Велику увагу приділено бібліотечним працівникам як провідному ресурсу системи управління, формуванню їх пізнавального потенціалу. **Висновки.** Зазначено, що ефективність діяльності сучасної бібліотеки закладу вищої освіти спрямованої на досягнення науково-освітніх значущих цілей та завдань стратегічного характеру, багато в чому визначається наявним ресурсним потенціалом. Основні результати дослідження можуть бути використані в процесі управління діяльністю університетської бібліотеки.

Ключові слова: бібліотека; заклад вищої освіти; ресурсний потенціал; управління

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USE OF CHOICE REVIEWS TO BUILD THE GEOSCIENCES COLLECTION

Objective. The Nazarbayev University School of Mining and Geosciences was established in 2016 to study and conduct research on the vast mineral reserves of the country. The school now has three bachelor's programs, two master's programs and the recently launched PhD program. The purpose of the study is to determine how many subjects from Choice Reviews are already part of the collection, and how many the library needs to buy to create a good geological collection. **Methods.** Introducing new programs, it is important to identify the academic and additional resources that will need to be offered during training. In 2018, the library acquired Choice Reviews Online to help the subject librarians create good discipline-oriented collection. **Results.** According to the survey, only 12.5% of the list is part of an existing print collection, and 87.5% should be added as a potential collection of mining and geology sciences. The analysis of e-book collection is as follows: 55% of the list is already part of this collection, and 45% of the library is required to be purchased when developing an e-book collection. **Conclusions.** The university has only just begun to develop the field of mining and geology, so there is still time to expand the library's collection of these disciplines. Subject librarians are interested in adding important titles from standardized Choice Reviews tools; as well, they should review and identify various resources that are relevant to the promotion of research to acquire them.

Keywords: mining and geosciences, collection development, earth sciences, Choice

Introduction

In 2016, the Nazarbayev University opened the School of Mining and Geosciences. Currently, it has three bachelor's programs (Geology, Petroleum Engineering, & Mining Engineering), two master's programs (Petroleum Engineering & Mining Engineering), and a PhD program which was launched in 2018. These programs are aimed at expanding research and technology in the field of mining, sustainable development, use of earth resources, etc., and encompassing mainly the Earth science of Kazakhstan the region and the world. (Suorineni, 2018). Starting a new program requires reference materials housed in the library as well as new textbooks to be used by the upcoming students. Slowly, the library is acquiring discipline-oriented resources as recommended by the faculty members.

The Subject Librarians also consult available publisher's catalog, and also do some benchmarking from our institutional partner from the USA which is the Colorado School of Mines. The Subject Librarians search the online catalog of the partner library for potential titles not owned by the library. In addition, the library purchased Choice Reviews Online to aid the subject librarian in their quest to build a standardized core collection.

Building the print collection is as important as the eBook collection. There are still users who prefer to use print materials. In a study by Foote & Rupp-Serrano (2010), they mentioned that faculty and graduate students still prefer print books when reading the whole book as they are generally easier to use.

Methods

The Association of College & Research Libraries (ACRL), a division of the American Library Association (ALA) developed the Choice Reviews Online. Choice Reviews is the best origin which provides a comprehensive review of outstanding academic titles and book recommendations. For that the collection evaluation is used in this study to determine how many items from the Choice Reviews is already part of the collection. Analysis using Choice was used by subject librarians to compare whether the library is performing well in acquiring expected items as part of the collection (Stebelman, 1996). This will also show the depth of the collection based on existing standardized tools.

The Subject Librarian consulted the online database and used the filter Earth Science under Science and Technology as well as Engineering under the same category. Adding a third keyword “geoscience” gave a result of 86 hits. The results will be used to compare what is already included in the current collection. The list was extracted using create a list tool and was saved online for documentation. MS Excel was used to filter data and verifying if there are duplicate records. Using the online catalog of NU Library, the titles were searched one by one to find out which is already existing and how many print books & eBook collection need to be added.

Results and Discussion

From the 86 results, we found out that 30 of them are duplicates. With this data, we deduct 30 from the 86 to get more reliable results. Only 12.5% from the list is part of the existing print collection and 87.5% needs to be added as a potential collection of the School of Mining and Geosciences (Fig 1).



Figure 1. Comparison of print books in the NU collection vs Choice Reviews

Some of the titles we have are *Understanding Oil and Gas Shows and Seals in the Search for Hydrocarbons* by John Dolson, *Earthquake Engineering Handbook* edited by Charles Scawthorn & Wai-Fah Chen and *Petroleum Geoscience: from Sedimentary Environments to Rock Physics* edited by Knut Bjorlykke. Also, the Subject Librarian will be ordering the *Earth Book: From the Beginning to the End of Our Planet, 250 Milestones in the History of the Earth Sciences* by Jim Bell.

When it comes to eBook collection, 31 titles are available in the Choice Reviews Online. In that case, we can say that 55% from the list is part of the present eBook collection. It means that in developing the eBook collection, the library needs to purchase 45% (Fig 2). Results would show that we need to expand the collection to keep up with the mining and geosciences trend.

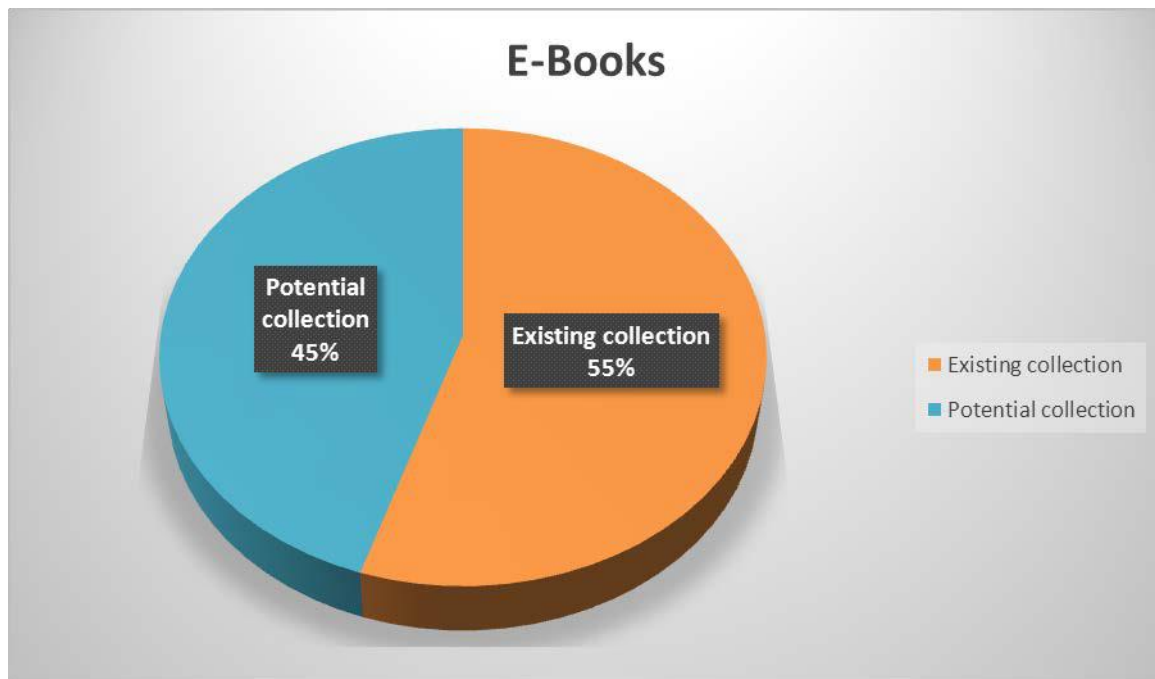


Figure 2. Comparison of eBooks in the NU collection vs Choice Reviews

While we are building the print books collection, we also need to consider expanding the eBooks collection. We can observe that we need more print books (87.5 %) compared to eBooks which we only need 45% of it. Certainly, we cannot deny that both collections have to be developed by Subject Librarians in diverse fields of mining and geosciences.

The table below (Table 1) is an example of select titles from the Choice Reviews recommended list. The table shows the kind of format already available in our collection. However, it only presents a small amount of sample.

Table 1. Recommended titles by Choice Reviews according to format availability in the NU collection

Title:	Print books	E-books	Combination
1. Four revolutions in the earth sciences	✓	✓	✓
2. Petroleum geoscience	✓	X	X
3. Geoscience Information Society	X	✓	X
4. The handbook of geoscience	✓	✓	✓
5. West's geology directory	X	X	X
6. Earthquake engineering handbook	✓	✓	✓

Conclusions

Since the School of Mining and Geosciences is still a developing entity of the university, there is a lot of room for collection development. Subject Librarians must be keen on adding more important titles from standardized tools such as Choice Reviews, Resources for College Libraries, Books in Print or Best Books for Academic Libraries.

A better collaboration from among the faculty members must also be established to solicit titles to be used as core text or just as part of their supplementary readings. Subject Librarians must also check and identify various resources that are corresponding to encourage research and academic programs of the faculty to recognize which books to purchase. A comprehensive collection development policy can also help improve the collection.

To further develop this study, it is recommended to use other tests such as WorldCat Collection Analysis (Benedetto & Gilmour, 2007). It helps to better understand on how to expand the collection in necessary areas. Furthermore, we continue to evolve the collection based from faculty recommendations and student requests.

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ВИКОРИСТАННЯ “CHOICE REVIEWS” ДЛЯ СТВОРЕННЯ КОЛЕКЦІЇ ІЗ ГЕОЛОГІЧНИХ НАУК

Мета. У 2016 році для вивчення та проведення досліджень величезних запасів корисних копалин країни у Назарбаєв Університеті було створено школу гірничо-геологічних наук. Зараз у школі є три програми підготовки бакалаврів, дві програми підготовки магістрів, а нещодавно запущено програму підготовки PhD. Мета дослідження – визначити, скільки назв із “Choice Reviews” вже є частиною колекції, а скільки бібліотеці треба придбати для створення потужної колекції літератури з геологічних наук. **Методика.** Із упровадженням нових програм важливо встановити академічні і довідкові джерела, які будуть потрібні під час навчання. У 2018 році бібліотека придбала “Choice Reviews” Online, щоб допомогти предметним бібліотекарям створити потужну колекцію, орієнтовану на дисципліну. **Результати.** За результатами дослідження лише 12,5 % зі списку є частиною наявної друкованої колекції, а 87,5 % – потрібно додати як потенційну колекцію гірничо-геологічних наук. Аналіз колекції електронних книг такий: 55 % зі списку вже є частиною цієї колекції, а 45 % – бібліотеці потрібно придбати під час розробки колекції електронних книг. **Висновки.** Напрямок гірничо-геологічних наук лише почав розвиватися в університеті, тому ще є час для розширення бібліотечної колекції з цих дисциплін. Предметні бібліотекарі зацікавлені в додаванні важливих назв із стандартизованих інструментів із “Choice Reviews”, а також повинні перевірити та виявити різні ресурси, які відповідають заохоченню наукових досліджень, щоб їх придбати.

Ключові слова: гірничо-геологічна справа та геологічні науки; розвиток колекцій; науки про землю; Choice

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BIBLIOMETRIC ANALYSIS OF THE DEVELOPMENT OF THE DIRECTION "DREDGING" IN WORLD PRACTICE

Objective. The study is aimed at obtaining new up-to-date knowledge and analysis of already existing one about the development of the "Dredging" direction in the world scientific space using the products and services of the Scopus scientometric database. Therefore, the chronological framework of the scientific articles under study is limited only by their availability in the Scopus database. **Methods.** In order to obtain relevant empirical data, the authors of the study reviewed the world scientific literature on the topic "Dredging" using the resources of the international reference and scientometric database of peer-reviewed literature Scopus. The algorithm of "step by step" actions in the Scopus database is considered: 1. Forming the circle of the most cited publications; 2. Defining the most relevant topics; 3. Identifying the most productive authors; 4. Determining the level of representation in the Scopus database of publications of Ukrainian scientists by the research topic. **Results.** During the study the authors have proved: 1. The main topics of the "Dredging" direction are: the impact of dredging on the ecology of the aquatic environment and marine life; models and algorithms for assessing and minimizing the risks associated with dredging; application of bottom sediments after dredging and their disposal in open waters; dredging fleet maintenance; 2. Scientists of our country are very slowly joining the world processes of exchange of scientific information in the "Dredging" direction; 3. The most intellectually productive authors of scientific articles in this field are scientists from the USA, Spain, Great Britain and Australia. **Conclusions.** For the first time in Ukraine, the authors conducted a bibliometric study in the field of water transport (subject area "Dredging") on the basis of products and services of the Scopus scientometric database. The results obtained can be used for further scientific research on this and related topics, as well as applied in the dredging discipline teaching process.

Keywords: bibliometry; scientometric analysis; scientometric database; Scopus; dredging operations

Introduction

Ukrainian ports are an essential element of the country's logistics infrastructure. In the World Economic Forum's Port Quality Rating, from 2014 to 2017, Ukraine improved its position slightly, rising from 107th to 93rd position (among 137 countries) (Hryhorenko, 2018). Dredging works are of great economic importance for increasing freight traffic and expanding ports, as the development of world trade is forcing ports to increase their capacity. This leads to the deepening of the water areas of the ports and the existing access channels, which makes it possible to accept larger merchant vessels (Dnoughlubitelnyie i morskije raboty, 2018).

In 2018 Ukraine spent more than \$ 1.5 billion on dredging in 6 of the country's 13 ports (Kyrychevskyi, 2019). In 2019 the Administration of Seaports plans to carry out operational dredging in 7 more seaports of the country: Mariupol, Berdyansk, Izmail, Chernomorsk, Mykolayiv, Odessa, Kherson and on 4 channels: Danube-Black Sea, Buh-Dnipro-Lyman, Dnistro-Lyman, Kherson marine channel (U portu Kherson zavershyly dnopohlyblennia yakirnykh stoianok ta rozpochaly roboty na pidkhydnomu kanali, 2019).

For Mykolayiv, these works are very important, because the Mykolayiv seaport will have all the conditions for servicing Panamax heavy-duty vessels, which will increase the port fees and payments to the state budget of Ukraine and will allow to develop business for Ukrainian companies operating in the water area of the port.

For a long time, no one has addressed the dredging issue in Ukraine properly. There is almost no research on the dredging problems in modern Ukrainian scientific literature. International experience confirms the necessity and prospect of this direction. Numerous world studies in recent years indicate the continued interest of scientists in various aspects of the development of water transport and the provision of uninterrupted and safe navigation through the regular production of track works, one of the main types of which is dredging.

Recently, the results of scientific studies in librarianship and scientometrics in various directions are increasingly appearing in the domestic scientific literature. However, the authors conducted the bibliometric research in the field of water transport ("Dredging" subject area) on the basis of products and services of Scopus scientometric database (DB) for the first time in Ukraine.

Methods

The practical part of the study is based on the Scopus DB – a bibliographic and abstract database and a tool for tracking the citation of articles published in scientific publications. This database is the most comprehensive resource for the search of scientific literature.

Step by step search activity in Scopus DB.

1. We start working with the Scopus database from the main page at <https://www.scopus.com>. In the Advanced Search tab, we list the keywords "dredging" and "ships" and select the "AND" operator. The system search result consists of 2,593 documents.
2. Then we specify the request. In the "Knowledge area" select "Engineering". In the field "Document type" select "Article". In the "Keywords" field, we choose, among the ones provided by the system, those that are directly related to dredging and ships, ports and terminals, environmental and ecosystem protection, sediment contamination, etc. ("Dredging", "Ships", "Dredges", "Sediments", "Ports And Harbors", "Dredger", "Geologic Sediments", "Marine Environment", "Shipbuilding", "Ecosystem", "Water Pollution", "Sediment Pollution", "Waterway Transportation", "Environmental Protection", "Land Reclamation", "Climate Change", "Suction Dredger", "Coastal Engineering", "Ecosystems", "Environmental Impact Assessment", "Hydraulic Structures", "Marine Engineering", "Dredging Operations", "Port Terminals", "Cutter Suction Dredger", "Marine Sediment", "Oceans And Seas", "Coastal Zone", "Port Development", "Navigation Channels", "Conservation Of Natural Resources"). As a result, we get 1,441 documents.
3. Further work is the analysis of selected documents using the service "Analyze search results". The analysis results are the number of published documents for each year (Fig. 1): 2020 – 1, 2019 – 45, 2018 – 75, 2017 – 89, 2016 – 94, 2015 – 69. Data for other years are presented in Figure 1.
4. Analysis of documents by source. Most articles (70) were published in Marine Pollution Bulletin (Elsevier Publisher, CiteScore (2018) 4.01, SJR (2018) 1.215, SNIP (2018) 1.305); 61 articles were published in HSB International (published by Uitgeverij Radius BV, SJR (2018) 0.112); 55 articles were published in Ports and Dredging (published by I H C Holland SJR (2018) 0.101); 48 articles were published in World Dredging, Mining and Constructions (published by World Dredging Magazine, SJR (2018) 0.101); 19 articles were published in the Journal of Coastal Research (published by Coastal Education & Research Foundation, Inc. CiteScore (2018) 1.21, SJR (2018) 0.424, SNIP (2018) 0.813); 16 articles were published in Holland Shipbuilding (published by Uitgeverij Radius BV, SJR (2018) 0.108), Maritime by Holland (published by Navingo

BV, SJR (2018) 0.100) and Science of the Total Environment (publisher Elsevier, CiteScore (2018) 5.92, SJR (2018) 1.536, SNIP (2018) 1.809); 15 articles were published in Water Environment Research (published by Water Environment Federation, CiteScore (2018) 0.96, SJR (2018) 0.286, SNIP (2018) 0.382).

Unfortunately, Scopus has stopped indexing the journals Marine Pollution Bulletin, Ports and Dredging, World Dredging, Mining and Constructions, HSB International, Holland Shipbuilding.

Documents by year

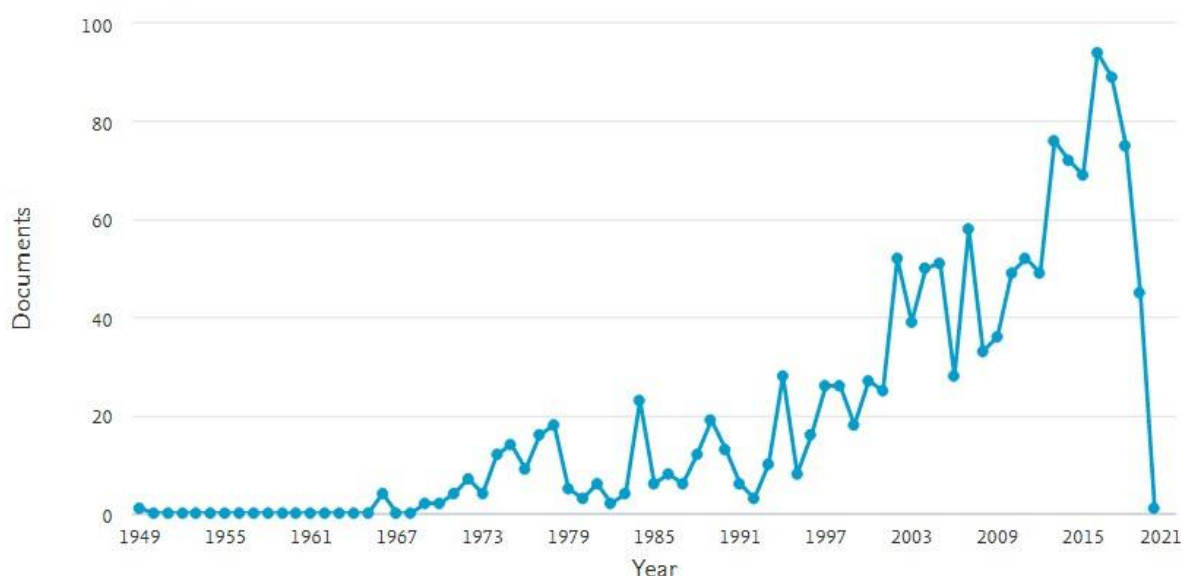


Figure 1. Number of published documents by year according to Scopus database

Analysis of documents by countries and territories. Most articles (349) belong to authors from the USA, 103 articles – to authors from the UK, 100 articles – to authors from China, 96 articles – to authors from Australia, 70 articles – to authors from the Netherlands. The Ukrainian authors are represented by two papers published in the journal *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu* (2014) and the proceedings of the US/EU-Baltic International Symposium: Ocean Observations, Ecosystem-Based Management and Forecasting – Provisional Symposium Proceedings, BALTIC (2008). T. O. Kolesnykova's studies (2013 and 2016) (Kolesnykova, 2013; Kolesnykova, Pominova, & Kolesnykov, 2016) confirm the lack of integration of Ukrainian science into the world scientific information space and the existing problems of insufficient representativeness of our scientists' publications in international citation indexes.

Analysis of documents by institution. The organizations whose authors work in Dredging direction include The United States Army Corps of Engineers (24 articles), Delft University of Technology (20 articles), National Oceanic and Atmospheric Administration (16 articles), Shanghai Jiao Tong University (15 articles) Consiglio Nazionale delle Ricerche (14 articles), University of Southampton (14 articles), Curtin University (14 articles) and others.

5. The leader in international recognition of publications is determined by the citation of works. Therefore, the next step is to identify the most cited articles that will constitute the so-called "core" and to compile a citation report (Table 1). To do this, go to the tab "View Citation Overview" and sort the selected documents by the number of citations in order of reduction. The number of citations during the last 15 years is presented in Figure 2.

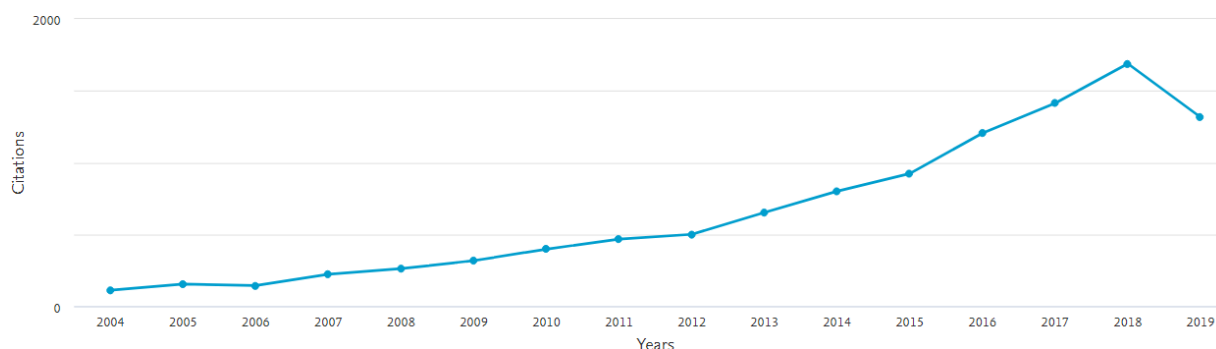


Figure 2. Number of citations during the last 15 years according to Scopus database

The total number of citations of 1 411 documents selected for analysis is 11 134.

Among the selected articles, 676 have non-zero citations. Of these, 557 articles have been cited more than 1 time and 20 cited more than 100 times. The most citations were received by articles in 2018 (1689), 2017 (1414) and 2016 (1205). In 2019, the articles received 1,316 citations.

Of the 1 411 articles, 97 are presented in Open Access, thereof 76 have more than 1 citation. 3 articles have more than 100 citations.

Table 1. Citation report of the most cited publications by keywords "dredging" and "ships" in Scopus database

No.	Authors	Title of Article	Journal name	Year of publication	Total citations	Average number of citations per year
1.	Erfteimeijer, P.L.A., Riegl, B., Hoeksema, B.W., Todd, P.A.	Environmental impacts of dredging and other sediment disturbances on corals: A review	Marine Pollution Bulletin	Volume 64, Issue 9, September 2012, Pages 1737-1765	277	35
2.	Vanhellemont, Q., Ruddick, K.	Turbid wakes associated with offshore wind turbines observed with Landsat 8	Remote Sensing of Environment	Volume 145, 5 April 2014, Pages 105-115	148	25
3.	Nogales, B., Lanfranconi, M.P., Piña-Villalonga, J.M., Bosch, R.	Anthropogenic perturbations in marine microbial communities	FEMS Microbiology Reviews	Volume 35, Issue 2, March 2011, Pages 275-298	134	15

Table 1. Citation report of the most cited publications by keywords "dredging" and "ships" in Scopus database (continuation)

4.	Falloon, T.J., Danyushevsky, L.V., Crawford, A.J., Meffre, S., Woodhead, J.D., Bloomer, S.H.	Boninites and adakites from the northern termination of the Tonga Trench: Implications for adakite petrogenesis	Journal of Petrology	Volume 49, Issue 4, April 2008, Pages 697- 715	98	9
5.	Ormerod, S.J.	Current issues with fish and fisheries: Editor's overview and introduction	Journal of Applied Ecology	Volume 40, Issue 2, April 2003, Pages 204- 213	79	5

The main topics of the most cited works are, first of all, devoted to the impact of dredging on the ecology of the aquatic environment and marine life. The addressed issues also include: dredging risk assessment and minimization; environmental impact of deepening of the bottom and widening of the reservoir bed by extraction of underwater soil; application of bottom sediments after dredging and their disposal in open waters; dredging fleet maintenance.

The distribution of the most cited articles by country is as follows, %:

United Kingdom – 20

Australia – 40

Belgium – 20

Spain – 20

The distribution of the most intellectually productive authors of scientific articles by the Hirsch index is presented in Table 2.

Table 2. List of the most productive authors

No.	Author	Institution	Country	h-index
1.	Thompson, Paul Murray	David Geffen School of Medicine at UCLA	United States	128
2.	Duarte, Carlos M.	CSIC-UIB - Instituto Mediterraneo de Estudios Avanzados (IMEDEA)	Spain	98
3.	Roberts, Callum	University of York	United Kingdom	57
4.	Ormerod, Stephen J.	University of Wales	United Kingdom	51
5.	Woodhead, Jon D.	University of Melbourne	Australia	50

Results and Discussion

The content analysis of publications in the field of dredging proves that dredging problems are relevant in many countries of the world. They are considered and researched from numerous aspects. Scientists study and analyse: projects for deepening rivers, lakes and ponds; environmental issues related to the clarification of reservoirs after dredging; the impact of hydrotechnical structures on the environmental situation in water bodies and adjacent territories; problems of design and application of dredging equipment; solving port infrastructure problems. During the study the following results were obtained: in Scopus database 1 411 documents correspond to the given parameters. Most articles (70) were published in the Marine Pollution Bulletin; 61 articles were published in HSB International; 55 articles were published in Ports and Dredging. Unfortunately, Scopus stopped indexing these journals. Of the 1 411 documents the most cited are the 5 that made up the so-called "core". These articles are primarily concerned with the impact of dredging on the ecology of the aquatic environment and marine life. The highest figures for the average number of citations per year are the articles of the composite authors: Erfteimeijer, P.L.A., Riegl, B., Hoeksema, B.W., Todd, P.A. (35); Vanhellemont, Q., Ruddick, K. (25); Nogales, B., Lanfranconi, M.P., Piña-Villalonga, J.M., Bosch, R. (15); Falloon, T.J., Danyushevsky, L.V., Crawford, A.J., Meffre, S., Woodhead, J.D., Bloomer, S.H. (9); Ormerod, S.J. (5). The most intellectually productive authors of scientific articles are scientists from the USA, Spain, Great Britain and Australia. They represent such renowned institutions as: David Geffen School of Medicine at UCLA, CSIC-UIB – Instituto Mediterraneo de Estudios Avanzados (IMEDEA), University of York, University of Wales and University of Melbourne. Distribution of most cited articles by country, %: United Kingdom – 20; Australia – 40; Belgium – 20; Spain – 20.

Ukrainian scientists are represented in the Scopus database by two papers which discuss the problems of dredging. They were published in the journal *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu* (2014) and in the proceedings of the US/EU-Baltic International Symposium: Ocean Observations, Ecosystem-Based Management and Forecasting – Provisional Symposium Proceedings, BALTIC (2008). Such a number of documents confirms the fact that for a long time nobody has properly dealt with the dredging issue in Ukraine.

Conclusions

During the study the authors proved that the main topics of the "Dredging" direction are: the impact of dredging on the ecology of the aquatic environment and marine life; models and algorithms for assessing and minimizing the risks associated with dredging; application of bottom sediments after dredging and their disposal in open waters; dredging fleet maintenance; scientists of our country are very slowly joining the world processes of exchange of scientific information in the "Dredging" direction; the most intellectually productive authors of scientific articles in this field are scientists from the USA, Spain, Great Britain and Australia.

Subsequently, the study materials can be used to create an information base and to train dredging specialists.

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БІБЛІОМЕТРИЧНИЙ АНАЛІЗ РОЗВИТКУ НАПРЯМУ «ДНОПОГЛИБЛЮВАЛЬНІ РОБОТИ» У СВІТОВІЙ ПРАКТИЦІ

Мета. Дослідження спрямовано на отримання нових сучасних та аналіз вже існуючих знань про розвиток напрямку «Днопоглиблювальні роботи» у світовому науковому просторі з використанням продуктів і сервісів наукометричної бази даних Scopus. Тому, хронологічні рамки досліджуваних наукових статей обмежуються тільки їх наявністю у базі даних Scopus. **Методика.** З метою отримання релевантних емпіричних даних авторами дослідження проведений огляд світової наукової літератури за темою «Днопоглиблювальні роботи» з використанням ресурсів міжнародної реферативної та наукометричної бази рецензованої літератури Scopus. Розглянуто алгоритм «покрокових» дій у базі даних Scopus щодо: 1. Формування кола найбільш цитованих публікацій; 2. Визначення найбільш актуальних тем; 3. Виявлення найбільш продуктивних авторів; 4. Визначення рівня представництва в базі даних Scopus публікацій українських вчених за темою дослідження. **Результати.** Під час дослідження авторами доведено: 1. Основними темами напрямку «Днопоглиблювальні роботи» є: вплив днопоглиблювальних робіт на екологію водного середовища та морських мешканців; моделі і алгоритми для оцінки та мінімізації ризиків, пов'язаних з днопоглиблювальними роботами; застосування донних відкладень після проведення днопоглиблення та їх утилізації у відкритих водах; технічне обслуговування днопоглиблювального флоту; 2. Вчені нашої країни дуже повільно долучаються до світових процесів обміну науковою інформацією з напрямку «Днопоглиблювальні роботи»; 3. Найбільш інтелектуально продуктивними авторами наукових статей з цього напрямку є вчені США, Іспанії, Великобританії та Австралії. **Висновки.** Авторами вперше в Україні було проведено бібліометричне дослідження в галузі водного транспорту (предметний напрямок «Днопоглиблювальні роботи») на основі продуктів і сервісів наукометричної бази даних Scopus. Отримані результати можна використовувати для подальших наукових досліджень з даної та суміжних тем, а також застосовувати в процесі викладання дисциплін з днопоглиблювальних робіт.

Ключові слова: бібліометрія; наукометричний аналіз; наукометрична база даних; Scopus; днопоглиблювальні роботи

UDC: 002:303.443.2

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e-mail vslazarev@bntu.by, ORCID 0000-0003-0387-4515**ON THE POSSIBILITIES OF EVALUATING PROPERTIES OF
SCIENTIFIC DOCUMENTS ON THE BASIS OF THEIR CITATIONS
COUNT (OR AGAIN: WHAT PROPERTY IS REFLECTED BY
CITATIONS COUNT *PAR EXCELLENCE*, AFTER ALL?).
PART 1: VALUE**

The **objective** is consideration of the most recent works on the problem of the phenomenon reflected by citations count of scientific documents. The **method** is interpretation of recent research publications made by bibliometricians. The **results** are presenting evidence that the property of scientific documents reflected *par excellence* by their citation is their value. It is also **concluded** that the attempts of identification of the “specific contribution” of cited documents based on the conditional and disputable classification schemes of citations that have been undertaken in the years 2006-2018 are not fruitful.

Keywords: citations count; citation reasons, motivation and functions; classification schemes; value

Introduction

When considering the properties of documents that can be quantified through the use of bibliometric indicators, terminological problems arise (Lazarev, 1996). The key question “What do citation counts measure?” which is, in fact, the title of two reviewing papers (Bornmann & Daniel, 2008; Tahamtan & Bornmann 2019) itself leads to plentiful confusions of concepts that prevent experts from understanding each other. To me, it is natural to expect that exactly the *properties* of the cited documents reflected by the citations counts are going to be the subject matter of a paper with such a title. Especially, since the author of the earlier paper with a similar title meant precisely cited documents properties when asked whether “they <citations – V.S.L.> measure quality, importance, impact, influence, utility, visibility, all of the above, or something else?” (Cozzens, 1989, p. 437)¹.

However, the recent reviewing papers (Bornmann & Daniel, 2008; Tahamtan & Bornmann, 2019) focused not on the properties of cited documents, but on “motivations, functions, and causes of references in scientific communication” (Tahamtan & Bornmann, 2019). These issues relate to different objects other than documents, viz., correspondingly, to the authors (who are motivated), references (which have their functions) and the citer’s comprehension of the document being cited (when a citer takes into account both his own goals and a content of a document or its fragment he is caused either to cite or not to cite). There are a number of other terminological problems, too, associated with the recent works devoted to the problem of the phenomenon reflected by citations count. With this regard, the objective of the

¹ “By **properties** we understand the general attributes or characteristics of research that we aim to capture (‘academic quality’, ‘intensity of collaboration’, ‘diversity of knowledge’, ‘brokering role’, et cetera). By **indicators** we understand the observables that can be empirically and directly recorded (citations, number of authors, number of disciplines, number of bridging positions, etcetera), and that can be related to a property through a theoretical model”, stated J. Molas-Gallart & I. Rafols (2018, p. 2). These definitions are possibly not ideal, but intuitively understandable and logically consistent. (The need to define the concept of “property” – which is intuitively understandable by itself – is caused by the fact that, as it will be seen in a couple of lines, absolutely different issues may be considered as a subject of assessment by citations counts – issues that even do not relate to the cited documents.)

present paper is consideration of the most recent works on the problem of the phenomenon reflected by scientific documents citations count and the revelation of the property of cited scientific documents reflected by their citedness *par excellence*.

Methods

The information base of the research was made of recent publications made by bibliometricians and dealing with the problem “What do citation counts measure?”. Particular attention has been paid to the article by I. Tahamtan & L. Bornmann (2019), as this is the most recent publication on this topic, representing a solid 50-page review. The method is interpretation of above-mentioned recent publications; herewith the special attention is paid to the terminology.

Again, it should be reiterated and emphasized that in the focus of the interpretation are *not* all the possible items that could be associated with citations count of the cited documents, but, first, the ones that are attributed *exactly to the cited documents*. Second, special consideration is paid to the issues (hereinafter referred to as properties according to J. Molas-Gallart & I. Rafols (2018, p. 2) that are reflected by the documents citedness *in the least indirect way possible*. Such an approach is believed to be most relevant to the essence of the question “What do citation counts measure?”

Results and Discussion

The verb “to measure” that is widely used as applied to citations count (Bornmann & Daniel, 2008; Tahamtan & Bornmann, 2019) might be a source of confusions in itself. The fact is that, generally, “measure” relates to *direct* measurement, while in case of using bibliometric indicators we deal with indirect, mediated evaluation (Motylev, 1983). So, I believe that we are to use in bibliometric research the term “quantitative assessment” or “quantification” instead of “measure” (Motylev, 1983). I believe this is really important because, when paying due attention to the *indirect* character of assessment, a metrician would have to focus primarily on a property that is reflected by citations count *to a lesser extent indirectly* and, therefore, predominantly, *par excellence*. Citers’ motives, for instance (considered by I. Tahamtan & L. Bornmann (2019) are hardly such a characteristic!

Another possible source of confusions with the basic terms related to the quantitative assessment of characteristics reflected by citations count is the choice of an unsuitable term out of the synonyms that point to the phenomenon under assessment. I used the word “property” above, but the use of the word “*quality*” instead of “*property*” as, e.g., O. Mryglod & S. Nazarovetz (2019, p. 83) did – although it is a use of a synonym – is fraught with confusion between the meanings of the word “quality” since “quality” means both ‘property’ (‘characteristic’, ‘attribute’) and ‘relative excellence’. Such a misuse of a synonym might become a cause, e.g., of such a ridiculous phrase as “Does citations count measure such quality of cited documents as their quality?”

The newest review under analysis (Tahamtan & Bornmann, 2019) does not seem not to deal with the properties of cited documents; it claims to “explore the citation motivation of scholars” with the use of various classification of citations. Many bibliometricians believe that such an approach makes it possible to get more detailed understanding of the nature of citing. Therefore, being interested in the problem of properties of cited documents reflected by citations to them (Lazarev, 1997, 2017, 2018a, 2018b, 2019), I nevertheless attempted to analyze some of this review in search of any findings that could enrich my vision of the answer to the question “What do citation counts measure?”. Especially since the properties of the cited documents, although not being in the focus of its consideration, are still mentioned in the review by I. Tahamtan &

L. Bornmann (2019). Thus, the Introduction to it mentions the assessment of such properties as “impact” and “performance” in relation not only to departments, research institutes, universities (but not to individual authors), but also to such sets of documents as books (evidently, of collected papers) and journals. The Introduction goes on to mention the possibility of studying such properties of cited works as “creative potential” and “overall quality” with citation counts. It is also mentioned there that citations count reflects the *use* of cited documents: “R. Jha, A.-A. Jbara, V. Qazvinian, & D. Radev (2017) noted that a more robust measure of citations is to use the citation context to provide additional information about how *a cited paper has been used in the citing paper*² (Hernández-Alvarez, Gomez Soriano, Martínez-Barco, 2017)” (Tahamtan & Bornmann, 2019).

After reading these statements it was natural to expect the continuation of consideration of cited document properties. Nonetheless, already at the top of its first page, the review makes a sharp turn to identification “of the specific contribution of a given work to the citing work” and application of “citation content/context analyses” (Tahamtan & Bornmann, 2019) with the purpose of such identifying. The formulation of the aim of this work given in its Introduction – viz. “to update the review of L. Bornmann and H. D. Daniel (2008) with an additional focus on the technical developments in the last decade, which have facilitated studies of citations” – should be considered as not specific enough, while the clarification of this formulation given in the Conclusions (“presenting a narrative review of studies on the citing behavior of scientists”) seems still to be too broad and devoid of necessary specificity. The only way to know the authors’ aim is to address the wording of the previous paper with the same title (Bornmann & Daniel, 2008) cited by I. Tahamtan & L. Bornmann (2019). In that paper, the aim was formulated as identification “the extent to which scientists are motivated to cite a publication not only to acknowledge intellectual and cognitive influences of scientific peers, but also for other, possibly non-scientific, reasons” (Bornmann & Daniel, 2008, p. 45). One can argue about the success of this formulation, too, but, in any case, it becomes clear from it that a recent review (Tahamtan & Bornmann, 2019) focuses mainly on the motivation of citing. Further acquaintance with this work allows us to clarify that considered are *not objectively existing reasons for the preference in choice of a particular work for citing*, but retrospectively defined *subjective ideas* about these reasons – the ideas defined either by scientometricians or by the citing authors themselves. These reasons have nothing to do with the properties of the cited documents, therefore, in my opinion, they hardly be called the root causes! As the text of the review shows, they are associated with the ideas about the functions that the cited documents performed in the work of the citing authors, with the ideas about the purposes of citing and about its motivation. However, in relation not to the assessment of documents by the scientometricians (“experts”), but to the questioning and interviewing of the citing authors (“citors”) themselves, it is no longer a question of ideas about the *reasons* for citing, but only about *motivation*. Also, one of the authors cited in the review (Tahamtan & Bornmann, 2019) “showed that “different readers understand the contexts of the same citations in very different ways” and noted that readers (experts) “are unlikely to correctly perceive authors’ reasons for citing” (Tahamtan & Bornmann, 2019). Isn’t this a kind of an indication to uncertainty of identification of the reasons for citing?

I. Tahamtan & L. Bornmann (2019) also mentioned the work by N. Harwood (2009) that “conducted semi-structured interviews with six computer scientists and six sociologists to identify the functions of citations in their papers or book chapters published recently”. As a result, 11 functions (not reasons, not motives!) of citations were allocated; the study by N. Harwood (2009) also showed that a citation may have *more than one function*: “over half of the citations in both fields were said to have more than one function” (Harwood, 2009, p. 495). I believe that this is another example of the uncertainty of the results considered by I. Tahamtan &

²Italicized by me – V.S.L.; mind this thought as we shall come back to it later.

L. Bornmann (2019). Possibly I am prejudiced, but I wish to ask: is the approach to the study of citations based on the recognition of various citation functions really promising?

Also, there are other identified citation motivations still not mentioned above and also presented in the review by I. Tahamtan & L. Bornmann (2019), as well as there are various classifications of references. Extra-academic associations between citing and cited works (such as social relations between cited authors) are also considered... But does all this bring us closer to the answer to the straightforward question formulated in the title of the article “What citation counts measure?”? In my opinion, it rather leads away from it all further: each of the articles analyzed in the review by I. Tahamtan & L. Bornmann (2019) has its own approach, and the authors of the review themselves point out that “every study introduces a new classification system”, that “some citation functions used in previous studies had (to some extent) the same meanings and definitions; however, different researchers had used different names for them” (Tahamtan & Bornmann, 2019). And yet the whole review is built in such a way that the only answer to the title question that can be implicitly seen from it is: “it is impossible to know what does citations count measure, as long as we do not apply citation content/context analyses”.

If only! In fact, the answer options when applying this citation content/context analyses are multiplied from an article to an article... and the authors of the review (Tahamtan & Bornmann, 2019) themselves also seem to recognize this uncertainty: “Possibly, rather than classifying citations into many functional categories <...>, using some general but exclusive functions would lead to comparable and (perhaps) more reliable results”. In this phrase I see some (unconscious?) capitulation: starting with enthusiasm for the possibility of complicating the study of citation motivations and functions, I. Tahamtan & L. Bornmann (2019) then come to think of the desirability of simplifying classification schemes...

Nevertheless, the analysis of citation functions undertaken by I. Tahamtan & L. Bornmann (2019) leads us to the concept of *use* (see footnote 2) which, in my opinion, is the key concept associated with the concept of citation (Lazarev, 1996, 1997, 2017, 2018a, 2018b, 2019). As it is stated by I. Tahamtan & L. Bornmann (2019), “use” was a frequently used and popular function in the classification scheme of several studies. For example, R. Jha et al. (2017) indicated that “the most frequent citation purpose was “use” (17.7%)”, and that the accuracy of their proposed classifier in recognizing “use” was higher <...> than that of other categories”.

However, in what series of notions (Jha et al., 2017 call them “purpose labels”) is, acceding to R. Jha et al. (2017), the notion of *use*?

R. Jha et al. (2017, p. 97) profess the following classification scheme for citation purpose: “criticizing”, “comparison”, “use”, “substantiating”, “basis”, “neutral”. In this series of concepts, “use” does not look as just “another one”, but it looks generic. Indeed, it is easy to imagine “use (of a document or of information that it contains) *for comparison or substantiating*” and, on the contrary, it is difficult to imagine “pure” information use without any further specification of *the nature of the use* that took place. As for me, I believe that by (“pure”) “use” R. Jha et al. (2017) could mean the only mode of use: when the authors of a citing paper directly replicate a method described in a cited paper. R. Jha et al. (2017) themselves stated: “A citing sentence is classified as “use” when the citing paper uses the method, idea or tool of the cited paper” (p. 97). I cannot but ask: “use of them – but how?” If we use method, we can replicate it – or not to use it at all. But how can we “purely” use an idea? By stealing? – so there would be no citation. By quoting? – so there will be not use in the terminology of R. Jha et al. (2017), but either “comparison”, “substantiating” or “basis”. And by the way, in the below wording by R. Jha et al. (2017) let slip that “basis” is a kind of the “use”:

“A citing sentence is classified as “basis” when the author uses the cited work as starting point or motivation and extends on the cited work” (Jha et al., 2017, p. 97) (italicized by me – V.S.L.).

Suspiciously looks also the following wording:

“A citing sentence is classified as “substantiating” when the results, claims of the citing work substantiate, verify the cited paper and support each other” (Jha et al., 2017, p. 97).

Why do the results in the above wording “substantiate, verify” etc. themselves – breaking all the language rules?! In my opinion, such a queer wording was chosen subconsciously to avoid admitting that the citer uses “the results, claims of the citing work” *to substantiate* his/her point through their interpretation or consideration. Without active mental processing of the results and claims (i.e. without their use) substantiating is just impossible!³

Does such understanding of the word (a noun) “use” contradict to its recognized meaning? I have consulted Cambridge Dictionary online (<https://dictionary.cambridge.org/dictionary/english/use>) and read there some interpretations of the *verb* “use” including:

- “to put something such as a tool<...> to a particular purpose”,
- “to take advantage of a person or situation; to exploit”.

I do believe that a research paper may be treated as a tool. It is certainly *not* “a person or situation”, but it *is* very much possible for a citer to take advantage of it, e.g. by placing his own study in a favorable cognitive context, by interpreting the ambiguous findings as supporting his/her standpoint, by convincing the research domain in his own rightness via citing similar results obtained by more authoritative authors... Some of the above actions of the citers with the cited works could be called “exploitation”.

And what about the noun “use”? It is simple – according to the one of the wordings of the same dictionary, the noun “use” means “the act of using something” (<https://dictionary.cambridge.org/dictionary/english/use>). So, if we call such citers’ actions “use”, then there will be a correct usage of this noun.

Another paper cited in the review by I. Tahamtan & L. Bornmann (2019) that contains the similar classification scheme of citation functions is the paper by M. Hernández-Alvarez et al. (2017). According to it, the “primary functions” of citations are “use”, “comparison”, “critique” and “background”. On account of this paper, my position is the same: “comparison”, “critique” and “background” are just various kinds of *use*. Apparently, there is no need to repeat the argumentation.

The above were just a couple of examples. However, in relation to the rest of works analyzed by I. Tahamtan & L. Bornmann (2019), my impressions seem to be quite similar. On one hand, I. Tahamtan & L. Bornmann (2019) themselves stated, that “use” can be seen in several studies <...> *which happens to have a high frequency compared to other functions*. “Use” has also been found to be among the most frequent verbs in different articles sections types” (italicized by me – V.S.L.). Again, “use” was a popular function in the classification scheme of several studies. For example, R. Jha et al. (2017) indicated that the most frequent citation function was “use” (17.7%), and that the accuracy of their proposed classifier in recognizing “use” (60%) was higher than that of other functions. “Use” was found to be mentioned quite frequently in most sections, specifically methods and introduction sections”... But on the other hand, I. Tahamtan & L. Bornmann (2019) stated that “low precision of the classification scheme in detecting citation functions” was mentioned in one of the works under analysis; while, according to another cited paper, “the issue with the studies that use automated data processing is that *the classification schemes they propose for identifying citation functions do not yield reliable results* (Hernández-Alvarez et al., 2017; Tahamtan & Bornmann, 2019).

³ As for the “neutral” “citing sentences” (“A citing sentence is classified as “neutral” when it is a neutral description of the cited work or if it doesn’t come under any of the above categories” (Jha et al., 2017, p. 97), I think that there are some kinds of the use that were just not identified by R. Jha et al. (2017): in fact, I cannot imagine useless citing! Why mere reading and even the information retrieval activity is called “document usage” (Kurtz & Bollen, 2010, p. 6), but the next stage of consumption of a document, viz. citation, could not be called use?! (Lazarev, 2017, p. 8-9).

Also, the review (Tahamtan & Bornmann, 2019) states that “the appearance of multiple cue phrases in the same sentence may result in *the low precision of the classification scheme in detecting citation functions*” (italicized by me in both quotations – V.S.L.). Reading all these fragments I cannot help but think that it is odd to hope for a successful increase in precision of citation functions by a bibliometrician – which is an *intermediary*, – while *the citers themselves* very often cannot recognize their own reasons for citing a particular source and not citing another one: questioning the authors about motives for citing or not citing cannot reveal the actual reasons why the author cited as he/she actually did (Nicolaisen, 2007, p. 615).

So, although the I. Tahamtan & L. Bornmann (2019) stated that “in practice they (citations – V.S.L.) are based on different reasons and have different functions”, that “giving all citations equal value overlooks the numerous potential functions they have for citing authors” and that, consequently, “through conventional citation analysis, we are unable to identify the *specific* contribution of a given work to the citing work” (italicized by me – V.S.L.), I, having grounded on the above consideration, cannot believe that the described attempts “to identify the specific contribution” based on the described conditional and disputable classification schemes are fruitful. I think that at this stage of analysis it is a high time to recollect the following wording by Anthony van Raan: “It is if a physicist would strive for creating a framework of thermodynamics by making a ‘theory’ on the behaviour of individual molecules. Certainly there are crucial ‘behaviour characteristics’ of molecules: magnitude and direction of velocity, angular momentum. But only a statistical approach in terms of distribution-functions of these characteristic variables brings us to what we need: a thermodynamic theory” (van Raan, 1998, p. 136). Analogously, if we accept that “all citations” are equal, we inevitably come (rather return!) to an obvious conclusion that citation counts reflect just *use* of the cited works – and nothing else (that specific reasons, motives and *kinds* of the use may be, of course, different). Citation counts reflect *use* of the cited works – this viewpoint was expressed in a number of works (Mirskaya, 1976; van Raan, 1998, p. 133; Glaser & Laudel, 2007, p. 104-105; Bornmann, Mutz, Neuhaus, & Daniel, 2008, p. 93 and many more, not mentioning the ones published by me!).

But *what property of the document* is reflected by its use? Use, in turn, reflects their *value*. “In fact, in the Information Science, the notion of value is defined as “the property of information determined by its suitability for practical use in various areas of purposeful human activity to achieve a certain goal” (Dictionary, 1975, p. 464). The value of information is directly related to the use of the document, no matter whether it is use of a single *document* or of a scientific periodical as an organized set of *documents*: outside the scientific document, human society does not have scientific information, since it is the document that is the material form of its fixation. So, it should be clear that, as a method of *direct* assessment of the actual use of <...> cited issues <...>, citation counts is a method of *indirect* assessment of their *value*. The updated definition of *value* does not contradict the above, but confirms it as it runs that “value, including scientific one, is not a purely natural property of the object (in our case, information), but is formed as a result of the subject-and-practical interaction of the object and the subject. Any value is conditioned by practice, understood in the broadest sense of the word, and practice acts as an objective determinant of value. <...> Value is an objective property being a product of the practical relationship (interaction) of the object and the subject (Zozulich & Vendeleva, 2008, p. 232)” (Lazarev, 2018a, p. 96-97).

Some supporting ideas might be found in the paper by C. Thornley et al. (2015) which is also analyzed in the review by I. Tahamtan & L. Bornmann (2019). For instance, C. Thornley et al. (2015) stated, that “this study does show that when a researcher cites a work it is nearly always because that work has something *valuable* to contribute to the researcher's own work and that the researcher regards the cited work and its author as reliable and trustworthy sources”

(italicized by me – V.S.L.). So, C. Thornley et al. (2015) drove to the conclusion that citations reflect value.

It is believed that citations count may reflect various properties (Bredikhin, Kuznetsov, & Shcherbakova, 2013, p. 95-110; Lazarev, 2017, p. 5; Lazarev, 2018b, p. 17-51). Very much indirectly and probabilistically it may. But *value* of scientific document is a property that is reflected *par excellence* as having causal associations with citedness via *use* (of the cited works by citers). There is only one intermediary between the indicator (citations count) and the reflected property (value); so, reflected by the documents citedness *in the least indirect way possible*.

Conclusions

The presented analytical interpretation evidence that, in spite of themselves, the reviewers I. Tahamtan & L. Bornmann (2019) supported the obvious idea that citation counts is a method of *direct* assessment of the actual use of cited issues and, consequentially, is a method of *indirect* assessment of their *value*. Also, I believe that it follows from the review by I. Tahamtan & L. Bornmann (2019) – contrary to the wishes of the authors, – that a detailed examination of the reasons, motives of citations, the use of their detailed classifications of citations are not a prospective direction branch of bibliometric/scientometric research. The undertaken interpretation shows that *value* of scientific document is a property that is reflected *par excellence* as having causal associations with citedness via *use* (of the cited works by citers).

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ПРО МОЖЛИВОСТІ ОЦІНКИ ВЛАСТИВОСТЕЙ НАУКОВИХ ДОКУМЕНТІВ НА ОСНОВІ ЇХ ЦИТОВАНOSTІ (АБО ЗНОВУ ПРО ТЕ, ЯКА Ж, НАРЕШТІ, ВЛАСТИВІСТЬ ВІДОБРАЖУЄТЬСЯ В ЦИТОВАНOSTІ *PAR EXCELLENCE*?). ЧАСТИНА 1: ЦІННІСТЬ

Метою дослідження є розгляд найбільш свіжих робіт з проблеми феномену, відображеного кількістю цитувань наукових документів. **Метод** полягає в інтерпретації останніх наукових публікацій фахівців в області бібліометрії. Отримані **результати** свідчать про те, що властивість наукових документів, переважно відображена їх цитованістю, це – їх цінність. Робиться також **висновок** про те, що спроби визначення "відносного вкладу" цитованих документів на основі умовних і спірних класифікаційних схем цитування, які здійснювалися в 2006-2018 роках, не є плідними.

Ключові слова: кількість цитувань; причини цитування; мотивація та функції; класифікаційні схеми; цінність

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LAZAREV V. S.

Scientific Library, Belarusian National Technical University (Minsk, Republic of Belarus),
e-mail vslazarev@bntu.by, ORCID 0000-0003-0387-4515**ON THE POSSIBILITIES OF EVALUATING PROPERTIES OF
SCIENTIFIC DOCUMENTS ON THE BASIS OF THEIR CITATIONS
COUNT (OR AGAIN: WHAT PROPERTY IS REFLECTED BY
CITATIONS COUNT *PAR EXCELLENCE*, AFTER ALL?).
PART 2: QUALITY?**

The **objective** is consideration of the recent works on the problem of the phenomenon reflected by citations count of scientific documents with a slant to the papers analyzing the citations count possibilities to reflect *quality* of cited research. The **method**: authoritative definitions of quality were under analysis and interpretation of corresponding research publications in the context of the results the mentioned analysis was undertaken. The **results**: citations count does not reflect quality of cited research as there are not causal relations between quality and citedness. The **conclusions**: since in practice the results of the citations count for documents value assessment and of peer assessment of their quality may mostly coincide, this makes it possible still to use citations count as a *proxy* indicator of quality. As for the “negative” citations, they seem to refer to cited items of high value, but of low quality.

Keywords: citations count; properties; quality; value

Introduction

Despite the confidence of a number of authors, including the author of this article, that citations count reflects the *value* of cited works, still a number of authors believe or take for granted that the reflected property is *quality*. “Even today, citation indicators are sometimes presented as measures of scientific quality”, state D.W. Aksnes, L. Langfeldt & P. Wouters (2019, p. 4). I would even say: rather frequently than sometimes. In 2018 I published a special paper that was aimed to refute the recent “citations count reflects quality” views (Lazarev, 2018), and I feel this paper already needs to be replenished! The most recent evidence of the prevalence of the “citations count reflects quality” opinion is the conference paper by M. Teplitskiy, E. Duede, M. Menietti, & K. Lakhani (2019) specifically aimed at the empirical refutation of this statement: the statement was treated as universally recognized, and its refutation – as a sensation. To my mind, one might say that citation reflects the quality of the cited document only as about conclusion from the normative theory of citation (mostly rejected by the scientific community), but we cannot mindlessly repeat “citation reflects quality” without looking into the vocabulary definitions of “quality” and without considering the essential characteristics of citing! However, this statement is repeated again and again – just because “it is accepted”, and also because it is contained in many works recognized as classical – as for example, the paper by S. Cole & J. R. Cole (1967). These papers apparently do not receive critical consideration, because no attention is paid to such wordings, for example, as “The number of citations is taken to represent the relative scientific significance or ‘quality’ of papers” (Cole & Cole, 1973, p. 21), though significance and quality are different properties (cf. the definitions of ‘quality’ stated below with the definitions of “significance” at <https://www.lexico.com/en/definition/significance>)!

The prevalence of the “citations count reflects quality” viewpoint requires further consideration of the properties reflected by citations count involving the musings on the degree of mediation of such a reflection, as well as on the reflection of a certain property *par excellence*.

Methods

Different definitions of *quality* were analyzed and the results of the analysis were compared with widespread arguments supporting the “citations count reflects quality” idea and with the essence of citedness featured in the first part of this paper. Special attention was paid in this context to the most recent paper by D.W. Aksnes et al. (2019) as their authors distinguish *several* “dimensions” of quality, casting a rather unexpected light on a rather familiar understanding of this property.

Results and Discussion

Quality may be in all the cases defined as “degree of conformance to a standard” (Gove, 1993, p. 1858) (including speculative “standards” that might exist only in the evaluator’s mind and not be formulated in a documentary format) or to requirements (Sistemy menedzhmenta..., 2015, p. 15). In the international standard ISO 5127:2017(en) “Information and documentation – Foundation and vocabulary” it is straightforwardly stated that quality is the “entirety of features and characteristics <...> of a product or service <...> that bear on its ability to satisfy stated or implied needs”. (Mind, that “implied” means not necessarily formulated in a documentary form!) Also, in my paper (Lazarev, 1996, p. 274), having grounded on the definitions of (Radlov, 1904, p. 127) and of (Encyclopedia Britannica, 1969, p. 915), I maintained that “quality” is cognized rather abstractly, not in the process of (or in relation to) the use or satisfaction of the concrete needs, strongly depending on a cognizing subject (Radlov, 1904, p. 127) and with the aid of some *ideal standards*” (Encyclopedia Britannica, 1969, p. 915).

If somebody thinks that too old definitions were used in the cited paper (Lazarev, 1996, p. 274), let us immediately consult just the *current* one. Here it is: “Quality is a judgment of how excellent something or someone is” (<https://www.lexico.com/en/definition/significant>). So, it is seen from the definitions that, by its very nature, *quality of a scientific document or a collection of documents* is a property that is quantitatively characterized by *expert evaluation (peer reviewing)*. At the same time, as it is was shown in Part 1, by *its* very nature, *citations count* is primarily a “measure” of the *use* of scientific documents which, in turn, indirectly reflects their *value*. Citations count has no causal relationships with *quality* (Bornmann & Haunschild, 2017; Ricker, 2017; Lazarev, 2018) – it is so simple!¹ Acknowledgment or credit “contributions by others” “covers only part of the dynamics” <of citing>² (Aksnes et al., 2019, p. 5) and, even when they do, they are just motivations of citing, not its reason, while quality is just the consequence of acknowledgment or credit!

Some experts believe, however, that “a peer evaluation may involve assessments of factors besides scientific quality” (Aksnes et al., 2019, p. 7). But what other factors could be “besides scientific quality” if conformance to the requirements (which is assessed) is quality by its

¹ Apropos, in the paper (Thornley et al., 2015) cited by the review by I. Tahamtan & L. Bornmann (2019), it is noted, that “the <citers> responses that could be grouped under normative reasons account for 19.18%, so these are in the minority” – and this looks as one more empirical blow to the popular normative citation theory on which the idea of the “quality” of the cited document as a property reflected by its citedness is based. Also, the paper by C. Thornley et al. (2015) stated that “high levels of citation are an indicator of trust and authority, which is at least a necessary, if not sufficient, condition for impact, but *are too varied in meaning to be used as a sole measurement for quality*” (italicized by me – V.S.L.).

² It is implied here that, “according to Merton’s view, the norms of science oblige researchers to cite the work upon which they draw, and in this way acknowledge or credit contributions by others” (Aksnes et al., 2019, p. 5).

definition?! No matter which requirements are formulated, – conformance to the requirements (or “stated or implied needs”) is quality.

As related to exactly scientific documents, very popular, e.g., is the following definition: “‘Quality’ is a property of the publication and the research described in it. It describes how well the research has been done, whether it is free from obvious ‘error’ <...>, how original the conclusions are, and so on” (Martin & Irvine, 1983, p. 70)³. It is clear that the mentioned “constituents” of quality are not reflected by the citations of publications as “a “mistaken” publication can have a large impact by stimulating further research” (Aksnes et al., 2019, p. 10) – everything is exactly the opposite, – while, a well-done paper may just be irrelevant to the research of a potential citer and, accordingly, not being cited at all!

In the recent paper (Aksnes et al., 2019), the following “elements” of quality are mentioned: “originality, significance, rigor, impact, vitality, and sustainability” (Aksnes et al., 2019, p. 7). Also, on page 8 of the same paper the existence of the following “dimensions” of quality is asserted: “plausibility, <...> originality, <...> scientific value, <...> societal value”.

Significance, impact, value and quality are apparently different standalone properties: one can verify this statement by a simple comparison of their definitions cited in Parts 1 and 2 of the present paper (except of “impact”, an overview of the definitions of which was presented in (Lazarev, 2019)). Of course, in accordance with a general definition of quality, any other properties can be “substituted” as requirements, but will this not “blur” all the semantic boundaries, the intuitive clarity of assessments, the clearness of their perception?! And in any case, the semantic differences between value comprehended through use and quality comprehended through a priori comparison with the “standard” are too great.

Based on their review of the literature, D.W. Aksnes et al. (2019) tried to consider the possibilities of using citation counts to evaluate listed “dimensions of research quality”.

Their conclusions are the following: as for the plausibility, “it seems unlikely that citations can be seen as valid indicators of the solidity of the publications” (Aksnes et al., 2019, p. 9); as for originality, “no simple relationship between originality or novelty and citations” was found (Aksnes et al., 2019, p. 9); as for “*societal value and relevance*” – *to their mind, it is poorly reflected by citation counts* (Aksnes et al., 2019, p. 10-11). And as far as for scientific value, again, it is absolutely different and standalone property that is difficult to imagine being included in the list of “requirements” of quality... As D. W. Aksnes et al. (2019) believe, “scientific value and significance <which are different properties, according to their very definitions! – V.S.L.> are dimensions of the quality concept to which some citations may most directly relate. This is commonly argued as follows. When a scientist refers to a paper, it has been useful or relevant <different notions – V.S.L.> in some way for the present research or for the writing of the publication. Thus, frequently cited articles may be assumed to have been more useful than publications that are hardly cited or not at all, and possibly be more useful and thus important in their own right <...>. This means that the number of citations may be considered as a measure of the article’s usefulness, impact, or influence <which are also different properties, according to their very definitions! Again, see the paper V.S. Lazarev (2019) – V.S.L.> on other research” (p. 10).

What is the subject matter of this passage? Is it value, significance, usefulness, relevance, impact or performance?! Having “cleared” the terminological and semantic confusion of this fragment, we come to seeing the authors’ involuntary recognition that the citation reflects directly the use and – through it – indirectly reflects the value of cited documents! But this – I repeat it once again – is a completely different property. As for the other “dimensions” of quality, D.W. Aksnes et al. (2019) confirm themselves that the citations count is in principle unsuitable for their evaluation.

³ These “constituents” are the concrete requirements mentioned in a general definition of quality.

Yet, a number of times correlation was revealed between the number of citations to the collections of documents and the results of their peer reviewing (Virgo, 1977; Lawani & Bayer, 1983; Rinia, van Leeuwen, van Vuren, & van Raan, 1998 and many more). Due to this correlation, we can assume that the quality of scientific documents might still be also evaluated by the citedness level. *However, such an evaluation is purely probabilistic, not causal.* Citations do not confirm quality of cited works; the portion of citations may just *coincide* with the portion of corresponding expert evaluations. Documents *value* is reflected by citations count *par excellence*, while the “reflection” of *quality* is just a matter of statistics. This becomes possible due to the often practical coincidence of these properties. However, the results obtained by J. Nicolaisen (2002) demonstrate deviations in the corresponding distribution supposedly caused by “negative citation”. If the cause is really this, then these deviations point to very interesting documents that are *valuable, but not qualitative*: when analyzing works that then receive “negative references”, the citing author finds new, additional, developing arguments to present his view of the problem, being “provoked” by the publication that later received a “negative reference” from him. This “provocative stimulation” determines the value of the “negatively” cited works, the value that is confirmed by its citedness figures. But as for the *quality* of such works, its assessment will be quite different. Hence, “negative” citations seem to refer to items of high value, but of low quality.

So, the presence of the studies which results show a good correlation between the results of the analysis of documents citedness and documents expert evaluation does not indicate the adequacy of the method of citation analysis to assess the *quality*, but demonstrate a certain coincidence of the assessments of the properties of “value” and “quality” in practice and, apparently, about proximity (but not identity!) of the essences of value and quality. Since in most of the studies that I know such correlation is invariably confirmed, the citation analysis can be successfully applied to assess the quality of a large number of scientific documents in cases where it is technically unacceptable to conduct an expert evaluation. It is only necessary to understand that it *actually* reflects – due to cause-and-effect relationships – *not quality*, but *value*. However, in practice these properties differ from each other relatively rarely (it is quite confident to talk about their practical mismatch only in cases of “negative citations”).

In the present paper, I did not consider the concept of impact (which is an unnecessary concept as applied to citations count, as I believe and as I tried to demonstrated in (Lazarev, 2019), and the problem of the reliability of the evaluation of use of documents by citations count as compared with the reliability of the same evaluation by assessing readers’ activity in search, queries, bookmarking documents (which may be another way to assess documents value). It is because the first problem is reflected in (Lazarev, 2019), while the second one – in (Lazarev, 2017, p. 8-10).

Conclusions

So, I have considered the most recent work on the problem of the phenomenon reflected by the documents citedness which was based on highlighting the various “dimensions” of the quality of cited documents and on attempts to analyze the possible associations between the citedness of research works and the various “dimensions” of their quality (Aksnes et al., 2019) in the context of analysis of both quality definitions and of some other papers devoted to assessment quality by citations count. This led to the confirmation of the following statement: citation counts reflect documents value *par excellence* and do not have any causal relations with their quality. However, in practice the results of the citations count for documents value assessment and of peer assessment of their quality can mostly coincide. This makes it possible to use citations count as a proxy indicator of quality documents. (As for the “negative” citations, they seem to refer to items of high value, but of low quality.)

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ПРО МОЖЛИВОСТІ ОЦІНКИ ВЛАСТИВОСТЕЙ НАУКОВИХ ДОКУМЕНТІВ НА ОСНОВІ ЇХ ЦИТОВАНOSTІ (АБО ЗНОВУ ПРО ТЕ, ЯКА Ж, НАРЕШТІ, ВЛАСТИВІСТЬ ВІДОБРАЖУЄТЬСЯ В ЦИТОВАНOSTІ *PAR EXCELLENCE*?). ЧАСТИНА 2: ЯКІСТЬ?

Метою є розгляд свіжих робіт з проблеми феномена, що відображується кількістю цитувань наукових документів, з ухилом на статті, котрі аналізують можливості кількості цитувань для відображення якості цитованого дослідження. **Методи.** Були проаналізовані авторитетні визначення якості; в контексті проведеного аналізу було здійснено інтерпретацію відповідних наукових публікацій. Як **результат** було встановлено, що кількість цитувань не відображує якості цитованого дослідження, оскільки причинно-наслідкові зв'язки між якістю й цитованістю відсутні. **Висновки.** Через те, що на практиці результати підрахунку цитувань для оцінки цінності документів та експертної оцінки їх якості можуть в основному збігатися, можливо, як і раніше, використовувати підрахунок цитувань в якості непрямого, що заміщує (проху), показника якості. Що стосується "негативних" цитувань, то вони, мабуть, відносяться до цитованих документів високої цінності, але низької якості.

Ключові слова: кількість цитувань; властивості; якість; цінність

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AUXILIARY SERVICES FOR SCIENCE IN MODERN LIBRARY: NEW INFORMATION SERVICES FOR THE DEVELOPMENT OF SCIENCE COMMUNICATION

Objective. The paper explains the need for providing auxiliary services for science in university library within modern scientific communication and covers main facets of library work in Kryvyi Rih State Pedagogical University (KSPU), emphasizing instructional services for science metrics. **Methods.** Research was conducted using synthesis, structural and functional analysis, systematic approach, survey, interview, and conversation. **Results.** Successful reimagining of library's functions is the key to university's success within modern science communication. Expanding basic library competencies makes university library a reliable foundation for research activities in higher education institution. **Conclusions.** The experience of auxiliary services for scientists in university library today possesses new meanings, leading to expansion of the range of information services provided by university librarians. University's science metrics is one of the determining indicators of authority of its researches; and today it is the library that serves as the foundation for implementing and utilizing science metrics data in university.

Keywords: university library; auxiliary services for science; information and library services; science communication; library and science metrics

Introduction

Today, the mission of instructional services is becoming one of the leading functions of a university library. Research of science metrics is actively used to evaluate the performance of a modern scientific-educational institution with the use of bibliometric analysis of publication activity in scientific document flow of a higher education institution (Nikolayenko & Rybalchenko, 2019). Doing science, each member of faculty uses international services for science metrics: frequently updates personal Google Scholar account, receives new citation rates, works with the registry of unique scientist identifier ORCID, studies new researches in his or her branch using citation and abstract databases Scopus and Web of Science. The position of librarian as an active participant in the scientific and educational process is changing: library professionals are involved in the development of modern system of science communication; they help to increase the representation of university studies in science metrics databases, provide advice on improving the credibility of scientific findings. Such cooperation with the university scientists determines evolution of the trends in providing auxiliary services for science by the university library. One of the leading Ukrainian library scientists, T. O. Kolesnykova emphasizes that it is through partnership with researchers a new milestone of library service development has been achieved, the distinguishing features of which are:

- shifting scientific libraries' focus of attention from services for the general reader to prioritizing services for the scientists;
- active partnership of scientific libraries at all stages of research lifecycle: from providing information and access to collections of documents to publication, preservation, dissemination and further analysis and evaluation of research results (Kolesnykova, 2016).

According to N. Nikolayenko, bibliometric indicators are needed for the following important facets of the functioning of a higher education institution:

- evaluating the university's scientists' achievements according to authoritative international and Ukrainian ratings;
- confirming the status of a higher education institution;
- improving personal ratings of the scientists affiliated with the university;
- accessing new opportunities for modern higher education (Nikolayenko, 2018).

The Library of Kryvyi Rih State Pedagogical University is directly involved in the science metrics activities of the higher education institution. Alongside traditional forms of informing scientists, librarians carry out a series of activities aimed at increasing the presence of members of the academic community of the university in the modern scientific environment, facilitating establishment of new scientific relations with foreign colleagues, exchange of theoretical and practical experience. During the creation of personal web pages for scientists, specialists of the KSPU library constantly provided detailed consulting on updating personal accounts, completing and editing information about achievements of the scientists, their professional biography, research interests, positions and academic titles, published papers and participation in conferences, their works and dissertations, informal education, etc.

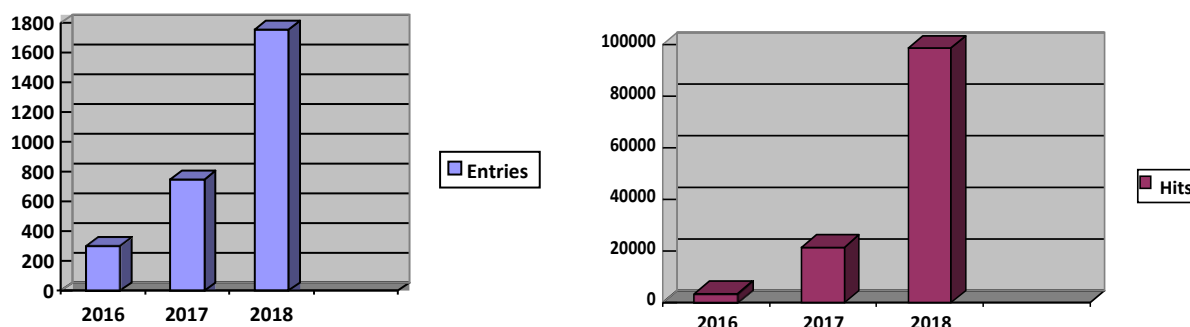
Information seminars, organized by the university librarians, play an important role in promoting awareness of the modern system of science communication and dissemination of skills, needed for efficient management of science metrics. For example, since October 2017, when Kryvyi Rih State Pedagogical University gained access to the Web of Science platform, scientists and librarians have frequently participated in series of webinars by Clarivate Analytics, learning new facts and skills necessary for using the resources and tools for science metrics, refining search skills by learning to combine available filters and tags across the database, studying and discussing the peculiarities of accounting for scientific findings and the issues of publishing papers in reputable professional journals, while avoiding the "predatory" fakes.

An important facet of providing the auxiliary library services for science is assisting in the publication of papers in the university's electronic archive, allowing open access to full-text materials. Availability of these electronic publications contributes to improvement of citation indexes of the university's scientific findings, increases credibility of scientists as well as the presence and visibility of their works in the information space of their respective branches. This electronic library provides a reliable information system, capable of storing and ensuring efficient usage of various collections of electronic documents (text, visual, audio, video, etc.) localized within the system and also accessible through telecommunication networks (Antopolsky & Vigursky, 1999).

Quantitative indicators of the use of the KSPU repository

Year	2016	2017	2018
Entries	305	750	1759
Hits	3473	21574	98639

Quantitative indicators of the use of the KSPU repository (*continuation*)



In addition, archives and new issues of scientific journals and collections of scientific papers are available via KSPU's own online resource "Scientific Publications of the University". In order to improve search capabilities and consolidate the authorship of scientists, each publication in these collections is assigned an international digital identifier DOI. This constitutes an important element of the university-wide system of information support for scientific research.

Among challenges, faced by librarians who provide auxiliary services for science, fulfilling the advisory mission of university library, are lack of access to modern information resources and external databases, necessary for successful research, problems of staff training and redistribution of functions between library departments, issues of integration processes that require close, well-coordinated collaboration between those responsible for various parts of library work.

Methods

The complexity of studying library and bibliographic activity lies in the multifaceted nature of its functions, which are closely interrelated and interdependent. Only their totality can constitute the essence of the library work as a system. This necessitates the use of a variety of methods for analysis, depending on the purpose of the study.

Providing auxiliary services for science is the object of our research; defining it, we rely on the principles of a specialized approach to the study of library information processes. At the same time, with the purpose of synthetic approach to the topic under study, we use a system of various methods, as well as the results of previous interdisciplinary research.

Systematic approach to studying the subject of our research - new information services of university library - determines that providing auxiliary services for science by library professionals is considered as a single complex system.

Implementation of the systematic approach is necessitated by the branched nature of activity and increase of complexity within the library structure, changing its backbone functions, expanding interlibrary cooperation, emerging necessity of creating a coordinated system of cooperation, difficulties acquiring and updating resources and sometimes lack of available sources of acquisition, branched library and bibliographic requests and the need for their prompt and reliable fulfillment.

The basic principles of systematic approach as a methodology for research of auxiliary library services for science are:

- defining individual components of the library's auxiliary services for science;

- revealing connections between them;
- studying interconnections of this type of library work with activities of other structural units of the University;
- discovering prospects for further development of the library's auxiliary services for science.

Structural and functional analysis is an important element of the methodology. It involves treating the object of study as a system; its components are separated and their functions are defined.

Survey is another method for researching information services to promote the development of science communication. It allows revealing facts about phenomena and processes, motives and plans, for example, those regarding the introduction of new communicative components to the interaction between the library and the user. The interview method is related to the previous one: it is another kind of an oral survey. Interviews are often considered the same as conversation because of their external similarity. Conversation techniques, which were also used during our research, and interview are quite alike; nevertheless, they are significantly different, too. The purpose of conversation is providing specific assistance to the user; the purpose of interview is obtaining relevant information, analyzing and summarizing it. It is during the interview that information is shared not only by the respondent for the interviewer, but also vice versa. Therefore, professionalism of the interviewer is subject to increased requirements: he or she should be not only proficient in the interviewing method, but also has to be knowledgeable in the subject matter, be able to correctly use the set of terms and technology, necessary for the work process.

In 2017 and 2018 IT department of the library conducted 72 interviews with the scientists of Kryvyi Rih State Pedagogical University. Main topics included the issues of using science metrics databases and updating personal accounts of the scientists (“How often do you update information regarding your research activity?”, “How useful are science metrics databases for your branch?” were among the interview questions).

Results and Discussion

Modern transformative processes taking place in the field of library and information services correspond to the qualitative changes in information needs of society. All practical and theoretical activities of library professionals aim to improve the efficiency of meeting current needs of users and fulfilling their requests.

In order to achieve this goal, a constant systematic self-development of professional information services providers is required. It is not possible to acquire new library and information competencies without constant self-improvement and professional development of library specialists. During communication with peers from other libraries, exchange of experience, participation in scientific and practical conferences, seminars, round tables, etc. the components of providing auxiliary services for science are being distinguished, among which the leading position belongs to the introduction of new information services. Studying the current findings of library science allows developing a comprehensive strategy for work and modernizing the main processes, needed to improve effective science communication for researchers based in higher education institutions.

The term “innovative experience” should be used only regarding those modern developments, which comprise the most efficient ways of using the tools of library and information activities. Such developments include those facilitating successful implementation of

previously undiscovered forms and methods of library work and those improving and developing the more traditional types of professional activities.

Researcher V. Gorovy emphasizes that the libraries' transition to new technologies and managerial decisions, caused by growing public requests, is characterized by a mixed system of traditional and new approaches to information services (Gorovy, 2005).

The hybrid model, suggested by T. O. Kolesnykova, facilitates harmonic functioning of two models in a single library: the classic one and digital library, institutional repository, new digital science model of library-based publishing. At the same time this model implies its gradual transformation into analytic and cognitive communication model of a library establishment with the features of a media center (Kolesnykova, 2011).

The issue of coexistence, of synergy between traditional and innovative ways of providing information services for the library users remains a topic of discussion in the professional community of librarians. In today's context, it seems appropriate to use both paradigms of information services, depending on the needs of users and the specifics of the information provided.

According to the research of the university scientists' experience with tools provided by science metrics databases, there is considerable demand for auxiliary library services for conducting research in various branches. Besides, the usage trends of university digital archive increased significantly, as it is effective means of improving citation indexes. According to the data presented in the table and chart above, the quantitative indicators of institutional repository use have increased several times in recent years. This is due to the active implementation of the electronic segment of the university's science communication system.

Conclusions

The dynamic development of modern library science requires the creation of an updated methodological apparatus for determining further research trends in the fields of library metrics, science metrics and information metrics. In library practice, interaction between elements of practical experience is manifested in new trends of the library science. Of course, single facts of experience may indicate some deviations from this trend; however, these errors do not change the overall trend, defined through aggregating the facts of practice.

Facts indicate that the problems of the auxiliary branch of library services for scientists require further theoretical study and practical elaboration. The experience of introducing this element to the work of the Kryvyi Rih State Pedagogical University library proves that modern information services, assisting the science metrics, are the required forms of library work. The constant transformation of new experiences into modern, verified by daily practice methodological foundations for the functioning of library creates a number of opportunities for in-depth research, systematization and synthesis of new work foundations, aimed at comprehensive information support and prompt providing auxiliary services for scientists, based in higher education institutions.

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НАУКОВО-ДОПОМІЖНА ДІЯЛЬНІСТЬ СУЧАСНОЇ БІБЛІОТЕКИ: НОВІ ІНФОРМАЦІЙНІ СЕРВІСИ ДЛЯ РОЗВИТКУ НАУКОВОЇ КОМУНІКАЦІЇ

Мета. У роботі передбачено обґрунтувати необхідність науково-допоміжної діяльності бібліотеки закладу вищої освіти в сучасних умовах розвитку системи наукових комунікацій, а також висвітлити основні напрями роботи фахівців бібліотеки Криворізького державного педагогічного університету (КДПУ) під час надання консультаційних послуг науковцям із питань наукометрії. **Методика.** Під час дослідження було використано такий методологічний апарат, як комплекс методів синтезу, структурно-функціонального аналізу, системного підходу, опитування, інтерв'ю, бесіди. **Результати.** Успішна переорієнтація основних функцій бібліотеки закладу вищої освіти є запорукою ефективного функціонування університету в сучасній системі наукових комунікацій. Розширення та поглиблення базових компетенцій бібліотечних фахівців є необхідною умовою становлення університетської бібліотеки як надійної основи науково-дослідницької діяльності закладів вищої освіти. **Висновки.** Накопичення нового досвіду з науково-допоміжної діяльності бібліотеки ЗВО стало поштовхом для розширення спектру інформаційних сервісів, що входять до сфери компетенцій бібліотечних фахівців. Наукометрична діяльність університету стала одним із визначальних показників авторитетності його наукової роботи. Саме університетська бібліотека виступає сьогодні базовим структурним підрозділом із упровадження й використання можливостей наукометричних показників для відображення ефективності роботи університету.

Ключові слова: бібліотека закладу вищої освіти; науково-допоміжна діяльність; бібліотечно-інформаційне обслуговування; наукова комунікація; бібліометричні й наукометричні показники

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PROMOTING SCIENTIFIC RESEARCHES OF THE SCIENTISTS: COMPREHENSIVE SOLUTIONS

Objective. One of the main tasks of the University Library today is to create a new additional effective virtual environment for research activities - its own open access electronic information resources. The work is aimed at considering virtual communication forms of representing scientific achievements of researchers of the National Technical University “Kharkiv Polytechnic Institute” (NTU “KhPI”) in various fields of science, production and industry. **Methods.** Using the example of specific bio bibliographic scientific projects (schools), which are being developed in KhPI Scientific and Technical Library, a comprehensive approach to their realization is considered. **Results.** Due to a comprehensive approach, the concept of information integration was first implemented – the electronic resources of the Library site, the University repository and electronic and paper versions of the journal were combined. **Conclusions.** Only through joint efforts of scientists and librarians can we promote and disseminate the results of university research in the modern scientific and educational space and raise the ranking and image of our university among higher education institutions of Ukraine and the world.

Keywords: KhPI scientific schools; promotion of scientist's achievements; scientist's bio-bibliography; own electronic resources

Introduction

The University's intellectual center has always been the Library, which follows new visions and accumulates the strategy of developing the scientific communication environment. Thanks to the productivity of cooperation between the University and the Library, we can present in any form and format the directions of scientists' activities and their world discoveries in science and technology.

One of the main tasks for today is to create a new additional effective virtual environment for research activities - own open access electronic information resources. It is more appropriate for libraries to focus their resources on enhancing electronic content in the open space, presenting materials on the history of the university, promoting the scientific achievements of its community, scientific schools and information about their founders and bright representatives (Semenenko, & Poberezhna, 2017), which enhances the image of the university, informs the scientific community of Ukraine about the achievements of NTU “KhPI” scientists, their significant contribution to the development of scientific schools. It is the availability of free access to full-text resources that significantly improves the training of higher education institutions, makes education more accessible, and the diversity of forms of presentation of scientific achievements increases the interest of users.

Methods

The Scientific and Technical Library of National Technical University “KhPI” develops several bio-bibliographic scientific projects (schools) related to the formation, development and world recognition of NTU “KhPI” – “Scientific School of Electrical Engineering”, “Scientific School of Chemistry”, “Rectors (Directors) KhPI” and “Scientists of NTU “KhPI” – education, science, industry: the best editions». The advantage of projects is a comprehensive approach to their implementation.

Project objectives:

- popularization of the influence of scientific achievements of NTU “KhPI” on the formation and development of a specific industry;
- increasing the accessibility of the achievements of the best polytechnic scientists by enhancing the presence of their scientific publications in the electronic information environment;
- lend-out increase of documents from the collection «Publication of scientists of NTU “KhPI”»;
- restoration and compilation of the bibliography of NTU “KhPI” scientists.

Results and Discussion

Thanks to a comprehensive approach, the concept of information integration was first implemented – the electronic resources of the library site, the University repository and electronic and paper versions of the journal were combined. Project Summary:

- the maximum list of publications of scientists / directors / rectors has been revealed;
- historical materials are presented in the form of a series of virtual exhibitions,
- at virtual exhibitions information about life and scientific activity, photos, bibliography of works of a scientist and about him/her with references to electronic versions of the main texts is presented;
- electronic versions of the full texts of the main articles from scientific journals are included in the scientific circulation (as evidenced by the statistics of text downloads);
- texts are scanned, full texts of publications are placed in the institutional repository;
- bibliographic records in virtual exhibitions have links to electronic versions of the full text of articles (placed in the collection “History of NTU “KhPI” in the institutional repository eNTUKhPIIR - <http://repository.kpi.kharkov.ua/>);
- creative design of the color page of the journal focuses on the main works of a scientist and the direction of his/her activity (Fig. 1).

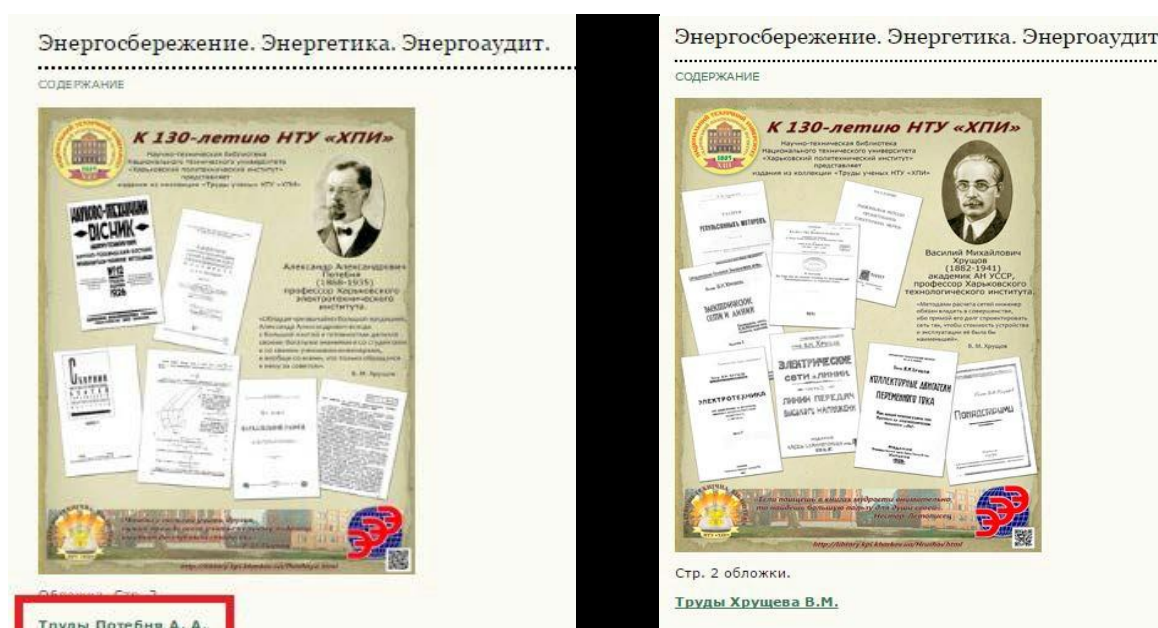


Figure 1. Color page of “Energy Saving. Power engineering. Energy audit”

The publications of the past years are introduced into the scientific circulation, historical facts about scientists are presented on the basis of primary sources and archival information; the availability of this section in paper and electronic versions of the journal has increased the number of users.

The concept of the project «Scientists of NTU “KhPI” – education, science, industry: the best editions» was developed in 2015 and 87 publications of scientific achievements of scientists have already been presented according to the results of the competition of the university «Best editions of NTU “KhPI” (Kostromina, 2016, November 30). The material about the publications and the authors is presented on the site of the Scientific and Technical Library in the form of the page section «Scientists of NTU “KhPI” – education, science, industry: the best publications» (Fig. 2) according to the scheme:



Figure 2. Page of the section “Scientists of NTU “KhPI” – education, science, industry: best publications” on the site of the scientific and technical library of NTU “KhPI”

- ☐ bibliographic description of the publication, cover,
- ☐ extended edition abstract,
- ☐ the content of the publication,
- ☐ reviews or responses to the edition (if any),
- ☐ information about the authors:
 - photo of the author;
 - surname, first name and ORCID (if any);
 - date and place of birth, family relations with famous artists, scientists, public figures;
 - the position occupied by the author;
 - education with the name of the higher education institution;
 - scientific degree, rank and indication of the year of receipt;

- Honorary titles, awards with indication of the year and the name of the awarding institution);
- Academic title and year of receipt;
- a brief description of the activities in the institutions where he/she worked, which positions he/she held; basic directions of scientific researches.

□ GoogleScholar profile link (if available).

The projects have received awards at various competitions: “Scientific School of Electrical Engineering” as a result of the competition “Librarian of the Year 2015” (the organizer is the methodical association of libraries of higher educational institutions of Kharkiv region and LLC “PAER”) employees of STL NTU “KhPI” received diplomas of the competition «Librarian of the Year» in the nomination «For the creation of own electronic information resources» and diploma of the participant of the third regional competition of scientific works and innovative projects named after L. B. Khavkina “Libraries, Their Organization and Technology”.

“Scientists of NTU KhPI – education, science, industry: best publications” according to the competition «Librarian of the Year 2016» (the organizer is the methodical association of libraries of higher educational institutions of Kharkiv region and LLC “PAER”) employees of STL NTU “KhPI” received the diplomas «Librarian of the Year» in the nomination «For the creation of own electronic information resources».

Conclusions

It is due to joint efforts of scientists and librarians that we can help to activate and popularize scientists, professors, researchers of our university in the modern scientific and educational space and raise the ranking positions and image of our university among higher education institutions of Ukraine and the world.

Library staff are ready to join in ordering the bibliographic and full-text data sets, cataloging them, forming the databases for further integration of their own generation resources into the national system. We strive to come up with new ideas; support the e-learning system based on the concept of openness, develop an environment conducive to research and learning, providing qualitative service and information support, creating a comfortable space in the library, creating an interesting and comfortable virtual space (Semenenko, 2018).

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ПОПУЛЯРИЗАЦІЯ НАУКОВОГО ДОРОБКУ ВЧЕНИХ ЗВО: КОМПЛЕКСНІ РІШЕННЯ

Мета. Одним з головних завдань університетської бібліотеки на сьогодні є створення нового додаткового ефективного віртуального середовища для науково-дослідницької діяльності – власні електронні інформаційні ресурси відкритого доступу. Робота спрямована на розгляд віртуальних комунікаційних форм представлення наукових здобутків учених Національного технічного університету “Харківський політехнічний інститут” (НТУ “ХПІ”) у різних галузях науки, виробництва та промисловості. **Методика.** На прикладі конкретних біобібліографічних наукових проєктів (шкіл), що розвиваються у науково-технічній бібліотеці “ХПІ”, розглянуто комплексний підхід до їх реалізації. **Результати.** Завдяки комплексному підходу вперше реалізовано концепцію інтеграції інформації – поєднано електронні ресурси сайту бібліотеки, репозитарію Університету й електронної та паперової версій журналу. **Висновки.** Тільки спільними зусиллями вчених і бібліотекарів можна сприяти активізації та популяризації результатів досліджень ЗВО в сучасному науково-освітньому просторі й підвищувати рейтингові позиції й імідж університету серед закладів вищої освіти України та світу.

Ключові слова: наукові школи ХПІ; популяризація доробку вченого; біобібліографія вченого; власні електронні ресурси

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PROFILE OF THE SCIENTIFIC ORGANIZATION IN SCOPUS AND WEB OF SCIENCE DATABASES. THE ROLE OF UNIVERSITY LIBRARIES IN THE PRESENTATION OF THE PUBLICATION ACTIVITY OF SCIENTIFIC ORGANIZATION

Purpose. The article is aimed to prove the possibility of increasing the significance of university libraries through the services for representing the publication activity of a scientific organization. **Methodology.** Consideration of the possibilities of the university library to support the scientific and publishing activities of the university, namely its publication activity, was carried out on the experience of the Scientific and Technical Library of Dnipro National University of Railway Transport named after Academician V. Lazaryan (Library of DNURT). **Results.** The features and stages of creating / correction of the organization profile in Scopus and Web of Science databases are presented. The role of the library in scientometric studies evaluating the publication activity of university is indicated. **Conclusions.** The demand for university library and strengthening of its role have significantly increased as a result of the introduction of services to support the publication activity of employees and organization.

Keywords: organization profile; Scopus; Web of Science; Library of DNURT; publication support services; library services

Introduction

A modern university of international level is not so much an educational institution as a research centre that uses the intellectual potential of a team of teachers, researchers, employees of the university library (Myamlin & Kolesnykova, 2014). The publication activity can be considered as the criterion for evaluating the labor efficiency of a research centre (laboratory, scientific organization as a whole) (Myrhorodska & Savelieva, 2016). The task of correct evaluation of the publication activity of individual scientific-pedagogical and scientific employees is associated with the problem of correct evaluation of the scientific achievements of the university as a whole. And since this evaluation is becoming increasingly important for

reporting, which is associated with budget financing and other investments, the number of different indicators, both for the university and for individual scientists, is constantly growing. In order to cope with this task, scientometric research methods that to one degree or another describe the publication activity are used (Kvelidze-Kuznetsova & Morozova, 2009; Kolesnykova & Matveyeva, 2015). The results of these studies affect the university position, both in the Ukrainian and in international ratings, which is also very important in the modern realities of higher education development in Ukraine. University libraries are playing an increasing role in these information-analytical processes. But since the services of diverse library support for scientific research are constantly changing and becoming more complicated, this issue is in the focus of attention of librarians.

Literature analysis.

Today, academic libraries of different countries offer specialized services to members of the scientific communities of their institutions, which include the active mediation of librarians during the preparation, distribution and analysis of the results of scientific work. New services require structural changes, for example, the creation of information analytics service (IAS) as a tool for monitoring the global scientific information flow, analysis of the citation level of university scientists and the impact indices of its periodicals in the international scientific information space, etc. (Kolesnykova, 2016). Among the services of information analytics are creating and organizing university profiles for Scopus and Web of Science databases, as well as helping scientists to create author profiles in Scopus, Google Scholar, bibliographic managers and specialized social networks, author identifier registers ResearcherID and ORCID (ibid.).

The Durham University Library website (Durham University Library, n.d.) offers a number of services for authors who think that the metric analysis of their work does not fully reflect their publication portfolio. The statement of Anne-Wil Harzing (2016) is also presented there *Publish or Perish* “Are you applying for tenure, promotion or a new job? Is your work cited in journals which are not ISI listed? Publish or Perish is designed to help individual academics to present their case for research impact to its best advantage.”

This refers to Publish or Perish software you can download for free, which can search for, retrieve and then allow you to analyse citations to a set of publications. It uses citation data from Google Scholar and Microsoft Academic Search, and allows you to present a number of metrics based upon that data (<https://harzing.com/popbook/toc.htm>).

Despite the fact that the presence/absence of a publication in WoS or Scopus citation databases can hardly be regarded as a sign of its scientific significance, for an author-researcher to have a publication in a journal indexed in one of the databases (or both) is “vital.” Therefore, one of the author’s most popular questions for the librarian sounds something like this: “Which of the journals indexed by WoS or Scopus should I submit an article to?” The answer to such questions was the expansion of the range of services by libraries to assist user-authors, including the reveal of pseudoscientific journals (Nazarovets, Teixeira da Silva, & Nazarovets, 2019).

A greater number of indicators of publication activity are based on two factors: the number of publications and the number of citations in a particular database. The correctness of accounting for these indicators is the main task for further evaluation of scientific activity and, at the same time, the ability of the library to strengthen its significance as an information and analytical centre of the university (Bychko, 2018; Yepifanova & Savelieva, 2018; Kolesnykova, 2015; Kolesnykova & Matveyeva, 2015).

The purpose of the article is to prove the possibility of increasing the significance of university libraries through the services of presenting the publication activity of a scientific organization based on the existing practices.

Methodology

Consideration of the possibilities of the university library to support the scientific and publishing activities of the university, namely its publication activity, was carried out on the experience of Scientific and Technical Library of Dnipro National University of Railway Transport named after Academician V. Lazaryan.

Thus, the experience presented concerns Dnipro National University of Railway Transport named after Academician V. Lazaryan and its representation in the main international Scopus and Web of Science databases. Work in these global citation databases is possible only in English, therefore the organization profile is presented as Dnipro National University of Railway Transport named after Academician V. Lazaryan.

Results and Discussion

Profile of Dnipro National University of Railway Transport named after Academician V. Lazaryan in Scopus.

Scopus is the largest unified database containing abstracts of scientific papers and citation information for peer-reviewed scientific literature, with built-in tools for tracking, analysing and visualizing data (<http://www.elsevier.com/scopus/>). Scopus database contains more than 8 million profiles of organizations, for the creation of which a complex algorithm for identifying the organization name and creating profiles based on a comparison of various Scopus parameters was used. If the name of the organization is indicated in the article correctly, then the article will automatically get into the organization's profile. In other cases, you need to correct the profile of the article's author.

In order for the number of publications in the organization profile to be displayed correctly, you must:

1. Indicate in the publication the correct profile of the organization. In our case, for Scopus database, this is Dnipro National University of Railway Transport named after Academician V. Lazaryan.

The library staff created and corrected the profile of our university, taking into account the maximum number of various possible names of the organization, of which there were more than 70 (Fig. 1).

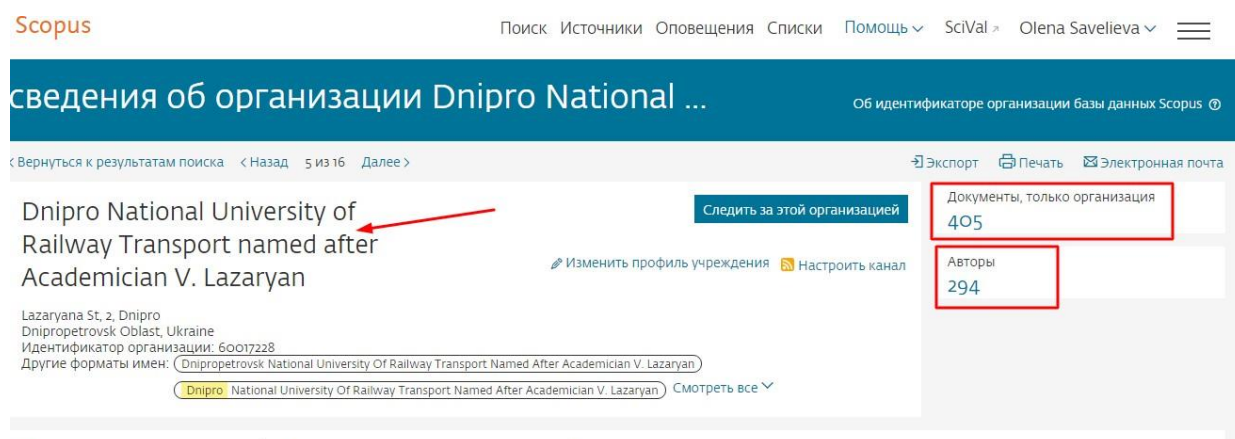


Fig. 1. University profile in Scopus database

Today, in the profile of our organization there are more than 400 articles.

The profile was created and corrected in 2 stages:

1 stage – automatic profile creation;

2 stage – manual profile correction, taking into account the search for various organization spelling variants.

Scopus database has two options for manual correction of the organization profile:

- Using the Support Centre Form (Fig. 2):

<https://ru.service.elsevier.com/app/contact/supporthub/scopuscontent/>

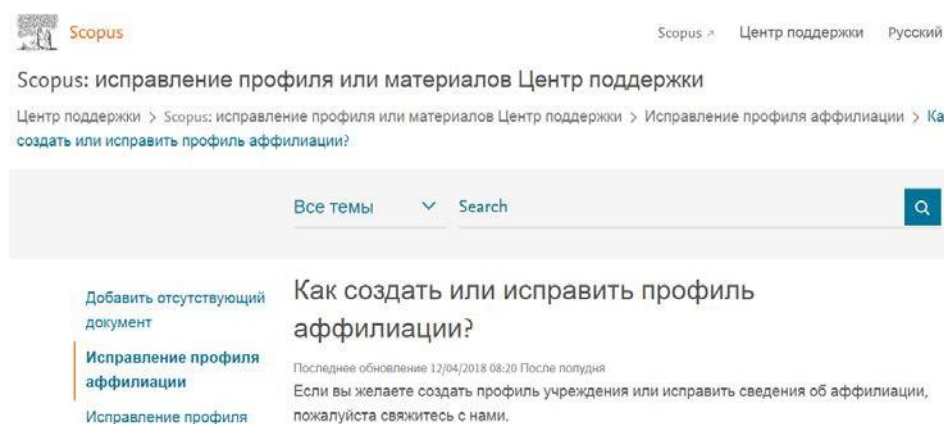


Fig. 2. Scopus database Support Centre Form for manual correction of the organization profile

- Using the Institution Profile Wizard.

Since, our organization has a subscription to Scopus database, we used the Institution Profile Wizard. To do this, the administrator of the organization must log in to Scopus database and send (English language is compulsory) the completed registration form (Scopus Institution Profile Wizard (IPW) Tool Administrator Registration Form) to affiliationfeedback@scopus.com with a request to activate access to the Institution Profile Wizard (Fig. 3).

Scopus Institution Profile Wizard (IPW) Tool Administrator Registration Form

[22.12.2018]

[Dnipropetrovsk National University of Railway Transport named after Academician V. Lazaryan (2 Lazarian St, Dnipro Dnipropetrovsk Region, Ukraine, AF-ID: 60017228)] submits to Elsevier, with reference to the applicable Scopus Institution Profile Wizard Terms and Conditions* below and the Elsevier Privacy Policy (<https://www.elsevier.com/legal/privacy-policy>) the following list of Administrators for the Scopus Institution Profile Wizard (IPW) Tool.

Name Administrator:	Scopus User Name:	Effective Date of Registration
Olena Savelieva	Olena Savelieva	10.10.2018

Fig. 3. Registration form for activating access to the Institution Profile Wizard

After consideration and approval of the application, it becomes possible to correct the organization profile independently (available to the administrator).

Thus, the work on profile correction became possible with greater accuracy and efficiency (Fig. 4).

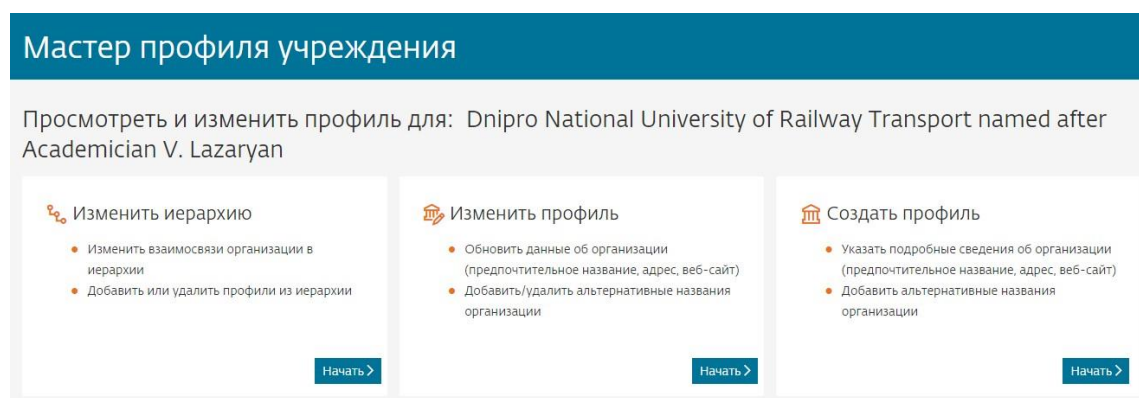


Fig. 4. Final work on correcting the university profile

2. For the correct display of the number of articles in the organization profile, you need to edit the author profile.

To do this, again two forms of automatic profile correction are used. The first is directly through the author's profile (Fig. 5).

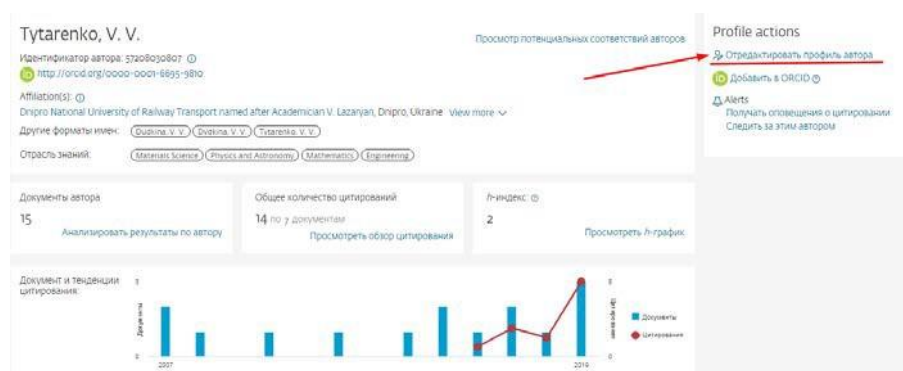


Fig. 5. Form for automatic profile correction directly through the author's profile

The second profile correction is through the Support Centre (Fig. 6):

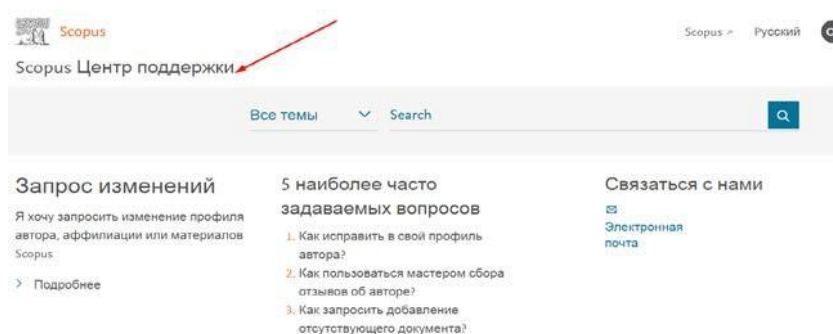


Fig. 6. Correction of the author profile through Support Centre

Profile of Dnipro National University of Railway Transport named after Academician V. Lazaryan in Web of Science database.

Web of Science (WoS) is a bibliographic database created by Eugene Garfield, the founder of the Science Citation Index (SCI) in the 1950s and early 1960s. Now it is an Internet search platform combining abstract databases of publications in scientific journals and patents, including databases that take into account mutual citation of publications. Creating a university profile in (WoS) we used a similar approach as in Scopus. Namely, the collection of all variants of university names and the formation of correction request for the profile of Dnipro National University of Railway Transport named after Academician V. Lazaryan.

The request was created using the Customer Support Helpdesk (Fig. 7).

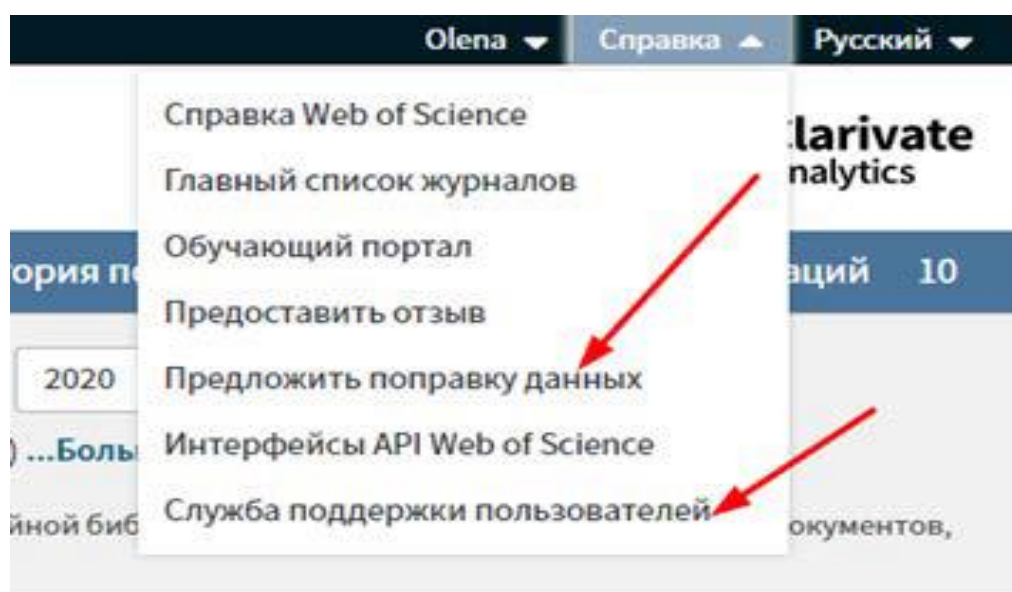


Fig. 7. Customer Support Helpdesk (WoS)

3. For correct display all the research achievements of the university, it is necessary to track and adjust the citation of articles, as well as to assist scientists in the basics of scientometrics, quantitative and qualitative characteristics of the scientist's productivity, scientific organization (h-index, SNIP, SJR, CiteScore, etc.). In this regard, scientific and practical seminars are held, explanatory work for profile correction is underway, and visualization of the scientific activities of scientists is being created on the library website.

The work of the University Library in the provision of such services has significantly improved the competence of both the university research staff and administrative specialists.

Below are the indicators of the university rating increase according to the version of Osvita.ua site "TOP 200 Ukraine" (<https://ru.osvita.ua/vnz/rating/64884/>) from 2015 to 2019. Indicators show increase in DNURT positions from 77-th position to the 58-th (Fig. 8).

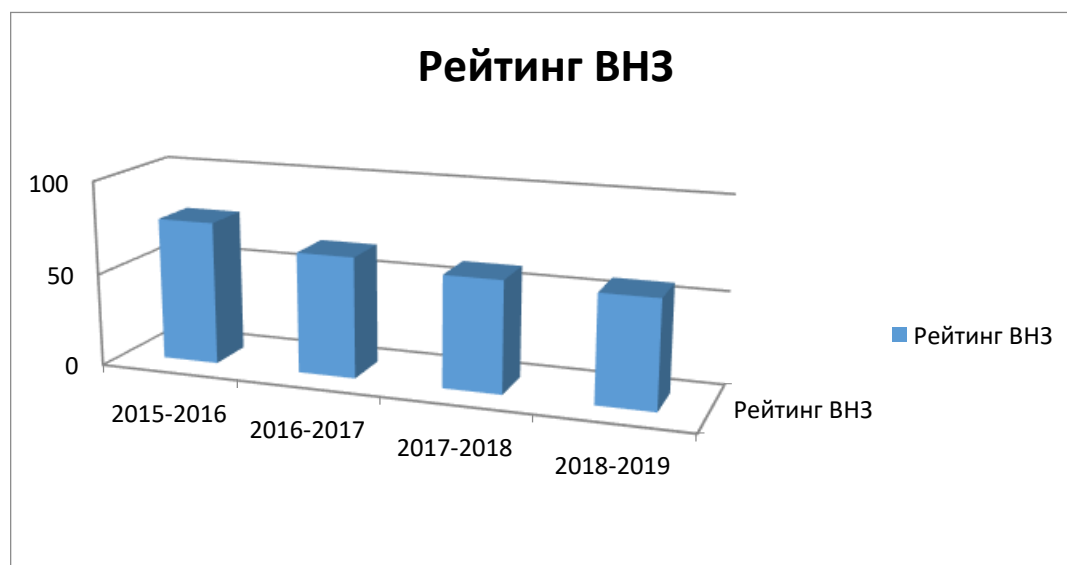


Fig. 8. Chart of indicators increase of university rating according to the version of Osvita.ua "TOP 200 Ukraine"

Conclusions

Thus, the role of the library in the development of scientometric research in the university cannot be underestimated. This is not only a transition to a qualitatively new stage of partnerships with scientists, but also new skills and qualifications, new knowledge and possibilities, new roles for librarians and university library.

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ПРОФІЛЬ НАУКОВОЇ ОРГАНІЗАЦІЇ В БД SCOPUS, WEB OF SCIENCE. РОЛЬ УНІВЕРСИТЕТСЬКИХ БІБЛІОТЕК У ПРЕДСТАВЛЕННІ ПУБЛІКАЦІЙНОЇ АКТИВНОСТІ НАУКОВОЇ ОРГАНІЗАЦІЇ

Мета. Стаття має на меті довести можливість підвищення значущості університетських бібліотек через сервіси представлення видавничої діяльності наукової організації. **Методика.** Розгляд можливостей університетської бібліотеки для підтримки наукової та видавничої діяльності університету, а саме його видавничої діяльності, проводився на досвіді науково-технічної бібліотеки Дніпровського національного університету залізничного транспорту імені академіка В. Лазаряна (бібліотека ДНУЗТ). **Результати.** Представлені особливості та етапи створення / корекції профілю організації в базах даних Scopus та Web of Science. Вказано роль бібліотеки в наукометричних дослідженнях, що оцінюють видавничу діяльність університету. **Висновки.** Попит на університетську бібліотеку та посилення її ролі значно збільшився внаслідок впровадження послуг із підтримки видавничої діяльності працівників та організації.

Ключові слова: профіль організації; Scopus; Web of Science; бібліотека ДНУЗТ; послуги з публікації; бібліотечні послуги

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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 is 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, filed 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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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

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CREATION AND DEVELOPMENT OF COMFORTABLE INFORMATION ENVIRONMENT OF SCIENCE AT THE UNIVERSITY: LIBRARY CONTRIBUTION

The **objective** of the study was identification of essential characteristics of a comfortable information environment of science and determining the role of the University library in its creation and development. **Methods.** The information base of the research consists of the publications of researchers and specialists on the problems under study, as well as of the results obtained during the research works of the authors of the article; both were interpreted by the authors and set out in the context of the research objective. **Results.** The findings are the presented analysis of definitions of the notions of "information environment", "information environment of science", "comfort of information environment". Essential characteristics of comfortable information environment of science are featured. The practical value of the research is the applicability of the results to the work of other University libraries. **Conclusions.** It is stated that the Belarusian National Technical University Scientific library makes a significant contribution to the creation and development of a comfortable information environment of science of the University by means of the introduction into practice of such activities as: information support of applied research and experimental development carried out in a number of priority areas of scientific and technical activities in the Republic of Belarus, the creation and maintenance of open access resources, the formation of the needs of scientists and researchers in primary scientific data, advisory work on researchers registration in various systems of identification of author profiles, bibliometric research.

Keywords: information environment; information environment of science; comfort of information environment; open access resources; primary research data; institutional repository; bibliometric research; scientific serials; scientific journals; systems of identification of author profiles; information support; information services; digital transformation of science

Introduction

The development of information and communication technologies and their integration into research processes and scientific communication poses new challenges for university libraries in the context of the implementation of the traditional function related to the information support of scientific and educational processes. In this regard, the question arises: how to create a comfortable information environment for science at the university, with all the variety of tools and services existing today within the framework of the information infrastructure of science, which allow realizing various goals and tasks of research nature? To solve this problem, it is necessary to determine the essential characteristics of the comfortable information environment of science and the role of the university library in its formation and development.

Methodology

The information base of the study was made up of publications by scientists and specialists in the field of research, as well as the results obtained during the research works of the authors of the article. Both the first and the second sets were interpreted by the authors and considered in this article in the context of the purpose of the study.

Results and discussion

At first sight, the term “information environment” is among the intuitive ones. At the same time, an analysis of the literature on this topic indicates the ambiguity of its interpretation. As an example, let us consider some of them.

The very first definition, proposed by the Internet when entering a corresponding request in Google, interprets the information environment as “a combination of technical and software means for storing, processing and transmitting information, as well as the socio-economic and cultural conditions for the implementation of information processes” (“Informatsionnaya sreda”, 2019). The first part of the definition assumes that the storage, transmission and processing of information without hardware and software is impossible, which cannot be disagreed, given the exponential growth of information volumes in the modern world. The second one places an additional emphasis on telecommunications, since “informatization” is “policies and processes aimed at building and developing a telecommunication infrastructure that unites geographically distributed information resources” (“Informatizatsiya”, 2019).

The following definition interprets the information environment as “a set of information conditions of the subject existence (this is the availability of information resources and their quality, development of information infrastructure). The information environment represents the conditions for the development of the subject “<...>, however, the degree of its preference is determined by the internal characteristics of the subject,” namely, a priori awareness, cognition, his/her information needs (Smirnov, 2001). Here, the reference to the role of information environment in the development of a subject and the dependence of development not only on the environment, but also on the subject's thesaurus are important. A remark about the role of the subject's thesaurus is also expressed by Yu. A. Shreider (1976). Namely, in his statement that in one case “the comfort of the information environment can be achieved by improving the search accuracy (in this case, the information service reduces the consumer's choice, cutting off noise for him/her), and in another case, by providing scientific information with the necessary meta-information. In this latter case, comfort consists in increasing the possibilities of choice for the consumer him/herself. With this approach, the determining criterion is not the criterion of sufficiency and quality of information resources, but the criterion of quality (comfort) of the information environment” (Shreider, 1976, p. 4).

T. A. Ozhereleva notes that “the information environment <...> is created by a person to solve his/her tasks” and therefore “can be used as a support system or as a management subsystem” (Ozhereleva, 2014, p. 23). In the definition of this author, the information environment is considered as part of the “information field” (Ozhereleva, 2014, p. 23), which is interpreted as “a reflection of the properties and characteristics of the surrounding world” (Tsvetkov, 2014, p. 551).

Consideration of various definitions of the concept of “information environment” convinced us that in relation to the *information environment of science*, we should focus on the concept presented in the work of K. A. Kalyuzhnyi (2015). This author rightly notes that if “space exists around a person, regardless of a person, his/her values and ideas,” then the environment “on the contrary, is always humanized and concrete, obviously assumes the presence of a person or society. The environment is gradually formed by a person and at the same time affects him/her. The environment, unlike space, is always inhabited by people, fixing the results of their activities and expressing their relationships. Thus, a certain part of the space is projected into the environment, on which a variety of prints of social processes is superimposed” (Kalyuzhnyi, 2015, p. 11). Moreover, “the content of the information environment is various forms of discourse – oral and written speech, computer records <...>, a constantly ongoing scientific dialogue <...>, as well as knowledge as a special form of information alienated from the personality of the researcher and becoming the public domain <...>. In general, <...> the information environment is quite complex

and heterogeneous. It includes “personal contacts, correspondence, exchange of manuscripts, preprints and prints, seminars and conferences, scientific journals and other publications, as well as a scientific information system that provides scientists with an ever-expanding range of information services”¹ (Kalyuzhnyi, 2015, p. 15).

Accordingly, the information environment is defined as “the anthropogenic part of the space in which the subjects and objects of information processes supported by the information infrastructure and related to the search, processing and storage of information and knowledge interact and self-organize” (Kalyuzhnyi, 2015, p. 17). Its first function is “to consolidate and reproduce information and knowledge”, and the second one is to ensure the comfort of “information exchange. Herewith, comfort is understood subjectively, in the sense that some subjects find it useful to use an expanded set of capabilities for searching, processing and storing information, while others require narrowing this set to the minimum necessary for making a choice” (Kalyuzhnyi, 2015, p. 18). Here, a quote from an old publication by Yu. A. Shreider is appropriate, which clarifies that “the comfort of the information environment can be achieved by <...> providing scientific information with the necessary meta-information. In this <...> case <...> comfort consists in increasing the choice of the consumer him/herself” (Shreider, 1976, p. 4).

Among the signs of the information environment of science, to which A. K. Kalyuzhnyi puts our attention, we note “openness” (Kalyuzhnyi, 2015, p. 18) and “redundancy” (Kalyuzhnyi, 2015, p. 19). At the same time, we take “redundancy” as a condition of reliability and, therefore, the comfort of the information environment.

One of the distinguishing characteristics of the information environment of science is a limited circle of participants in information processes, which include scientists, researchers and administrators of science. The comfort of the information environment is both its ability to provide each of the participants with the selected documentary information and ready-made solutions for transmitting the documentary information they generated into its channels (publications, etc.) and repositories etc., as well as the ability to provide them with the opportunity of comfortable independent information exchange and search. The comfort of the latter is natural to understand not only as the convenience of their implementation, but also as providing the acceptable completeness of the reflected documentary information and the relative compactness of its “channels and repositories” at the same time.

What is the role of the Scientific Library of the Belarusian National Technical University (hereinafter – BNTU) in the formation of a comfortable information environment for science, capable of ensuring the consolidation and reproduction of information and knowledge and the effective satisfaction of research needs?

In the framework of this paper, we will not consider the traditional direction of the library's activities related to information support of the scientific and educational processes of the university through the organization of licensed access to world scientific databases of full-text journals of world scientific publishing houses and citation indices. In terms of providing scientists and researchers with documentary information selected for them let us dwell on the preparation of a system for informing responsible executors of research work carried out in a number of Priority areas of scientific and technical activity in the Republic of Belarus for 2016 – 2020, approved by the Decree of the President of the Republic of Belarus of April 22 2015, No. 166². The system being created is based on the following considerations:

¹ The quote inside the quote refers to (Ozhereleva, 2014, p. 3).

² Research work "Development of a bibliometric methodology for the selection and evaluation of the world scientific periodicals, the publications in which are necessary for the high-quality implementation of scientific research in the Republic of Belarus."

1. The comfortable information environment necessary for researchers in natural sciences and technology should combine the requirements of content redundancy and relatively limited volume.
2. Neither non-critical involvement of the services of the most famous publishers and information providers, nor, moreover, the use of the cheapest options for “subscription packages” and sources of open access, guarantees effective scientific and information services for research in a particular branch of science. In the context of the rapid growth of the world information resources and against the background of limited financial abilities for their use to organize the scientific and information services of the researchers, it is necessary to attract precisely those databases, “subscription packages”, and other sources about which there is reasonable evidence that they will provide access to the information necessary for research in sufficient volume and diversity in the best way.
3. The most important, demanded and universal channel of documentary scientific information on science and technology³ are scientific journals – a channel through which a researcher is provided with about seventy or more percent of the corresponding world documentary flow.
4. Other (in addition to scientific journals) serial publications (periodicals and continuing collections, series of monographs) provide coverage of the proceedings of the most important international industry conferences and summarizing monographs, manuals and guides on the most important problems of the industry (since they often appear in the form of continuing serial publications).
5. Databases, publishers, provider services, “subscription packages”, etc. selected for the organization of information services should be evaluated by the presence in them of at least 60-80% of the cited serial publications.

For the purpose of this selection, a bibliometric methodology was developed. It is based on the use of citation analysis at the level of serial publications with a “citation window” of one year, and includes accounting the cumulative figures of citations to publications that are made in the *selected specialized source journals* and calculating the “*discipline impact factor*,” i.e. an indicator similar to the “impact factor” (the ratio of the number of references to the number of publications). However, in the numerator of this latter indicator there is a citations figure to the publications being evaluated that are made not in all journals indexed by JCR, but only in the **selected specialized** journals (Hirst, 1978). The difference from the Hirst's methodology is that the “publication window” is chosen equal to “5+1” year, that is, the five previous years and the year during which the references were taken into account. Moreover, as additional steps, the methodology also includes selection based on the data on citations given by the serial editions being evaluated to *specialized journals*, with a “citation window” of one year and a publication window of “5+1”, with a choice of *citing* publications, respectively, as well as the calculation of the “discipline susceptibility factor,” that is, the ratio of the number of references made during the year in the serial publications being evaluated to the publications of highly specialized journals to the number of publications in *citing* publications during one year. An example of such a study is (Lazarev & Yurik, 2018). As a result, ranked lists of the relevant thematic periodicals were compiled (placed in the figshare open data repository); the totality of databases necessary to create a comfortable, reasonably compact and complete research environment has been determined; methodological recommendations on the selection of the world scientific serial publications

³ Information service of social sciences is not considered in connection with other laws of functioning of scientific communications in them, although BNTU has quite powerful research schools in social sciences as well.

have been developed to improve information services for specialists in the natural sciences and technology.

Since 2012, the library has supported a repository based on DSpace software to place and store documentary information generated by scientists and researchers of BNTU. The repository is one of the largest in the Republic of Belarus and contains, by the end of 2018, 45,025 documents. In 2018, the number of virtual visits to the repository amounted to 43,2129, the number of “electronic issues” of documents – 1,780,000.

It should be noted that the Scientific Library supports the principles of open science and actively implements open access to publications in practice, by not only creation and support of a university repository, but also by five sites of BNTU scientific journals. Since 2014, the scientific journal management system has been operating on the platform <http://ejournal.by/>, which ensures compliance with international standards for the presentation of content. Currently, access is provided to more than 4,500 publications. Since 2017, all manuscripts of articles received in the BNTU journals through the system are tested by the ANTIPLAGIARISM system. The library actively interacts with the editions of scientific journals of BNTU, rendering all possible assistance in bringing the journals in line with international requirements, for example, in the preparation of reference lists in accordance with internationally accepted citation styles.

The transition to an open science model involves providing free access not only to scientific articles, but also to the primary scientific data of experimental studies. By open scientific research data, we mean the type of open data representing the results of scientific research available on the Internet for free download, modification and distribution without any legal or financial restrictions (York University, (n.d.)).

The general availability of scientific primary data makes it possible to compare the results of experiments conducted by various researchers, increases the reliability of conclusions, and maintains transparency and reproducibility of data, strengthening confidence in science. Among the expected results from the use of open research data are: 1) the growth of the scientific segment and increase in its influence and usefulness; 2) more transparent mechanisms for assessing and monitoring scientific activity; 3) effective models of management, forecasting, strategic planning (Kachan et al., 2018).

We believe that the formation of a modern comfortable information environment for science at the university is impossible without expanding the range of information services that form the need of scientists for the primary scientific data of experimental studies. The first step in the development of this direction of the library was the study of world experience. In 2017, a group of experts, including one of the authors of this material, in the framework of the research project “Analysis of world experience and development of proposals for a development strategy for 2018-2020 and for the future until 2025 of the system of scientific, technical and innovative information of the Republic of Belarus as an element of the national innovation system” analyzed global trends in the digital transformation of science and education and compiled a list of digital tools designed to assist researchers at each stage of the research life cycle. Identified digital tools act as platforms for the publication of scientific data, exchange of experience, open discussion of the research process and results. Among them there are: a variety of search engines, repositories of scientific works (ArXiv, biorXiv, F1000, etc.), repositories for preparing and posting data (re3data.org, Dryad, Figshare, Zenodo, etc.), open source repositories (BioLINCC, GitHub, DataHub, etc.), universal (Twitter, Facebook, Google+, LinkedIn, etc.) and specialized scientific social networks (Academia, ResearchGate, Mendeley, etc.), online platforms for working with bibliographic data (bibliographic managers) (CiteULike, Zotero and Mendeley etc.), peer review services (Publons, Academic Karma, Journal Review, etc.), etc. (Kachan et al., 2018).

The next step is to place on the website of the Scientific Library a section on primary scientific data – from an introduction to the topic (definition of a concept, the possibility of data management) to recommendations on the use of digital tools for the preparation and placement of scientific primary data. And finally, the introduction of services related to providing assistance in finding the data necessary for research; recommendations of sources for placing primary scientific data and preprints of BNTU researchers and assistance in placing data etc.

The service associated with assisting in the selection of journals for the assumed publication of research results that are fully consistent with the needs, capabilities or desires of the researcher is gaining popularity. This refers to both the selection of the leading world journals in a specific scientific field (in accordance with a bibliometric assessment), and, for example, the fourth quartile journals, however, indexed in Web of Science or Scopus. Both the selection of journals at the request of researchers, as well as the corresponding training courses take place.

A popular area of the library's activity is assistance in registering researchers in various author profile systems: Goodge Scholar, ORCID, ResearcherID and RSCI. The number of trainings on this issue conducted by the library is measured in dozens, consultations – in hundreds, as the number of profiles created only in Goodge Scholar from December 2016 to the present, it has increased from 200 more than ten times. These measures are designed to increase the visibility of the work of BNTU researchers by the international community. At the request of the researchers, they are also consulted on the use of the ResearchGate research social network and Mendeley cloud service for data distribution, where one can directly store both one's publications and related factual information in a format convenient for the international scientific community.

Productive information services for scientists, researchers and administrators of science are no longer presented without a bibliometric examination. It includes the following areas: collection, structuring, coordination and interpretation of bibliometric data; organization of consultations for the administration, departments and staff of the university; conducting research on scientific productivity, national and international cooperation. Every year, an assessment is made of the effectiveness of the publication activity of BNTU researchers as a whole. It is based on the study of their citation and publications in leading world journals; such an assessment is carried out for individual researchers at their request; researchers training on bibliometric techniques of such self-esteem is organized according to their requests.

A number of the described directions are reflected to one degree or another on the website of the BNTU Scientific Library – <http://library.bntu.by>.

Conclusion

Introducing into practice of the Scientific Library of BNTU such areas of activity as information support of applied research and experimental development carried out in a number of priority areas of scientific and technical activity in the Republic of Belarus, the creation and support of open access resources, the formation of the needs of scientists and researchers in primary scientific data, advisory work on registration in various systems for identifying author profiles, bibliometric studies, - contributes to the formation and development of a comfortable information environment of science at the university. It is capable of ensuring the consolidation and reproduction of information and knowledge and the effective satisfaction of a whole range of information needs of scientists, researchers and administrators of science. In addition, new directions allow the librarians to form competencies necessary for successfully solving the problems of searching and processing scientific information in the context of the digital transformation of science; strengthen the integration of the library into management processes;

increase the prestige of the library within the university; improve the “visibility” of the library in a broad academic context.

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ФОРМУВАННЯ ТА РОЗВИТОК КОМФОРТНОГО ІНФОРМАЦІЙНОГО СЕРЕДОВИЩА НАУКИ В УНІВЕРСИТЕТІ: ВНЕСОК БІБЛІОТЕКИ

Мета. Виявлення істотних характеристик комфортного інформаційного середовища науки і визначення ролі університетської бібліотеки в її створенні та розвитку. **Методи.** Інформаційна база дослідження складається з публікацій дослідників і фахівців із досліджуваних проблем, а також результатів, отриманих в ході досліджень авторів статті; обидва були інтерпретовані авторами і викладені у контексті мети дослідження. **Результати.** Представлені результати аналізу визначення понять «інформаційне середовище», «інформаційне середовище науки», «комфортність інформаційного середовища». Наведені суттєві характеристики комфортного інформаційного середовища науки. Практична цінність дослідження – застосування результатів до роботи інших університетських бібліотек. **Висновки.** Встановлено, що Наукова бібліотека Білоруського національного технічного університету вносить значний вклад у створення й розвиток комфортного інформаційного середовища науки університету шляхом впровадження в практику таких видів діяльності, як: інформаційна підтримка прикладних досліджень та дослідно-конструкторські розробки, що здійснюються по ряду пріоритетних напрямків науково-технічної діяльності в Республіці Білорусь, створення та підтримання ресурсів відкритого доступу, формування потреб вчених та дослідників в первинних наукових даних, консультативна робота з реєстрації дослідників в різних системах ідентифікації авторських профілів, бібліометричні дослідження.

Ключові слова: інформаційне середовище; інформаційне середовище науки; комфортність інформаційного середовища; ресурси відкритого доступу; первинні дані досліджень; інституційний репозиторій; бібліометричні дослідження; наукові серії; наукові журнали; системи ідентифікації профілів авторів; інформаційна підтримка; інформаційні послуги; цифрове перетворення науки

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THE VALUE OF LIBRARY RESOURCES AND SERVICES THROUGH THE LENS OF DISCOVERY TOOLS

Objective. The objective of the paper is to show the discovery service from the perspective of the library and user values as a means of access to information. **Methods.** The literature review on the subject of value approach to the library functioning is provided. In the paper were used data from the user experience study, statistical reports and anecdotal experience. The **results** show the issues of customization of discovery services functionalities and resources management required. The users' evaluation of the discovery service as a tool for finding and retrieval of information is also given. **Conclusions.** Discovery services have special functions and are powerful tools for identifying the required information, which is placed in directories and databases, online libraries, and external full-text databases. The study found that finding relevant information was of paramount importance to users who highly appreciated the usefulness of this service for their research.

Keywords: academic libraries; values; discovery services

Introduction

As the academic libraries' strategic axis lays in the context of a service center for learning and research, their statement of values addresses the impact to institutional achievements by providing resources and services. (Oakleaf, 2010) The literature review indicated the scope of approaches in valuing the library's performance. The conceptual approaches to definition and measurement of values are differentiated between single- and multi-centered, and generally, based on the economic or social impact of libraries. (Malapela, & De Jager, 2018; Matthews, 2018). Though the libraries recognize the internal business-like definition of the values, in this paper we are not considering the concepts of ROI or other financial values.

The resources have value for the user and library as a source of information that has value "as a commodity, as a means of education, as a means to influence, and as a means of negotiating and understanding the world." (ALA, 2015). A range of studies explores the value of information sources in the libraries for their usefulness in practical and scientific applications in medicine, environment and engineering, education, humanities. (Zwicky, 2019; Kong, Bynum, Johnson, Sdunzik, & Qin, 2017; Laxminarayan, & Macauley, 2012).

The establishment of libraries implies the service to their communities. In the past decades providing access to collections and databases, the libraries linked a resources-focused model to service-related approach. The studies on libraries' mission statements note the ethical and emotional modes (friendly, welcoming, comfortable, reliable, respectful, sharing) of social values, such as access, quality, diversity of materials, responsiveness, user-centered, community-centered. (Barninkis, 2016; Chauvet, Bourbous, & Liston, 2016).

However, some researchers commonly admit the challenge in articulating libraries' values for institution research and academic development. L. S. Connaway, W. Harvey, V. Kitzie, & Mikitish (2017) reported that "Integration of library data in learning analytics is fledgling at best, but there are growing calls for such activity to increase, especially to enhance a library's ability to prove their resource expenditures and demonstrate alignment with wider institutional goals (e.g., improve learning outcomes, decrease costs, etc.)."

The ALA Report Value of academic libraries (2010) overviews the assessment tools applied to demonstrate their impact on student learning and researchers' performance on the

institutional level, e.g. examinations of work in part of referencing and citing, anecdotal evidence, surveys, usage. It seems possible to consider as an evaluation measure on the library level the community users' behavior and experience in using the library means to access the information.

The changes in approaches don't change the understanding of library values which remain services and resources, but the means of their delivery are in constant transformation. The tools and aids that ensure effective library ecosystem functioning has been significantly influenced and improved with the development of information technologies. K. Munson, & H. H. Thompson (2018) mentioned that "there is a relationship between the perceived value of the item and the effort required to acquire it". From this perspective, the website, catalog and other information search tools, have growing meaningfulness in searching, organizing and exposing the information; the virtual instructional and reference services are of critical importance in supporting access to information through improving information literacy skills.

The usefulness and performance of search systems has been explored in multiple studies using qualitative and quantitative data from evidence-based assessment of user's perceptions, usage counter statistics, usability tests of speed, accuracy and relevance of results. A few researchers set a prime focus on the value of search tools for library users. D. S. Pearson, S. Roksandic, & J. Kilanowski (2018) address the concern to "provide the most up-to-date, peer-reviewed content, often with an additional time constraint for rush patient care" in medical libraries. C. J. Belliston, J. L. Howland, & B. C. Roberts (2007) shared results of survey determining the value of federated searching for undergraduate students.

The discovery tools serve as a part of the library digital environment demonstrating the image of the library augmented. As the access point to the resources and services, they have to be designed in order to communicate the library values. The research focus of this paper is on defining the value of discovery service for users and its management in a value-centered academic library.

Methodology

For this paper, we used data from a user experience study conducted with the aim to improve the information discovery and retrieval experience of the users working with the discovery service of the library. The project of user study involved 25 users including 1 faculty, 2 staff members, undergraduate students (School of Science and Technology, School of Engineering, School of Humanities and Social Sciences, School of Medicine, Center for Preparatory Studies), 1 master student (Graduate School of Education). 8 participants seized the opportunity of online session while the others participated in-person. For the study we designed 18 tasks with the purposes to learn about their search experience and explore the users' perception of the discovery service.

In the paper, we also describe the issues of electronic resources management on EDS, observation of customized functionalities and reference services as well as limitations of the tool.

The utility value was analyzed based on statistical reports from EBSCO Discovery Service (EDS) for the past two academic years (2015-2016, 2017-2018).

The reports on virtual reference services and statistics track or questions related to EDS were exported from the LibAnswer, the application for managing the reference services provided by Springshare. Data include interactions starting from April 2017 when the application was implemented in the library.

We also used the examples and anecdotal issues faced by librarians in their daily work with EDS.

Results and Discussion

The discovery tools integrate and generate a powerful information environment. The NU Library has implemented Proquest's Summon discovery service in 2012. Starting from 2016 the EBSCO Discovery tool is being used. The initial then planned (2018) branding of site interface and functionalities added value of the asset to the library. We applied the institution branded colors and logo, simplified the navigation labels on the top menu, renamed custom links to Open Full text and integrated widgets of search tools (Google Scholar, CORE) and Ask a Librarian service (chat, FAQ). The Interlibrary loan request form was also tailored and implemented for non-holding items. (Fig. 1, 2).

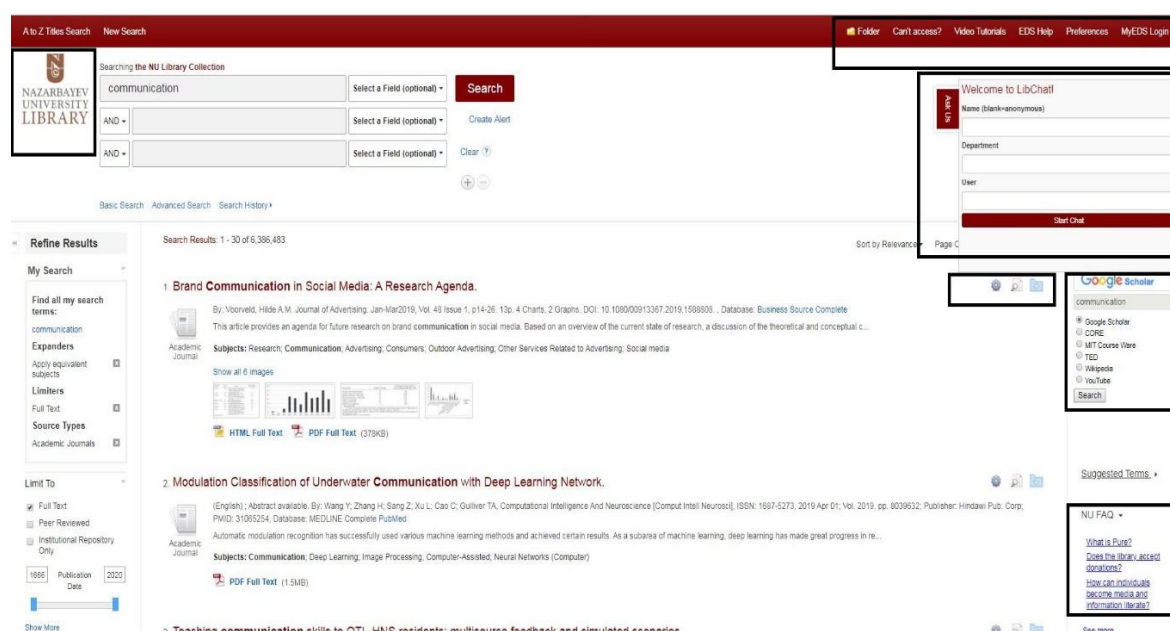


Figure 1. EBSCO Discovery service interface

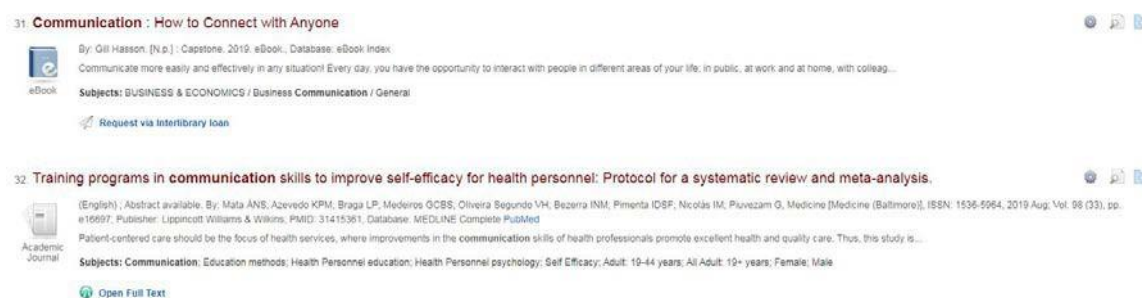


Figure 2. Types of customized links

In terms of the content, we included in EDS index all subscribed databases, resources which are in trial mode, and some open access databases recommended by Subject Librarians. The Nazarbayev University Repository collections are also included in EDS.

The quality access to the growing resources relies on appropriate electronic resources management which should include content (holdings) management and system support and development.

We were able to identify different types of problems which affect the comfort work with the system: EZproxy issues such as firewall blocks; not standardized or inaccurate metadata in the records received from publishers and providers display the confusing information e.g types of documents; failures to inform about changes made to access policies; timely updating custom links and assigning items for Interlibrary loan requests; inability to include the content of databases providing evidence-based acquisition or having institution-specific resources accommodation; limits to interface customization for required the system development.

Consequently from the user experience study we learned at least a practical understanding of that tool by students and its value for research.

The verbatim responses of UX study participants to open-ended questions highlight the value of the tool for scholars and researchers: “helpful”, “It eases work of the researcher. It is user-friendly and anyone can master using it”; “It made me confident in doing the research. It provides multiple opportunities to find Information”; “As I am a senior student and don’t have any research paper left, I regret that I hadn’t discovered all the benefits of the EDS. Even though, now I know how to search for the research papers written by our students and read the dissertations of master students related to my major”; “I guess nothing because every tool is functional and even if it is not used by me, it might be very useful for more advanced researchers. Also, I really liked the interface as nothing distracts your attention”.

The responses included the evaluation of EDS as a sources of information: “Provides a wide range of sources, open to your requests, quite easy to use”; “As a very user-friendly and powerful online service to get an academic article/book/etc almost on any topic”; “Fast search for relevant sources. Free access to some articles, which regular users need to pay for”; “It helps me looking for journal subscription and sharing the articles with my professors and classmates”; “An ability of getting access to many articles and journals, and to be able to use, analyse and store them efficiently”; “Good alternative to Google Scholar”.

The value of service provided on the site and how easy and functional the tool was also mentioned in the responses: “Easy to use, up to date”; “I can also ask help from Librarians through various methods”; “Many features, advanced search, friendly and simple design”; “User friendly, has several options to sort articles, to limit”; “Time saving, gives relatively more relevant and qualified results”; “All academic sources in one platform, easy access to any sources, chat with librarian in case you have any questions”; “Making a collection of sources that can be shared. Searching among different databases. Having an opportunity to get an article/book though requiring”; “Interface is very nice”; “I think this system works very well and has all needed functions starting with searching information and finishing by saving and sharing with friends.”

The participants were proposed to compare the library discovery service with other search tools such as commonly Google Scholar. In the response the majority found the advantages of the library search system: “Google scholar which is more intuitive and easier, but accessibility can be limited. In addition, EDS has much more tools”; “GS, but with more features available”; “GS, they both shows academic results”; “Google Scholar, often used”; “GS, used for the same purpose before I found out EDS and almost completely switched to this tool”; “Google. To find initial information about the specific topic, Google is easy. However, EDS is good for researchers who already have background information about the topic”; GS because allowed to search for, but not so flexible functional as EDS”; “GS, it’s mainly used by majority”; “The only system I’ve used throughout my studies (along with library.nu.edu) was Google Scholar. However, it was sometimes difficult to access some of the research papers without registration, and the searching system was not so specific and accurate as in library.nu.edu.”

Although participants admit that having problems they would be willing to communicate with librarians online via chat, the statistical report shows that for the past three years only 8% of transactions came from EDS. (Fig. 3).

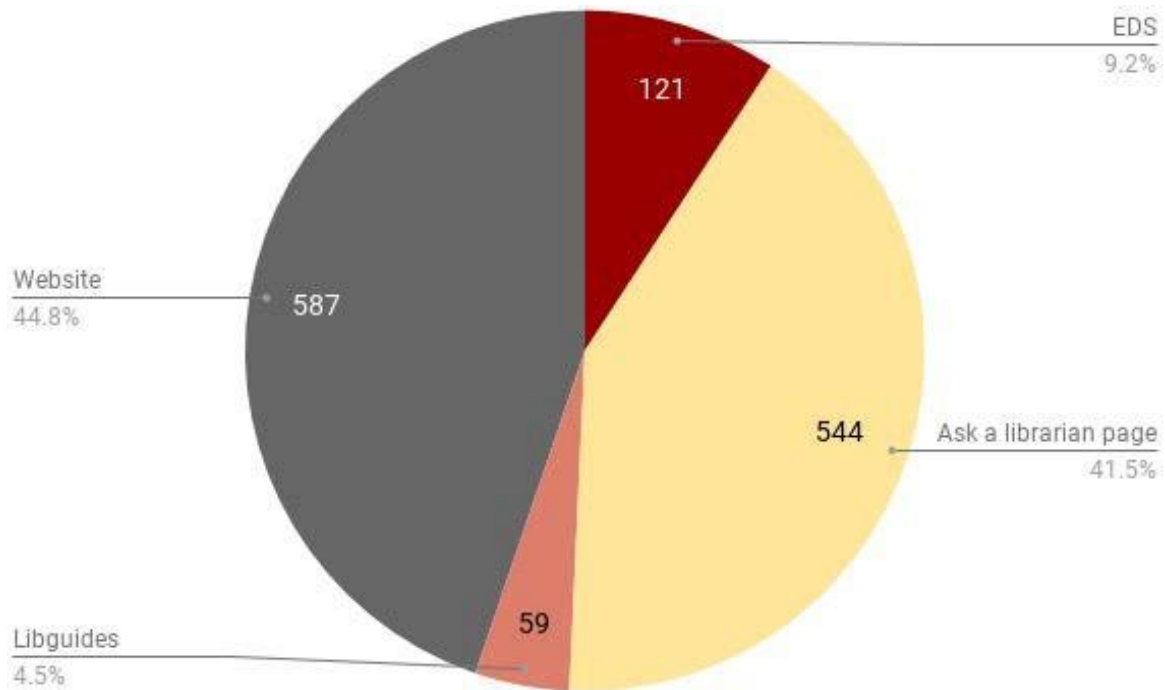


Figure 3. LibChat references

Some students participated in the study with ready questions on the EDS work and case of poor experience such as broken custom links and problems with accessing the full text. The pending queries were still actual but students couldn't explain why they hesitated to ask librarians or report the problems.

Overall, the statistics recorded 227 questions from users regarding EDS. The majority of queries were received online via chat, ask-a librarian system, email (Fig. 4). Mostly students were asking specific questions which librarians categorized as questions on finding or accessing specific source, article or book. This type of questions is followed by requests for research consultation (Fig. 5, 6).

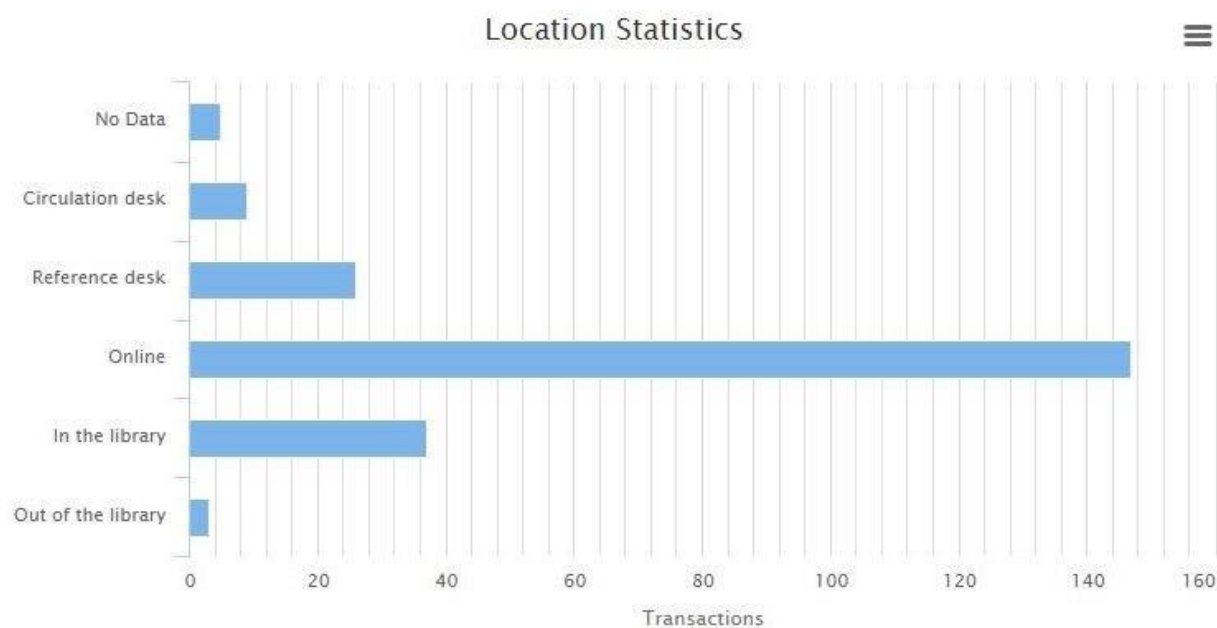


Figure 4. Location Statistics for EDS queries

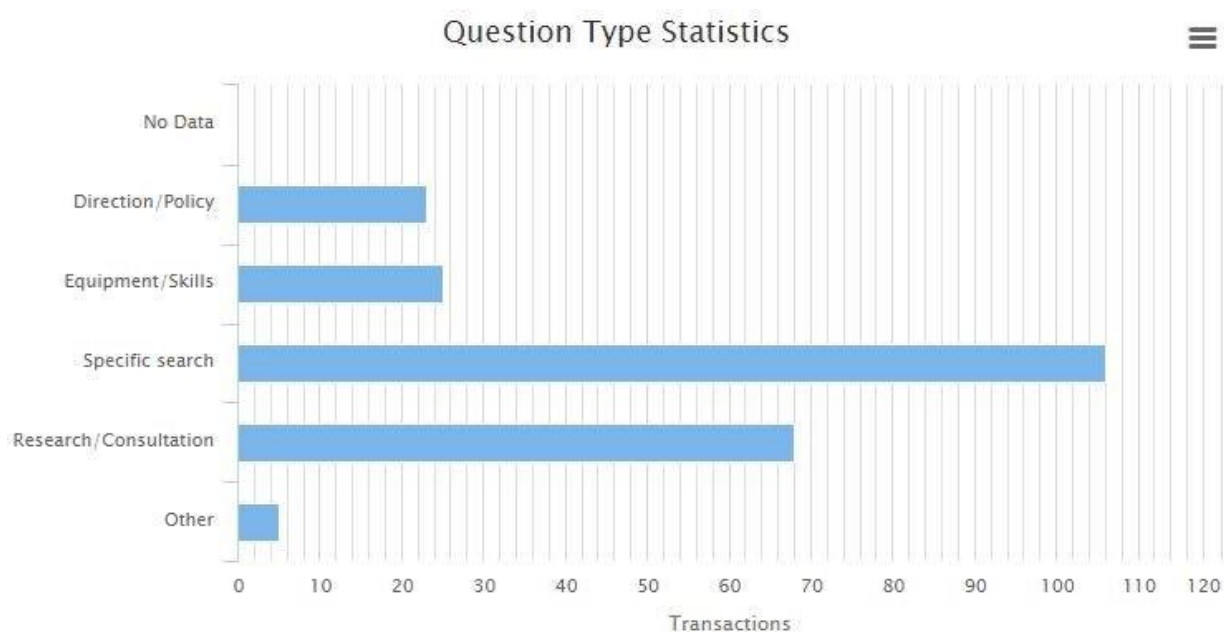


Figure 5. Question Type Statistics for EDS queries

Q: Search for online full-text resources					
A:					
Specific search	Student	Walk-Up	Reference desk	EBSCO-EDS	NLA
Q: Access troubles to EDS from Macbook with Safari					
A:					
Direction/Policy	Student	Walk-Up	Reference desk	EBSCO-EDS	NLA
Q: access to e-resources on T&F					
A:					
Direction/Policy	Student	Chat	Online	EBSCO-EDS	GSB

Figure 6. Examples of questions

The cohort of students from NU Center for Preparatory Studies (CPS) is involved in elementary research. The CPS faculty strongly recommend to use EDS as a valuable start-point of searching for information according to the required quality (peer-reviewed, authoritative, recent, etc.). Although the library sessions based on Information literacy modules are integrated to CPS courses, it takes time to build skills and experience needed for efficient work with the system. This explains data showing that among the most active students who asked librarians about EDS issues are scholars affiliated to Center for Preparatory Studies (CPS) (Fig. 7).

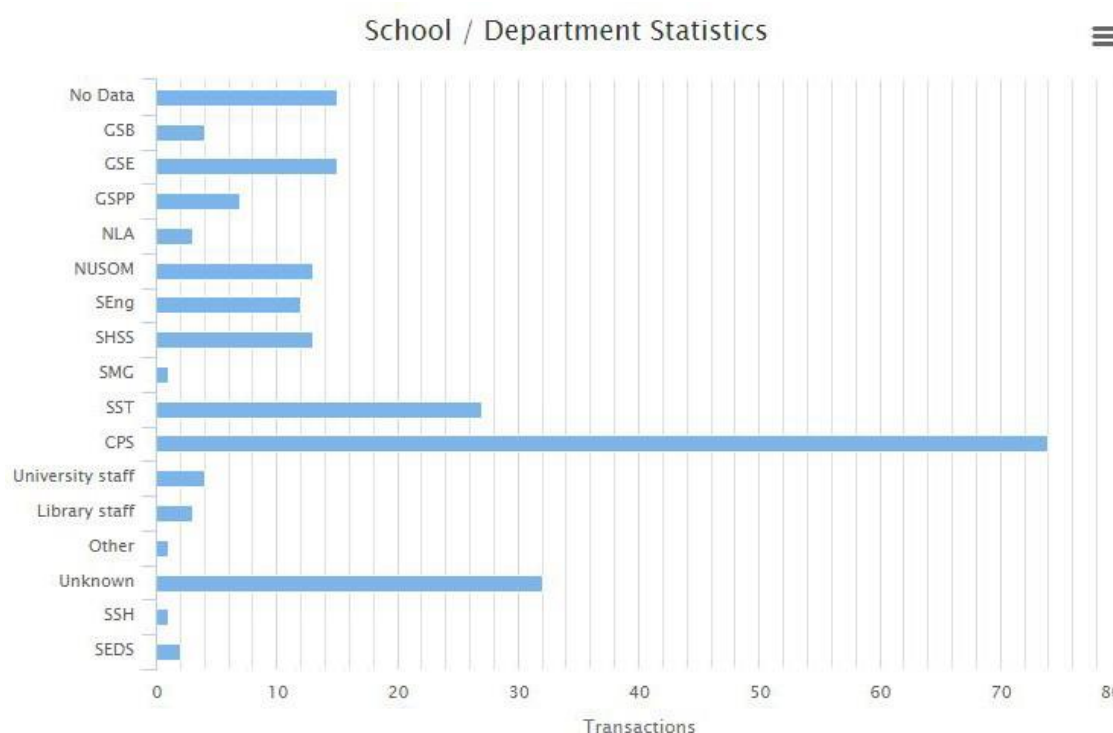


Figure 7. School / Department Statistics for EDS queries

The discovery system reports display an increasing usage of the site by NU community from 150137 in 2016 to 192605 in 2018 (Table 1). In contrast, almost all people participating in the

study admitted to underestimate the discovery service and used Google Scholar or a direct search on the specific databases for the reason of unawareness about the tool.

Table 1. Usage of the discovery service site in academic years 2017-2018, 2016-2017

Academic Year	Number of searches	Successful custom links activity
2016-2017	150137	40395
2017-2018	192605	48924

It was recommended to enhance the library service in training sessions on EDS: "From my experience, everything is fine, the only thing is that new users do not utilize all features of EDS, so, for example, creating more workshops in the beginning of the year may help new students to get to know the system in more detail."; "I would recommend making an online video manual on how to use its features, such as EDS folder, limiters and sharing results."; "I just want to suggest to explain and show to work with EDS to our students because I think many students just do not know how to work on it that is why most of my peers just want easy life and go to search on Google Scholar".

Conclusion

The continual advancement of academic libraries is determined by their strategic values. The discovery tools merge resources and assistance to foster access to information which is a value in itself. The value-based approach to the library tools and systems namely discovery service requires branding, proper electronic resources management, system support, and development.

While discovery tools are supposed to be a powerful search and information retrieval service enriched with special features, the study demonstrated that finding relevant information has a primer value for users who highly evaluated the usefulness of the discovery tool for research.

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ЦІННІСТЬ РЕСУРСІВ І ПОСЛУГ БІБЛІОТЕКИ ЧЕРЕЗ ПРИЗМУ ІНСТРУМЕНТІВ DISCOVERY

Мета. Основною метою статті є показати discovery-сервіс як засіб доступу до інформації з точки зору цінностей бібліотеки й користувачів. **Методика.** Наведено огляд літератури на предмет ціннісного підходу до функціонування бібліотеки. У роботі використано дані дослідження досвіду користувачів, статистичні звіти та ін. **Результати.** Описано можливості налаштування необхідних функцій пошуку для користувачів та

управління ресурсами, а також проблеми підтримки інструментів discovery. Також наведено оцінку користувачів discovery-сервісу як інструменту пошуку інформації. **Висновки.** Пошукові сервіси мають спеціальні функції і є потужними інструментами виявлення необхідної інформації, яка розміщена в каталогах і власних БД, електронних бібліотеках, а також у зовнішніх повнотекстових базах даних. Дослідження показало, що пошук відповідної інформації має першорядне значення для користувачів, які високо оцінили корисність цього сервісу для досліджень.

Ключові слова: академічні бібліотеки; цінності; discovery-сервіс

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THE ROLE OF LIBRARIES AS PUBLISHERS IN THE OPEN EDUCATION LANDSCAPE: REFLECTING MODERN WORLD PRACTICE OF OPEN TEXTBOOKS

Objective. The study aims to analyse the experience of university libraries in different countries in working with the Open Textbook (OT) and to consider the prospects of creating a similar pilot project in Ukraine. **Methods.** The analysis covered the world publications (journals, books, conference proceedings, posts on social networks) in the field of Library and Information Science, devoted to the role of libraries in OT support, that have appeared since 2014. The author studied the aspects revealing that publication, namely OT, support services are areas with great potential for the future development of academic / university libraries. **Results.** Numerous evidence is presented that the topic of library as a publisher in OT support is most developed in the universities and colleges in economically developed countries, especially in the USA, Canada, Australia, and Great Britain. Library strategies for OT projects have been identified. The author clarified the nature of the initiatives and partnerships of libraries in supporting OT, as well as the basic services and roles of libraries in these projects. **Conclusions.** Today, the global practice of Scholarly Communication has enough evidence that the functions of the Library, lost in the course of evolution, as a Knowledge Publisher have returned under its “roof” and supplemented the existing function of Knowledge Managers. Digital Library Publishing (DLP) services in OT support help to change the learning environment and life of students (including persons with disabilities), pedagogical practices of teachers by means of free textbooks with an open license, as well as to receive reputation benefits for the university, improving the image of the latter. The possibility of eliminating systemic inequalities in access to academic resources increases the significance and changes the role of libraries in open education. The successes of Ukrainian librarians in supporting digital scholarly communication initiatives and the successful implementation of Open Access support projects (repositories, e- journals, e-conferences) give confidence that they can act as initiators and key partners in creating affordable textbooks.

Keywords: Open Textbook; textbook affordability; open education; library as publisher; services; Digital Library Publishing; university libraries; Ukraine

Introduction

The development of a knowledge society, the widespread dissemination of information technologies create not only new opportunities for learning. They also challenge established views and practices regarding how teaching and learning should be organised and carried out.

The wider context of a culture of open knowledge, open source, free sharing and peer collaboration, which emerged in the late 20th century, is characterized by the formation of the global movement Open educational resources (OER) for the development of open and distance learning.

OER can be separated by content type into four groups: text-led, video-led, animation-led and multiple media. Types of OER include: full courses, course materials, modules, learning objects, open textbooks, openly licensed (often streamed) videos, tests, software, and other tools, materials or techniques used to support access to knowledge (Butcher & Moore, 2015, p. 34). According to the Legislation of Ukraine “On Approval of the Provision on Electronic Educational Resources” (Ministry of Education and Science, Youth and Sports of Ukraine, 2012), in terms of the functional characteristics of OER in the educational process, they are divided into electronic educational publications (including textbooks, work-books, lecture courses, etc.), electronic reference books and electronic practical publications.

Thus, Open Textbook (OT) is one of the significant components of OER, expanding access to education and supporting innovations in teaching and learning. The notion of “Digital textbooks” (Digital textbook, 2019) reveals them as the major component of technology-based education reform. They may serve as the texts for a traditional face-to-face class, an online course or degree, or massive open online courses (MOOCs).

But, even after almost 20 years since the advent of OER, educational information exchange systems still do not meet the potential of the 21st century technologies, although the whole world is striving for new educational opportunities. The Scholarly Publishing and Academic Resources Coalition Europe (SPARCEurope) website (2019) notes that the global educational materials market is supported by outdated publication models that significantly limit the distribution and innovative use of resources.

In the context of constantly increasing prices for educational services and the cost of textbooks at universities around the world, the affordability of higher education is becoming increasingly difficult. For example, according to the data of the World Bank Country and Lending Groups in 2019, 31 countries had income in economic indicators of GDP per capita below the average – \$ 1,026 to \$ 3,995 (The World Bank, 2019). Lower middle-income countries include Ukraine as well. In addition, in Ukraine, which has 19 universities that were displaced in 2014 from the temporarily occupied territories of Donetsk and Lugansk regions, as well as the Autonomous Republic of Crimea, the situation with providing libraries and bookstores with modern textbooks is especially tense.

In an effort to adequately follow their mission to promote the creation of knowledge, their preservation and dissemination, university libraries of different countries make a significant contribution to the digitalization of education and science. Following their focused communication strategies, libraries join actively in a wide range of digital scholarship events (Kolesnykova, 2014; Kolesnykova & Kliushnyk, 2015; McGrath, 2018; McCready & Molls, 2018; Raju, 2016; Schmolling, 2015). At the same time, they get themselves noticed not only as owners of digital collections and service providers, but also as reliable partners in the publishing of knowledge – Digital Library Publishing (DLP).

In addition, the pursuance of social justice is part of the mission of libraries. Therefore, the possibility of eliminating systemic inequalities in the availability of academic resources motivates librarians to constantly look for new ways and initiate new projects in the development of open scholarly and educational resources, including the creation and use of Open Textbook.

Literature review

In the process of evolution, the Library as a social institution has undergone significant changes. From a once functionally triune institution (Volodin, 2002), uniting under one “roof” knowledge creators, knowledge publishers, knowledge managers (that is, people responsible for the availability of acquired knowledge, its dissemination and preservation for subsequent generations), it was entrenched for many centuries mainly with only the function of collecting, organizing, storing literature and its lending to readers (Kolesnykova, 2014). As a result of the bifurcation of communication channels, the library ceased to fulfill the function of a scriptorium (copy manufacturer), which was fundamentally important to it for the past millennium. With the development of book printing, the function of book production was completely separated from the function of collecting and storing books, and printing and publishing houses became the institutions separate from the library.

But at the beginning of the XXI century, as a result of the technological boom, university libraries were again included in the provision of new publishing channels. The collaboration environment initially involved primarily digitizing of old publications, promoting of open access, and increase in publishing services for informal scientific publications – gray literature (Watkinson, 2014). Further library work with institutional repositories was supplemented by support for electronic academic journals and books deployed on the open platforms DSpace,

Open Journal Systems, Open Monograph Press, etc. (Pitcher, 2014; Kolesnykova & Kliushnyk, 2015).

Today, Digital Library Publishing (DLP) services, supporting the communities of their universities and colleges in the development, creation, management and distribution of online publications, including OER and OT, successfully operate in different countries (Schmolling, 2015; McGrath, 2018).

And the movement for the creation and distribution of Open Textbook itself is becoming increasingly popular, because OTs are complete, true textbooks that are used by many teachers and licensed for free use, editing and distribution. Generally, legal permission is granted by use of an open license (for example, Creative Commons license) which allows anyone to freely use, adapt and share the resource – anytime, anywhere (SparcEurope, 2019).

OT can be either digital or printed. Since authors and publishers almost always provide PDF for printing as needed, students can print the entire textbook or the required number of pages.

The popularity of OT is also due to the growing negative consequences in the academic performance of students, who are often forced to refuse a purchase of expensive books and complete course attendance (Open Textbooks Matter, n.d.). Research in a number of US colleges shows that students spend an average of \$ 900-1,200 each year on textbooks, but these costs continue to grow every year (Open Textbooks Matter, n.d.; Allen, 2010).

For example, Nicole Allen (2010) published data showing that an average student in Chicago spends \$ 900 on textbooks per year, which is 26% of average education in a university and 76% of average education in a college. Public Interest Research Groups (PIRG) of students conducted groundbreaking research in 2010 by interviewing 1,428 college students at ten campuses to find that open textbooks can help students cut costs and save up to 80%.

The U.S. government has initiated grants to transform textbooks that have been provided to teachers, libraries and librarians to increase access to education (Croteau, 2017). Grants allocated by the budget in the state of Georgia already at the first stage showed their effectiveness, as they allowed the students to save about 760 000 dollars without negative impact on learning outcomes.

The timeliness and importance of including libraries in Open Textbook publishing are supported by evidence of a reduction in the financial burden on students using such publications. For example, the Rhode Island College Adams Library on September 18, 2019 notes that “Students at RIC saved \$143,600, this semester, and \$594,700, since 2016 in textbook costs through faculty adoption of open textbooks and open educational resources!” (Open Textbook Network, n.d.).

And the website of Charles C. Sherrod Library East Tennessee State University (2019) gives the data that over the year the library helped save \$ 200,000 to students at its university through OER initiatives.

Library plans and OT activities that reduce student textbook costs and increase academic activity may vary. Ranging from defining strategies (Thomas & Bernhardt, 2018), financial support for teachers, implementing individual creative projects to increase the interest of teachers and students, and to training programs for librarians.

For example, the Oregon State University (OSU) Libraries launched a program in 2013 that provided a scholarship of US \$ 15,000 for OSU teachers (through a budget) to publish an open textbook. The competitive application process emphasized “the use of rich, original multimedia and interactive content” (Sutton & Chadwell, 2014, p. 41).

University Libraries at Virginia Tech, by popularizing and raising awareness of free and open educational opportunities that exist for everyone, everywhere and now, have created a number of popular videos (VTLibraries, 2016).

In an effort to expand interest in creating and using the OT the University of Kansas Libraries, in collaboration with the Shulenburg Office of Scholarly Communication & Copyright in May 2019 announced Textbook Heroes, a new initiative spotlighting KU faculty, staff, instructors and students who advocate for textbook affordability. Textbook Heroes are identified among those who have adapted, adopted, created or championed open educational resources (OER) and other low-cost materials for use in classrooms at KU (KU Libraries, 2019).

As the use of OER in education and research continues to grow, there is an increasing need for specific methods for developing, supporting, and deploying OER as part of library publishing programs, including the scope of services and staffing requirements (McCready & Molls, 2018).

Training programs for librarians implementing publishing projects are provided, for example, by Library Publishing Coalition: Library Publishing Curriculum (Lippincott, Schlosser, Ballard, & Maron, 2018) and a series of webinars for professional development (Library Publishing Coalition. (n.d.).

Rhode Island College Adams Library (2019) organizes “Open Textbook Workshop”, for librarians, teachers and students, where they teach OT practices and provide teachers with content that can be adapted to their courses.

With over 100 members (universities, university libraries and colleges in the USA), the Open Textbook Network provides formal training for librarians under “The Certificate in OER Librarianship” program (Open Textbook Network, 2019). This is the program of professional development that creates effective managers of open education projects who want to be stewards and advocates of open educational resources.

The results of the study of the Open and Affordable Textbooks program at Rutgers University, USA, which is administered through libraries, complete the discussions on the need for library support for OT and call for defining an ecosystem of library services and activities that support affordability of textbooks and OER (Todorinova & Wilkinson, 2019).

But at the same time, for university libraries in Eastern Europe and Ukraine, the topic of partnership with teachers, scientists and OER specialists in creating and using the Open Textbook is still not sufficiently covered and presented in publications.

Thus, the implementation of the Polish state program, which released open digital textbooks, at the first stage did not involve the use of library publishing services. But the guidance of A. Tarkowski, M. Sitek, J. Strycharz, R. Vuorikari & J. Castaño Muñoz (2019) can help librarians further study the costs and savings associated with open textbook initiatives and assess their impact on the results of learning (e.g., based on academic achievement example) (Tarkowski, Sitek, Strycharz, Vuorikari, & Castaño Muñoz, 2019).

In Ukraine, the topic of the library as a publisher of scholarly digital resources (repositories, e-journals, e-conferences, open access initiatives, related services) (Kolesnykova & Kliushnyk, 2015; Kolesnykova, 2019; Levchenko, 2018) as well as the motivational factors for improving professional competencies of a university librarian in supporting open knowledge (Serbin & Kulyk, 2019) are periodically addressed in LIS publications. But the author of this study has not found publications on the inclusion of libraries in Open Textbook projects.

The purpose of this study is to analyze the experience of university libraries in different countries in working with the Open Textbook and to consider the prospects of creating a similar Ukrainian (international) pilot project.

Methods

The study is based on an analysis of world publications on Library and Information Science (journals, books, conference proceedings, posts on social networks) that have appeared since 2014. To search for publications, I used the databases Scopus, Web of Science, Google Scholar, social networks ResearchGate and Facebook, sites of selected journals, university

libraries and professional communities (Library Publishing Coalition, SPARC Europe, The Association of College & Research Libraries).

The search was conducted by the key phrases “open textbook and library support”, “academic libraries and textbook affordability”, “library publishing and open textbook”.

I analyzed the evidence that publishing support services, namely the Open Textbook, are areas with great potential for the future development of academic / university libraries.

In order to better understand the global landscape of DLP in the field of OT, before assessing the possibility of introducing such services in Ukraine, it was supposed to study the following aspects:

- 1) To clarify the services distribution scale in university libraries of the world.
- 2) To define library strategies for OT projects.
- 3) What is the nature of library initiatives and partnerships in supporting OT?
- 4) Library roles and basic services in OT projects.

Results and Discussion

The study of professional literature and social network posts allows to state that technological innovations in the production and distribution of documents / information, problems of traditional publishing practices related to business models and intellectual property management, as well as active efforts to expand access to educational and scientific resources, have provided libraries with the opportunity to return the functions of knowledge publishers (once lost in the process of evolution).

The topic of library as a publisher in support of Open Textbook is most developed in the universities and colleges in economically developed countries, especially in the USA. American librarians study the successes and weaknesses of OT library projects in the context of: reducing students' financial costs; expanding affordability / receipt of texts; academic performance; developing partnerships with teachers, IT services and university press; the importance of competencies; common standards and workflows. Workshops and library trainings also often focus on Open Source Platforms (Open Monograph Press, Janeway, etc.). These are publishing systems for presenting manuscripts, managing peer reviews, editorial and production processes, information about books and hosting, as well as book distribution channels.

But at the same time, for countries with economic GDP indicators of low and middle income per capita, the experience of Libraries of the University of Cape Town, Republic of South Africa (Raju, 2016) and the Scientific and Technical Library of the Dnipro National University of Railway Transport may be interesting (Kolesnykova & Kliushnyk, 2015; Kolesnykova, 2019).

University libraries, especially in the USA and Canada, are taking decisive steps to identify an ecosystem of library services and activities that support the availability of textbooks and OER. The programs administered through the Libraries offer a glimpse at how textbook affordability interfaces with key library services, including collection development, teaching and learning, reserves and the visibility, use and discoverability of library resources.

Two approaches are mainly used to develop and implement library support strategies for Open Textbook projects. The first approach involves material (as a rule, the provision of mini-grants) and moral incentives for teachers who get involved in the processes to create OT, which will be free for their students. The second approach to the strategy is to identify the necessary texts that the library already owns or can acquire as e-books for an unlimited number of users. Herewith, it is especially important for a university (college) not only to respect copyright, but also to have publishing rights to a work.

The initiatives and partnerships of libraries in support of Open Textbook are institutional in nature or are a joint venture.

Joint ventures bring together a number of institutions that share resources and a platform to reach a critical mass of freely accessible textbooks. In addition to the effect of significant cost savings and increased access to education, this makes it easier for beginners to publish open access electronic textbooks than starting from scratch on their own.

At the same time, some projects were more institutionally localized in nature at startup, and then expanded, accepting new participants and working more efficiently.

OT implementation projects are often two-stage, such as at the University of Minnesota Libraries (2019). At the first stage, implemented at the institutional level, the library conducts a range of activities from grant applications for teachers to assistance in the textbook production. On the second stage, it helps to load the text into the Open Textbook Library (<http://open.umn.edu/>). The similar work organization is at the State University of New York Libraries, supported by grants from SUNY Innovative Instruction Technology (<https://textbooks.opensuny.org/about/>), as well as librarians of the University of Minnesota Libraries, who state on the website that “We publish a number of journals, books, dynamic scholarly serials, and textbooks through our Libraries Publishing imprint” (University of Minnesota Libraries, 2019).

Joint ventures and popular tools to locate, create, and store open textbooks and resources are as follows:

- Open Textbook Library (<http://open.umn.edu/>). The library currently includes 680 textbooks, with more being added all the time. The Open Textbook Library is supported by the Center for Open Education and the Open Textbook Network;
- OER Commons (<http://oercommons.org>) – is a public digital library of open educational resources;
- Open Stax Connexions (<http://cnx.org>) – is a dynamic non-profit digital ecosystem;
- Merlot (Multimedia Education Resource for Learning and Online Teaching, <http://merlot.org>) – is an online repository and international consortium of institutions (and systems) of higher education, industry partners, professional organizations and individuals;
- BCcampus (<https://open.bccampus.ca/>) – contains BC Open Textbook Collection, OER by Discipline Directory, various tools and guides for creating OT;
- OASIS (Openly Available Sources Integrated Search, <https://oasis.geneseo.edu/>) – is being developed at SUNY Geneseo's Milne Library. It is used today as resource providers by almost 100 institutions in different countries (USA, Canada, Great Britain, Australia, Lebanon, Singapore, the United Arab Republic, etc.), which replenish therewith their subject collections;
- OER Commons (<https://www.oercommons.org/>). Digital librarians have curated collections of Open Textbooks and full courses to help leverage OER in your classroom.

It seems unlikely that individual institutions, acting independently and already having collections, will be able to resolve further complex issues of sustainable development of OT.

An indispensable condition for the development of institutional projects for the creation and publication of OT is the partnership of libraries with teachers.

An illustration of one of the DLP services is an example at the Massachusetts Institute of Technology (MIT) Library. The subject librarians of MIT work closely with faculty to help them identify open educational resources that they can use instead of requiring students to purchase textbooks (Marcum, Schonfeld, & Thomas, 2015).

There are more and more teachers who support open education and how authors create texts for open textbooks or review them. V. Rolfe & B. Pitt (2018) note that improving the

learning experience for students was a top reason for academics to have published learning resources in the past, and a key driver for any potential future learning resource publications. Another important motivation is career development.

However, many authors have concerns over copyright and IPR – particularly in terms of what belongs to them and what belongs to their employing university. There is also a concern about reputational risk of learning resources being misinterpreted or misrepresented by other teachers who use them without fully understanding the context or purpose (Collins & Stone, 2019).

Despite some communication difficulties resulting from this concern, the Publishing Support provided by DLP services to teachers and staff in creating OT is quite diverse across libraries. But it seems obvious that there are basic services:

- Providing tools & a platform for creating a textbook;
- Providing consultation and training on publishing workflow;
- Connecting authors to shared community resources for faculty mentors, volunteer editing, & peer review;
- Helping prepare a print version and coordinating print on demand services;
- Helping after finishing work on the text to share it on the website Open Textbooks.

I presented my vision of the possible roles of teachers and librarians in creating open textbooks in Table 1.

Table 1. University PARTNERSHIP: the role of teachers and librarians in creating open textbooks

ROLES	
Teachers	Librarians
As authors, they create new content or update (reprint) the existing one	As information specialists, they support and develop the OT creation and publishing infrastructure
As teachers, they decide which book is right for their students and their course	As publishers, they provide digital publishing services, including registration of publications (ISBN, DOI)
As teachers and authors, they adapt the content of others to their own needs (upon the availability of Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License (CC BY 4.0))	As educators, they contribute to the development of the information culture of students and teachers; provide consultation and training on publishing workflow
As reviewers, they conduct scientific expertise	As creative project managers, they popularize OER and OT
	As community organizers, they unite DLP practitioners among publishing libraries to develop competencies, learn best practices and launch new projects

In addition to teachers, the strategic institutional partners of libraries in creating OT are: IT services, university press, students, open education support services, campus independent bookstores, etc.

In publications that cover the topic of library initiation and support for OER and OT projects, librarian positions have different target titles: Director of Learning Resources, Library Services Educational Specialist, Network and Library Administrator, Library Services Coordinator, Information Communication Manager, Project Manager, Subject Librarian, Expert Librarian, Librarians/Illustrators, Technical Services Managers and others.

Hopefully, the results of this study will allow to start discussions in Ukraine and other countries of Eastern Europe regarding open textbooks and the role of university libraries in their creation and support. So far, Ukrainian libraries have not received mandates for creating open textbooks or other open educational resources.

Most likely, this area of activity of university libraries, which are actively forming the digital infrastructure of science and education, will not be addressed at the national level. But the achievements of Ukrainian libraries prove that it is already possible to start dealing with these issues at the institutional level. And let it be only 2-3 libraries in the country, but these will be the first steps that set the speed up.

The pursuit of social justice is part of the mission of libraries. Therefore, the possibility of eliminating systemic inequalities in access to academic resources makes us constantly look for new ways and initiate new projects in the development of information support for students, teachers and scientists. And now it is time for Open Textbook.

In Ukraine, which has 19 universities that have been displaced since 2014 from the temporarily occupied territories of Donetsk and Lugansk regions, as well as the Autonomous Republic of Crimea, the situation with providing libraries and bookstores with modern textbooks is especially tense. And after the restoration of peace in the Donbass, it is open literature that will contribute to improving the cultural and educational landscape of the region.

In addition, libraries participating in projects for the creation and accessibility of free open textbooks will expand educational prospects for people with disabilities.

Given the above, I would like to have hope that the libraries of Ukrainian universities in partnership with the entities interested in OT publications will start with focus group survey and interviews with students and their own scientists. This will provide a better understanding of local pressures and priorities for the production of academic resources. Perhaps the relevant question would also be how OT production can contribute to broader institutional strategies in open education: improving the students' education conditions, educational prospects for people with disabilities, knowledge sharing, development of staff and professional pedagogical qualifications.

Conclusions

The development of the digital infrastructure of science and education, global projects of open knowledge today allows fixing 3 types of publishers: commercial publishers, society publishers, library publishers.

University libraries around the world position themselves as a platform for innovation in the field of education, research, knowledge sharing in a global context. And today, the global practice of Scholarly Communication has enough evidence that the functions of the Library, lost in the course of evolution, as a Knowledge Publisher have returned under its "roof" and supplemented the existing function of Knowledge Managers (that is, people responsible for the availability of acquired knowledge, its dissemination and conservation for future generations).

But it seems that the projects for creation, support and development of open educational resources, incl. Open Textbook, involve mainly the university libraries of the USA, Canada, Great Britain and Australia. At the same time, a clear change in the role and mainstreaming of the libraries of these countries in the landscape of open education is an incentive for many others.

The reflection in the publications of the modern world practice of “DLP services: Open Textbooks” emphasizes that they help to change the learning conditions and life of students, pedagogical practices of teachers by means of free textbooks with an open license, as well as to receive reputation benefits for the university, improving the image of the latter.

Often, OER projects in universities and colleges are initiated from below – by library, faculty, Scholarly Communication or Educational Resources Department, etc., which later as partners are engaged in their implementation and development.

It is this model of initiation and development of Open Textbooks that may be the most successful for libraries in Ukrainian universities. The successes of Ukrainian librarians in supporting digital scholarly communication initiatives and the successful implementation of Open Access support projects (repositories, e-journals, e-conferences) give confidence that they can act as initiators and key partners in creating affordable textbooks.

Most OER projects are using Creative Commons licenses to license their content. Among Creative Commons users, the Attribution-NonCommercial-ShareAlike option is the most popular.

Providing free open textbooks allows:

1) students to save their money; 2) to improve the learning conditions for students, especially for persons with disabilities; 3) to save the resources of the libraries and the support services for persons with disabilities; 4) to contribute to the provision of high quality teaching, open resources for teachers; 5) to get reputational benefits for the university.

Reputation benefits for the university are one of the most important elements of its strategy. This is, firstly, the opportunity to strengthen the authority of the university in the practice of open education; secondly, increasing the recognition of its global brand and its reputation as an institution favorable to improving the learning environment of students.

The opportunity to showcase your university worldwide as an institution constantly striving to improve student life far exceeds any potential income.

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РОЛЬ БІБЛІОТЕК ЯК ВИДАВЦІВ У ЛАНДШАФТІ ВІДКРИТОЇ ОСВІТИ: ВІДОБРАЖЕННЯ СУЧАСНОЇ СВІТОВОЇ ПРАКТИКИ OPEN TEXTBOOKS

Мета. Дослідження спрямовано на вивчення досвіду університетських бібліотек різних країн в роботі з відкритими підручниками (Open Textbook, ОТ) і розгляд перспектив створення аналогічного пілотного проекту в Україні. **Методи.** Проаналізовано світові публікації (журнали, книги, доповіді конференцій, пости в соціальних мережах) в області Library and Information Science, присвячені ролі бібліотек в підтримці ОТ та опубліковані з 2014 р. Вивчалися аспекти того, що служби підтримки публікацій, а саме ОТ, є областями з великим потенціалом для майбутнього розвитку академічних / університетських бібліотек. **Результат.** Представлені численні докази того, що найбільший розвиток тема бібліотеки як видавця в підтримці ОТ має в університетах і коледжах економічно розвинених країн, особливо в США, Канаді, Австралії, Великобританії. Були визначені бібліотечні стратегії по проектам ОТ. Автором уточнено характер ініціатив і партнерства бібліотек в підтримці ОТ, а також базові послуги і ролі бібліотек в даних проектах. **Висновки.** Сьогодні світова практика наукових комунікацій має досить фактів того, що загублені в процесі еволюції функції Бібліотеки як Видавця знань повернулися під її "дах" і доповнили існуючу функцію Менеджерів знань. Послуги цифрового бібліотечного видавництва (Digital Library Publishing) в підтримці ОТ допомагають змінювати умови навчання і життя студентів (в т.ч. осіб з обмеженими можливостями), педагогічні практики викладачів за допомогою безкоштовних підручників із відкритою ліцензією, а також отримувати репутаційні вигоди для університету, покращуючи його імідж. Можливість усунення системної нерівності в питаннях доступності академічних ресурсів підвищує значущість і змінює роль бібліотек у відкритій освіті. Успіхи українських бібліотекарів у підтримці цифрових ініціатив наукової комунікації та успішна реалізація проектів підтримки Відкритого Доступу (репозитарії, е-журнали, е-конференції), дають впевненість, що вони можуть виступити ініціаторами і ключовими партнерами у створенні доступних підручників

Ключові слова: відкриті підручники; доступність підручника; відкрита освіта; бібліотека як видавець; послуги; цифрове бібліотечне видавництво; бібліотеки університетів; Україна

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БІБЛІОТЕЧНЕ КУРАТОРСТВО ЯК СКЛАДОВА НАУКОВО-ПРАКТИЧНИХ ЗВ'ЯЗКІВ МІЖ БІБЛІОТЕКОЮ ТА ВЧЕНИМ: СУЧАСНИЙ СТАН

Мета. Бібліотечне кураторство над факультетами є новим напрямом роботи, над реалізацією якого працюють університетські бібліотеки різних країн. Робота спрямована на дослідження світового та вітчизняного досвіду університетських бібліотек в напрямі бібліотечного кураторства як складової науково-практичних зв'язків між бібліотекою та вченим. **Методика.** Дослідження проводилось на основі аналізу світового літературного потоку з бібліотечно-інформаційної справи. Український досвід проаналізовано на прикладі реалізації програми «Бібліотечне кураторство» Центральної наукової бібліотеки Харківського національного університету імені В. Н. Каразіна (ЦНБ ХНУ) у рамках виконання Стратегії розвитку Університету та Бібліотеки. **Результати.** Проаналізовано найбільш актуальні питання, що хвилюють світову бібліотечну спільноту: мета і варіанти взаємодії бібліотекаря та викладача, протиріччя у взаєминах бібліотекарів та науковців, бібліотекар і навчання з інформаційної грамотності. Основними елементами програми «Бібліотечне кураторство» ЦНБ ХНУ є розширене інформування представників факультетів щодо можливостей ЦНБ та різні форми індивідуального та групового консультування читачів, поглиблення міжорганізаційної взаємодії. **Висновки.** Процес взаємодії бібліотекарів із підрозділами закладів вищої освіти на початку XXI століття, в умовах всебічного й дуже швидкого розвитку інформаційного суспільства, є назрілим та необхідним. За умов раціональної та грамотної реалізації основних його умов, що вже є відпрацьованими на основі іноземного досвіду, він має великий потенціал.

Ключові слова: бібліотека; факультети; колаборація; наукова взаємодія; інформаційна грамотність

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LIBRARY SUPERVISION AS A COMPONENT OF SCIENTIFIC AND PRACTICAL RELATIONS BETWEEN THE LIBRARY AND THE SCIENTIST: CURRENT STATE

Objective. Library supervision over faculties is a new direction of work, which is being implemented by university libraries in different countries. The work is aimed to study the world and domestic experience of university libraries in the direction of library supervision as a component of scientific and practical relations between the library and the scientist. **Methods.** The research was conducted on the basis of the analysis of the world literary flow in library information science. The Ukrainian experience is analyzed on the example of implementation of the Library Supervisory Program of the Central Scientific Library of V. N. Karazin Kharkiv National University (CSL KhNU) within the framework of implementation of the University and Library Development Strategy. **Results.** The most topical issues of concern to the world library community were analyzed: the purpose and options of the librarian-lecturer interaction, the contradictions in the relationship between librarians and scholars, the librarian and information literacy training. The main elements of the Library Supervisory Program of the CSL KhNU are the expanded informing of the representatives of the faculties on the CSL's possibilities and various forms of individual and group consultations of readers, deepening of inter-organizational interaction. **Conclusions.** The process of interaction between librarians and higher education departments in the early 21st century, in the context of a holistic and very rapid development of the information society, is urgent and necessary. Given the rational and competent implementation of its basic conditions, which have already been worked out on the basis of foreign experience, it has great potential.

Keywords: Library; faculties; collaboration; scientific interaction; information literacy

Введення

В умовах сучасного інформаційного суспільства університетські бібліотеки зустрілись, як відомо, із новими викликами, що витікають із широкого розповсюдження Інтернету та мобільних гаджетів, що дозволяють отримувати до нього доступ постійно та у будь-якому місці. Студенти та навіть аспіранти у всьому світі вже не вважають, що бібліотека є пріоритетним місцем для наукового пошуку, частіше використовуючи Google. При цьому характерно, що джерела інформації, що походять не з бібліотек й не є перевіреними, можуть бути недостатньо якісними, але є доступними у будь-якому місці та часі (Lewis, 2007, p. 424).

Новий час вимагає змін від бібліотек, якщо вони хочуть залишити за собою своє традиційне місце – лідера у наданні інформаційних послуг. У XXI столітті це буде полягати у розвитку цифрових компетенцій, наданні консультаційних послуг у галузі освітніх та наукових технологій із використанням інформаційно-освітніх ресурсів. Для читача бібліотека, у першу чергу університетська, повинна асоціюватись із вільним доступом до зазначених технологій та інформації, гарантовано надійним та таким, що забезпечує всі можливості до якісної та зручної роботи. Життєво важливим в цих умовах стає гібридний підхід – книга та знання, що акумулює бібліотека, плюс електронні ресурси, з одного боку, та навчання вмінню ними користуватись – з іншого. У даному аспекті велике значення для бібліотеки закладу вищої освіти має співробітництво із факультетами та науковцями, для якого є ще й інша важлива причина – необхідність підвищення статусу бібліотеки в університеті до рівня, якого вона заслуговує згідно із функціями, що виконує. Особливо це є актуальним у вітчизняних умовах, де роль бібліотеки часто розглядається керівництвом ВНЗ традиційно – як нібито допоміжного підрозділу, який не випускає спеціалістів і, отже, «не потребує» особливої уваги та, відповідно, фінансування.

Тематика дослідження навчальних колаборацій між бібліотекарами та науковцями, у зв'язку із новизною самої проблеми, не отримала достатнього розгляду в літературі, однак можна відзначити роботи авторів, що вивчили сучасні тенденції у даному процесі – переважно у регіональному вимірі (Braddlee & VanScoy, 2019; Dobozy & Gross, 2010; Ivey, 2003; Yu et al., 2019).

Мета даної роботи – дослідити світовий та вітчизняний досвід університетських бібліотек в напрямі бібліотечного кураторства як складової науково-практичних зв'язків між бібліотекою та вченим.

Методика

Дослідження проводилось на основі аналізу світового літературного потоку з бібліотечно-інформаційної справи. Вітчизняний досвід проаналізовано на прикладі Центральної наукової бібліотеки Харківського національного університету імені В. Н. Каразіна (ЦНБ ХНУ).

Бібліотечне кураторство над факультетами є новим напрямом роботи, що здійснюється як світовими бібліотеками, так і ЦНБ ХНУ з метою покращення співробітництва між студентами і науковцями університету та бібліотекою. Робота виконується у рамках виконання Стратегії Харківського університету та бібліотеки. Основними елементами програми є розширене інформування представників факультетів щодо можливостей ЦНБ та різні форми індивідуального та групового консультування читачів, поглиблення міжорганізаційної взаємодії.

Увагу в дослідженні було зосереджено на розгляді найбільш актуальних питань, що хвилюють світову бібліотечну спільноту: мета і варіанти взаємодії бібліотекаря та викладача, протиріччя у взаєминах бібліотекарів та науковців, бібліотекар і навчання з інформаційної грамотності.

Результати та їх обговорення

На даний момент дослідники розглядають варіанти взаємодії бібліотекаря та викладача у трьох якостях. Згідно із ними, бібліотекар переважно виступає: а) як «джерело довідок» (відповідаючи на питання відвідувача-читача, поза навчальними аудиторіями); б) як консультант (проводячи індивідуальні консультації для студента щодо використання бібліотечних ресурсів) та в) як інструктор (проводячи групові консультації та заняття в аудиторіях). У той же час зазначається, що у випадках, коли бібліотекари та викладачі не співпрацюють, багато студентів не знають про допомогу, яку можуть їм надати бібліотеки, відносяться до них із побоюванням та мають погано розвинені дослідницькі навички (Scripps-Heekstra & Hamilton, 2016).

Треба зазначити, що, незважаючи на те, що сучасні студенти, як правило, є «комп'ютерно-освіченими» (інформованими щодо використання комп'ютерів та загальних принципів пошуку інформації), але не є освіченими «дослідницько» (у плані наукового пошуку) (Campbell, 2010, р. 30). Так, викладачі та наукові керівники в університетах переважно навчають алгоритму проведення наукових досліджень, але більш прикладні питання щодо ефективного пошуку інформації та відфільтрування непотрібних даних в цих курсах не розглядаються. Внаслідок цього нестача розуміння у багатьох студентів того, як саме працює інтернет-мережа, у сукупності із високим ступенем довіри до неї приводить до того, що у випадку, коли інформацію не вдається легко знайти в інтернеті, виникає впевненість у тому, що її з даного питання взагалі не існує (Dobozy & Gross, 2010, р. 92). Крім того, у більшості випадків невідповідний користувач переважно звертає увагу лише на назву, анотацію та ключові слова, а іноді взагалі не може пояснити свій вибір джерел, користуючись виключно інтуїцією. Також багато проблем пов'язані із інтерпретацією результатів пошуку (McNee & Radmer, 2017, pp. 6-7).

З урахуванням даної проблеми (природної для сучасного суспільства, яке стало інформаційним у той час, коли значна кількість освітніх планів продовжують залишатись в епосі «до інтернету» й у багатьох країнах ще не мають пріоритетом саме інформаційну освіту), найбільш актуальною метою співробітництва бібліотекаря й викладача має стати підтримка як науковця, так і студента у виявленні найбільш ефективної стратегії пошуку (Braddlee & VanScoy, 2019, р. 430). Зокрема, у зазначеній вище схемі необхідно рухатись до виконання бібліотекаром у першу чергу функцій не «довідника», а *активного консультанта*, в ідеалі вбудовуючи бібліотечні елементи у навчальний процес (Scripps-Heekstra & Hamilton, 2016). При цьому бібліотекар має відігравати роль своєрідного «гіперпосилання» (визначаючи, що саме за ідеї розглядаються та як вони поєднані), тоді як викладач надає вихідну інформацію та «каркас» для її інтерпретації (Campbell, 2010, р. 33). Більш того, окрім головного – інтеграції інформаційних навиків (англ. «skills») до навчального процесу – зараз є необхідність у вбудовуванні бібліотечних знань навіть у повсякденне життя студентів та викладачів (Lewis, 2007, р. 425).

Таким чином, співробітництво між бібліотекарями та викладачами є необхідним. На даному етапі, згідно із опитуванням журналів «Library Journal» та «Gale» (2015 р.), воно проходить у таких основних напрямках: «навчання студентів інформаційній освіті», «розвиток [бібліотечних] колекцій у прямій підтримці програм курсів», «розвиток колекцій із загальних дисциплін» та «особиста допомога студентам в організації

досліджень» (Yu et al., 2019, p. 98). Важливим є те, що робота із студентами та аспірантами вимагає різних підходів: студентам потрібно у першу чергу навчитись користуватись ресурсами, які надає бібліотека, та працювати з ними з метою виконання навчальних завдань, тоді як аспіранти вимагають більш спеціалізованої допомоги у роботі із списками літератури та своїми дисертаціями (Scripps-Hoekstra & Hamilton, 2016). Також необхідним є зворотній зв'язок між лектором (після завершення курсу інформаційної освіти, в якій би формі він не проводився) та бібліотекою – з метою оцінити якість навчання (Davids & Omar, 2018, p. 4).

Цікавим є результат опитування університетських викладачів щодо того, яку роль, на їхній погляд, відіграє бібліотека у навчальному процесі, проведеного у коледжах штату Вірджинія (США). За їх оцінкою, найбільш активно бібліотекари діють у напрямках підвищення обізнаності щодо відкритих освітніх ресурсів у викладачів (так вважають 40,7% респондентів), допомоги у їхньому пошуку (38,9%), оцінювання якості зазначених ресурсів (36,4), проведення семінарів з їх використання (28,4%). При цьому на запитання, яку роль, з точки зору респондентів, має відігравати бібліотека в університеті, відповіді були іншими: більшість висловились за акцент на безпосередній допомозі у пошуку відкритих освітніх ресурсів (56,2%), проведення роботи з додавання їх до бібліотечних колекцій (54,3), допомогу у отриманні якнайкращого доступу до ресурсів (48,1%) та ін. (Braddlee & VanScoy, 2019, p. 436).

На жаль, протиріччя у розумінні функцій бібліотеки в університеті мають місце у всьому світі, у більшому чи меншому ступені. По-перше, існує упереджене «розділене» ставлення до викладачів як інструкторів у галузі знань та до бібліотекарів як допоміжного персоналу, що нібито лише каталогізує матеріали, додає їх до баз даних та відповідає на запитання студентів (Scripps-Hoekstra & Hamilton, 2016). Як ми можемо побачити, виходячи із наведених вище даних, це твердження у сучасному світі не відповідає дійсності. Також можна виділити такі проблеми, як взаємне нерозуміння специфіки робочої діяльності іншої сторони, «статус ідентичності» (відсутність або мала кількість співробітників бібліотек із академічними ступенями й науково-дослідницькими навичками) та банальне незнайомство один із одним (Yu et al., 2019, pp. 98-99).

Дуже характерним для демонстрації характерної ситуації є вираз Джейсона Дрейка, співробітника Роз'яснювальної програми для студентів першого курсу Нью-Йоркського університету й пристрасного прихильника широкої колаборації із бібліотекарами: «Бібліотеки – це божевільні, дивовижні місця, але небагато людей розуміють, як їх використовувати» (Campbell, 2010, p. 97). Проблема полягає у тому, що у ряді випадків викладачі не наважуються звертатись до бібліотек за допомогою, бо не знають, що бібліотеки можуть справді їм допомогти (Bendriss, Saliba, & Birch, 2015, p. 822).

Отже, протиріччя у взаєминах бібліотекарів та науковців можна розглядати у двох вимірах: організаційному та соціального статусу. Перешкоджають, крім того, й такі, теж впливові, фактори, як організаційна культура, доступні ресурси (час та мотивація) і навіть невірне розуміння деякими викладачами власних дисциплін (Wishkoski, Lundstrom, & Davis, 2018, p. 169). Зокрема, як зазначається багатьма викладачами, нестача часу на співпрацю, не виділеного в академічному розкладі, створює додаткові проблеми, а спілкування через електронну пошту не є ідеальним (McNee & Radmer, 2017, p. 8). Крім того, самі бібліотекари, які звикли працювати із читачами «один-на-один», інколи виявляють невпевненість у тому, що вони зможуть вести заняття із групами студентів, на що звертають увагу викладачі – звичайно, трактуючи це не на користь активізації колаборації. У зв'язку з цим у літературі ставиться питання щодо необхідності запровадження відповідних курсів також і для бібліотекарів – майбутніх інструкторів (Ivey, 2003, p. 109).

Подолати ці непорозуміння можна, максимально широко інформуючи науковців, студентів та аспірантів (які у недалекому майбутньому стануть викладачами) про можливості бібліотеки у підвищенні якості освіти та наукових компетенцій всіх, хто звернеться до неї по допомогу. Для того, щоб уникнути протиріч в організації процесу, треба дотримуватись таких обов'язкових принципів, як: а) *безпосередньо встановлення контакту між співробітниками* (формального чи неформального); б) *загальна мета* (та її однакове розуміння всіма учасниками, що не менш важливо); в) *загальна відповідальність* (чіткий розподіл завдань між сторонами); 4) *загальний процес* (добре структурований задля досягнення єдиної мети); 5) *організаційна ефективність* (наприклад, покращення рівня обізнаності студентів та якості наукових досліджень) (Yu et al., 2019, pp. 100-101). Також важливими складовими є довір'я та взаємоповага, відсутність обмежувальних «кордонів» у розподілі взаємної відповідальності, а також відсутність необхідності у прийнятті рішень виключно консенсусом – має існувати довір'я (Ivey, 2003, p. 101). Таким чином, обидві сторони-учасниці взаємодії повинні, з одного боку, поважати інтереси іншої сторони, а з іншого – не поступатись своїми, не порушуючи рівності партнерів, йдучи до загальної вигоди. В цілому бажано обирати для співпраці викладачів, що розуміють необхідність навчання студентів інформаційної грамотності та самі використовують засновані на інформаційних ресурсах методи викладання (Ivey, 2003, p. 102). Також зазначається дуже велика роль особистих неформальних зв'язків між конкретними представниками бібліотек та факультетів, які можуть схилити ситуацію в будь-який бік – аж до отримання або неотримання фінансування.

Треба зазначити, що «інформаційна грамотність» (information literacy, IL) є дуже важливим поняттям, навколо якого може будуватись співробітництво між бібліотеками та факультетами. За визначенням Американської бібліотечної асоціації, вона являє собою набір здібностей, згідно із якими учні мають бути у змозі виявити, коли інформація є необхідною, а також знайти, оцінити та ефективно її використовувати (American Library Association, 2000, p. 2). При цьому дослідження процесів навчання інформаційної грамотності ще знаходиться на початковій стадії (Ivey, 2003, p. 111). Відомо, що у багатьох інституціях на її вивчення виділяється одне заняття, що є абсолютно недостатнім, бо важлива інформація, не будучи закріпленою практично, може бути пропущена користувачем або ж її можуть запам'ятати невірно (Bendriss et al., 2015, p. 822).

Проте, можна навести значну кількість прикладів успішної взаємодії між бібліотеками та науковцями саме у цій площині. Так, в університеті штату Юта у 2017- 2018 рр. проводились дослідницькі семінари викладачів із студентами, у яких брали участь бібліотекари – зокрема, для останніх дуже важливим було виявлення існуючих точок взаємодії між бібліотекою та предметом («natural partnerships») (Wishkoski et al., 2018, p. 185).

В університетах Південно-Африканської Республіки окремо вивчається курс з інформаційної грамотності. Згідно із даними статистики, серед 14 університетів 93% курсів читається саме бібліотекарами (у співробітництві із основними лекторами); від 56 до 60% його є частиною різних модульних курсів та від 20 до 32% – окремим модулем для студентів першого курсу. Зокрема, в Технологічному університеті Капського півострова (Cape Peninsula University of Technology) з 2009 р. цілеспрямовано реалізується програма інтеграції курсу IL до навчального процесу: для контролю діє контрольний комітет, до складу якого входять як викладачі, так і бібліотекари (Davids & Omar, 2018, p. 2).

Для студентів першого курсу педагогічних спеціальностей Університету Едіт Коуен (м. Перт, Західна Австралія) підготовано спеціальний плагін для навчального програмного забезпечення BlackBoard із подкастами на теми пошуку інформації у бібліотеці,

важливості використання журнальних баз даних у науковій роботі, дослідницьких стратегій та використання в них онлайн-ресурсів (проходження подкастів факультативне). Навчання проводиться із обов'язковим залученням досвідчених бібліотекарів. Із тих, хто взяв участь в опитуванні щодо використання даних програмних продуктів, в своїх дослідженнях їх використали 23%, з них 2/3 пройшли курс до кінця. Цікавими є висновки з функціонування програми: згідно із ними, просте надання значної кількості інформації не є ефективним, необхідним є розширення стратегічного співробітництва із залученням більшої кількості викладачів та проведенням цільових заходів (Dobozy & Gross, 2010, pp. 94-97).

Найбільш цікава система використовується у Єльському університеті, де новим студентам призначають «особистого бібліотекара» – це є точкою для стабільного та регулярного контакту учня із бібліотекою. Протягом навчання бібліотекар інформує студента про нові бази даних та наукові інструменти, колекції та методи досліджень. Також студентам рекомендують контактувати із особистим бібліотекаром з будь-яких питань, які в них з'являються в ході своєї роботи в бібліотеці (Campbell, 2010, p. 31).

Цікаво, що бар'єром у контактах можуть також бути не тільки психологічні, але й соціальні фактори. Так, на основі власного досвіду колаборації учасники, крім іншого, зазначають, що у сучасному мультикультурному світі для успішної реалізації програми вкрай бажана наявність сумісної культури (сукупності загальних норм, цінностей, переконань та настанов), бо якість взаємодії залежить також і від національної культури конкретного суспільства (Yu et al., 2019, pp. 102-104). Зокрема, у 2015-2016 рр. у, Тайланді, Гонконзі, Сінгапурі та на Тайвані проводилось дослідження, шляхом опитування, щодо досвіду взаємодій бібліотекарів та науковців. Серед необхідних елементів співпраці більшість визначили у першу чергу «взаємну повагу та довіру», далі йшли «взаємні вигоди та відповідальність», «відносини та взаємодія» та «зобов'язання» (див. Додаток 1). Найбільш важливою причиною для взаємодії було названо «сприяння розвитку освіти щодо інформаційної грамотності». Важливим висновком дослідження була впевненість респондентів у тому, що саме бібліотекари мають бути ініціаторами співпраці, проводячи регулярні та активні контакти (Yu et al., 2019, pp. 110-112). Головними причинами, що протидіють ефективній взаємодії, опитані називали нестачу виділеного робочого часу та відсутність контактів між учасниками. Також мали місце окремі зауваження (переважно із Сінгапуру, через більш низький статус університетських бібліотек) щодо недостатнього сприйняття бібліотек університетськими адміністраторами, невиділення коштів та людських ресурсів, а також того, що співпраця є повністю зав'язаною на окремих осіб: якщо хтось із них йде із роботи, то вона припиняється (Yu et al., 2019, pp. 116-117).

Також використовується й інший варіант взаємодії, але він, вочевидь, не вирішує проблеми. Так, у Санкт-Петербурзькому державному економічному університеті запроваджено т. зв. проект «Куратор», що передбачає призначення представників кафедр у бібліотеці (на кафедрах) та «кураторів напрямків» (у бібліотеці). Метою проекту названо активізацію спільної роботи кафедр та бібліотеки, забезпечення «нового рівня» взаємодії (на рівні кафедр) з формування та використання інформаційно-бібліотечних ресурсів, а також встановлення партнерських відносин на основі т. зв. «радикального довір'я» (Никитина & Мац, 2012, p. 148). На жаль, автори, використовуючи надто багатозначний у даному контексті термін «радикальне довір'я», не пояснюють, що саме вони мають на увазі. В цілому проект не тільки не пропонує партнерам ніяких пропозицій підвищення якості освіти, але й де-факто фіксує пасивну роль бібліотеки як виключно допоміжної структури у взаємозв'язках із викладачами (лише як постачальника ресурсів, створюючи дублюючі зв'язки співробітників, вочевидь, в обхід деканатів, без можливостей інтеграції

бібліотечних знань до навчальних планів, що суперечить світовому досвіду) та взагалі не передбачає контактів на рівні факультетів. Керівництву закладу у такому випадку взагалі немає ніякого сенсу розширювати взаємодію із бібліотекою, якщо вона не бажає модернізуватися, ігнорує світовий досвід та не пропонує реальної допомоги у забезпеченні якості освіти. Дуже дивною також виглядає теза авторів про те, що проект встановлює особисту відповідальність «конкретної людини за виконану роботу» (Никитина & Мац, 2012, р. 149). Тобто, за логікою авторів цього дивного «кураторства», до цього відповідальності за свою роботу у співробітників не було...

Підводячи попередній підсумок, можна зазначити, що співробітництво бібліотек із факультетами, що враховує сучасні тенденції, є вигідним обом сторонам й в цілому сприяє підвищенню якості освіти. Так, проходження курсів інформаційної культури, як засвідчено досвідом викладачів та бібліотекарів медичного коледжу Уейла Корнелла (Катар), призводить до того, що студенти більш якісно використовують свої знання у своїх професійних галузях, вірно користуючись цитуванням та електронними ресурсами, а також критичним мисленням – як у академічній діяльності, так і в приватному житті (Bendriiss et al., 2015, р. 828).

В умовах України ж бібліотечно-факультетська колаборація є абсолютно необхідною. Так, за досвідом Центральної наукової бібліотеки ХНУ імені В. Н. Каразіна, ще досить багато викладачів, подібно деяким західним колегам, не вважають, що бібліотека здатна навчити студента або аспіранта корисним навичкам, за звичкою уявляючи її чимось на кшталт архіву із підручниками та персоналом, який знаходиться поза навчальним процесом. При цьому в той час, коли в багатьох західних університетах вже зараз звертається увага як на розвиток критичного мислення, так і на т. зв. «стратегію дослідження» («search strategy»), природним компонентом якої стають бібліотечні знання, у вітчизняному освітньому просторі у ряді випадків даний компонент є другорядним у процесі навчання студентів – у кращому випадку, від них вимагають опрацювати список літератури, наданий викладачем.

Центральна наукова бібліотека Харківського національного університету імені В. Н. Каразіна, з метою покращення якості послуг та намагаючись використовувати кращі зразки світового досвіду бібліотечної справи, також включається у процес колаборації з факультетами. Програму, що отримала робочу назву «бібліотечне кураторство», започатковано згідно із прийнятою у 2019 р. Стратегією розвитку ЦНБ «Сучасна університетська бібліотека. «Бібліотека 4D: дослідження, доступність, досконалість, дружність». У пункті 6-му, зокрема, поставлено завдання: «Створити сучасну систему взаємодії з факультетами та науково-дослідними центрами університету для підвищення ефективності використання інформаційних ресурсів. Призначити інформаційних бібліотечних кураторів для факультетів. Організовувати семінари для викладачів і науковців, спрямовані на формування знань про сучасні методи оцінки ефективності наукових досліджень, знайомство з сучасними вимогами до наукових публікацій». Згідно з ним бібліотечними кураторами призначено 15 співробітників ЦНБ (на 21 факультет) – переважно серед молодих бібліотекарів.

Причиною введення згаданого пункту Стратегії була виявлена протягом останніх років недостатня обізнаність студентів та науковців щодо можливостей бібліотеки – в першу чергу, щодо інформаційних ресурсів (репозиторію, електронного архіву eScriptorium та ін.), можливостей доступу до повнотекстових та наукометричних баз даних й навчання користування ними. Так, за спостереженнями співробітників, про можливості, які надає своїм читачам ЦНБ у даних галузях діяльності, за станом на момент початку реалізації програми знали переважно ті науковці, що самі цікавилися даними питаннями, приходили до бібліотекарів та ставили запитання. Тому, з метою подолання комунікаційної

кризи, у якості головного завдання кураторам доручено встановлення додаткових, більш тісних, зв'язків із деканатами та кураторами академічних груп.

Першим практичним кроком до реалізації програми була розробка тематики теоретичних та практичних занять, теми яких куратори надали заступникам деканів факультетів для розповсюдження між викладачами та кураторами груп. Значна кількість тем пов'язана із питаннями, що, на наш погляд, мають найбільшу актуальність саме з точки зору необхідності поширення інформаційної грамотності – бібліографічні стандарти, вміння працювати з базами даних (Web of Science, Scopus, EBSCO та іншими, до яких мають доступ читачі ЦНБ), спеціальними інструментами (Publons та ResearcherID, Mendeley, EndNote Online), розміщувати власні публікації в електронному архіві університету та ін. Крім того, куратори нагадували про можливість індивідуальних консультацій із зазначених питань, а також передавали заступникам деканів спеціально розроблені оголошення та інформацію про те, чому кожному сучасному студенту та науковцю потрібен доступ до баз даних та вміння працювати із ними, із запрошенням записуватись на заняття ЦНБ у бібліотечного куратора факультету (із наданням реквізитів для зв'язку). Також розпочато цикл занять з інформування із зазначених питань із кураторами академічних груп факультетів університету.

Реакція факультетів на ініціативу ЦНБ виявилась досить позитивною та у повній мірі підтвердила дані щодо світових тенденцій у співробітництві бібліотек та науковців, наведені вище. Найбільш активним (незважаючи на те, що контакти здійснювались у період літнього підсумкового контролю) був відгук з боку тих підрозділів університету, які є зацікавленими у роботі з електронними ресурсами, але не мали з різних причин повної інформації щодо можливостей бібліотеки (зокрема, це напрямки економіки та бізнесу). Зацікавленість у взаємодії продемонстрували викладачі, які розуміють актуальність інформаційних ресурсів в освітньому процесі, самі працюють із наукометричними базами даних. Зокрема, бібліотечного куратора одного з цих факультетів було запрошено на зустріч із представниками кафедр. Діалог засвідчив як зацікавленість у співробітництві з різними підрозділами бібліотеки (комплектування, читальні зали), так і необізнаність окремих викладачів у елементарних питаннях, що витікала із банального небажання спілкуватись із бібліотекарями. Заступник декана іншого факультету виявив велике зацікавлення у співпраці, в першу чергу щодо підвищення рівня інформаційної грамотності студентів, та виступив із ініціативою складення плану занять, інтегрованого до навчального процесу, на базі самого факультету. Показовим є факт візитів нових відвідувачів – студентів з цього факультету – до ЦНБ із запитом щодо баз даних після спілкування заступника декана із куратором.

З іншого боку, ряд факультетів (переважно гуманітарної спрямованості, що є менш представленою у Web of Science та Scopus) майже не виявили зацікавленості у співробітництві – їх реакція була мінімальною; мали місце випадки нерозуміння сутності процесу та навіть намагання ухилитись від контактів. В цілому виявила себе правильність наведеної у літературі тези щодо дуже великої ролі неформальних зв'язків між працівниками бібліотеки та факультетів, індивідуальних якостей та рівня обізнаності кураторів щодо особливостей діяльності різних підрозділів бібліотеки в цілому (комплектування, читальних залів, інформаційного сервісу).

Висновки

Процес взаємодії бібліотекарів із підрозділами закладів вищої освіти на початку ХХІ століття, в умовах всебічного й дуже швидкого розвитку інформаційного суспільства, є нарізним та необхідним. За умов раціональної та грамотної реалізації основних його умов,

що вже є відпрацьованими на основі іноземного досвіду, він має великий потенціал. Особливості його розвитку у вітчизняних умовах покаже час, але бібліотека Харківського університету, використовуючи свій досвід та напрацювання, має усі умови для того, щоб дивитись у майбутнє з оптимізмом.

Додаток 1

Порівняння значень параметрів бібліотечно-факультетської взаємодії в університетах Гонконгу, Сінгапуру, Тайланду й Тайваню (за джерелом: Yu, T., Chen, C. C., Khoo, C., Butdisuwan, S., Ma, L., Sacchanand, C., & Tuamsuk, K. (2019). Faculty - librarian collaborative culture in the universities of Hong Kong, Singapore, Taiwan, and Thailand: A comparative study. *Malaysian Journal of Library & Information Science*, 24(1), 97–121. doi:10.22452/mjlis.vol24no1.6). С. 110

Dimension	Location of university				Average	SD
	HK (mean)	SG (mean)	TH (mean)	TW (mean)		
1. Organizational collaborative environment	3.188	3.076	3.481	3.051	3.10	0.66
2. Mutual benefit and responsibility in collaboration	4.045	4.039	4.254	4.234	4.14	0.49
3. Collaborative commitment	3.652	3.902	3.790	3.911	3.81	0.59
4. Collaborative leadership	3.504	3.554	3.540	3.707	3.57	0.75
5. Mutual understanding and communication	3.723	3.643	3.947	3.760	3.76	0.57
6. Mutual respect and trust	4.247	4.290	4.070	4.202	4.20	0.49
7. Collaborative relationship and interaction	3.977	4.030	3.792	3.972	3.94	0.59
Average	3.765	3.790	3.839	3.833		

Note: 1. N=480; 2. HK=Hong Kong, SG=Singapore, TH=Thailand, TW=Taiwan

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NETWORKING INFORMATION TECHNOLOGIES AS A METHOD INNOVATIVE CHANGES IN ACADEMIC LIBRARIES

Objective. The article examined at current global trends to require significant changes of the educational and library infrastructure. The analysis of these tendencies and of the current state of development of the educational and library sphere gave an opportunity to understand to the implementation of network technologies can affect to the activities of academic institutions. **Methods.** At the present stage, the popularity of distance technologies is increasing because they are best able to meet the new needs of modern users of library networks. The authors identified the factors of popularity and scope of networking technologies and investigated their influence on various aspects of the practical activity of university libraries. **Results.** Practical experience of the Scientific and Technical Library of DNURN named after academician V. Lazaryan demonstrates to the use of the modern networking technologies, which changed, improved and expanded the scope of services of the library institution. **Conclusions.** The research allows conclude to mastering library specialists of new knowledge and working skills to mobile information technologies. The introduction these technologies to practical activity promotes further development of the academic library and helps to improve forms of service for remote users to digital content.

Keywords: academic libraries; networking information technologies; innovative development; digital media; remote user

Introduction

The international movement for openness of information and knowledge, the rapid growth of the number of digital media, the creation of digital libraries require upgrading to the educational infrastructure. Changing the stereotypes of modern library users are helping to transform libraries from simple book collections to media centers. These centers create the conditions for education, science, as well as spaces for collaboration, communication and leisure. This has a positive effect on the socialization and self-realization of the young people studying in the educational institution. Those who wish to get an education increasingly prefer a continuous form of study, namely distance courses. Distance learning courses are based on networking information technology.

These changes will best meet new user needs. It is impossible to imagine a modern university library without the use of the latest media technologies. The authors aim to understand the processes that are taking place at the present stage of development in educational and library-communication activities and to explore the impact of digital network technologies on the modernization of university academic institutions.

Today, there are many publications by domestic and foreign scholars on various aspects of the use of remote technologies and the provision of mobile services to users. Namely, T. Markova, I. Glazkova and E. Zaborova (2016) investigated the problem of quality of online distance learning, and N. Yevsyukova and S. Fedyaj (2018) examined the issue of improving the

skills of library workers through the mass open online courses “Prometheus”. L. F. Bandylo (2018) identified tendencies and directions of innovative activity of Ukrainian libraries at the present stage, and V. Zagumenna, T. Granchak (2017) provided an analysis of distance education of librarians in the virtual environment. M. L. Smirnowa, (2017) explored the motivational potential of new media and e-learning programs, and L. W. Afanasjewa with M. L. Smyrnova, (2019) examined the use of innovative multimedia technologies in foreign language classes by technical students. V. M. Kukharenko's work (2018) is devoted to the obstacles to the implementation of distance learning. Areas of application of modern multimedia and interactive technologies in education are covered in the work of O. Ye. Konovalenko and V. O. Brusentsev (2017), and the issues of the use of modern innovative intellectual technologies in distance learning of engineers in the article by G. A. Samigulina and Z. I. Samigulina (2017). The implementation of networked information technologies in the practical activities of the library to expand and improve the forms and methods of information services for remote users has not been sufficiently researched in scientific publications. This problem was the focus of our research.

Methods

The current research use analytical and descriptive methods with a focus on analyzing the practical experience of the Scientific and Technical Library of the Dnipro National University of Railway Transport named after Academician V. Lazaryan (STL DNURT) in the field of application of networking information technologies.

The availability of electronic media breaks existing states borders. There are no barriers to knowledge transfer because remote users have now access to scientific and cultural heritage (Brünger-Weilandt, 2014). European libraries have started to create and develop digital online libraries to meet the needs of modern users. For example, the Deutsche Digitale Bibliothek DDB (German Digital Library) is the largest online library in the country. The portal of DDB opens access to culture treasury and sources information for all interested parties. Remote users can read online scientific articles, watch movies, and get acquainted with museum collections to the help of network technologies. It is very important that DDB users can be assured of digitized sources of information, as guaranteed by German cultural and scientific institutions. More than 2000 cultural and scientific institutions, libraries and archives participated in this project. The digitized material in good resolution remains on the website of the institution that worked it. The number of objects in the German Electronic Library is constantly growing. As of the end of 2018, the portal contained records of more than 24 million objects, according to Wikipedia (Deutsche Digitale Bibliothek, (n.d.)). In the long term, this library should integrate all German cultural and scientific institutions to the online libraries and integrate them into the European project “Europeana”.

Ukrainian libraries have already begun to join this global trend, as participation in such projects contributes to the development and popularity of the library, enhances its image. Moreover, the facts show that such projects have great resonance. Thus, in the first few days after launching DDB FIZ portal Karlsruhe recorded 3.6 million hits and more than 25.6 million downloads (Deutsche Digitale Bibliothek - Kultur und Wissen online, 2012, December 20).

Networking information technologies are spread across different spheres of public life because their use for professional development of employees satisfies both the workers themselves of production or business companies, and employers. Modern multimedia and interactive technologies are used for modeling and creation of production situations, “field” researches, psychological exercises, creation of video presentations and videos for advertising of production, etc.

Integration of knowledge and communication, the international movement for open access to knowledge are changing the functioning and development of academic libraries in the direction of providing high-quality information services to the author-scientist and supporting the philosophy of open access to knowledge. Shifting the vector of priority to the needs of user-scientists, providing new digital services to users, participating in the publishing of scientific periodicals turns university libraries into a partner of scientists-educators in the production, preservation and dissemination of knowledge (Kolesnykova, 2017).

Good mastery of the latest technologies, increased access of users to world information resources, production of innovative information products and services, digitization of the most valuable part of funds are the basic directions of development of academic libraries, which requires from library specialists era of networks, electronic documents and virtual reality (Bandilko, 2018).

Media literacy and the use of modern digital technologies make it possible for anyone to achieve their own educational goals, which is why more and more people are opting for distance learning. Distance learning is the main area of application of network technologies. The digital world is transforming education today like no other social phenomenon. Learning is becoming more use virtual as distance learning has some advantages over traditional forms of learning. Distance learning is an effective, flexible, mobile and consumer-friendly training system. By means of distance courses it is possible to receive education of different level or to improve their professional qualification regardless of their place of residence, physical disabilities, to inseparable from their professional activity. Networking technologies provide course participants to webinars, discussion of various issues on the forum or social networking. The process of teaching and certification of students' knowledge is carried out to the help of mobile information technologies.

University libraries should provide information and library support for distance learning systems. The requirements for the technical equipment of library facilities and the professional competence of library specialists are constantly increasing. The application of the latest multimedia technologies requires innovative changes in academic libraries. Functional and constantly updating websites and repositories, an easy-to-use electronic catalog should provide remote users to access to digital textbooks, tutorials, self-study scientific conference materials, as well as educational video films, video presentations, video lectures and virtual exhibitions. Academic librarians must have a good knowledge of the IT culture, constantly improve their level of information culture, in order to help users, work to the electronic catalog, use international databases (DB), evaluate sources of information, publishers, web addresses, values of Internet resources, guidance in the use of bibliographic, thematic, factual references, in different types of citations.

Results and Discussion

Distance learning courses, participation in the Clarivate Analytics and Bright TALK webinars help prepare professionals for innovative change, and they then actively put their knowledge and skills into practice. For example, in 2014, the employees of the Scientific and Technical Library DNURN named after of Academician V. Lazaryan took the opportunity for distance learning at the courses of NTU "KPI" "Curator of Content 3" (Network Information Analyst) and received certificates after their completion. The training and development of new technologies by STB employees allowed the creation of a new department of library and information technologies in the library with the sector of information analytics and the sector of support of the automated library system and software. The acquired knowledge and skills of

specialists helped to expand the sphere of virtual services and allowed to fulfill better the information needs of the university community.

Today, librarians carry out scientometric and bibliometric studies prepare analytical management reports, to support the created database "University Science Publication Profile". They also mastered a new type of activity - editorial and publishing activities. This allowed successful publication of the open access electronic journals "Science and the Progress of Transport" (<http://stp.diit.edu.ua/>) and "Anthropological Measurements of Philosophical Research" (<http://ampr.diit.edu.ua/>) (Fig. 1).



Figure 1. E-Journals of STL DNURT published as "Library Publishing" Project

STB DNURT organizes practical seminars, webinars for the scientific community, creates and places useful and accessible video lessons on the site of the library. These lessons help scientists easily navigate the virtual space. All this has made it possible to expand the scope of online library services in the direction of providing users with access to digital scientific content.

To the help of the Open Conference Systems platform, which has been successfully mastered by the specialists of the institution, the Scientific and Technical Library engages in publishing and promoting the results of scientific activities of the University's scientists through the site of open conferences (Fig. 2).



Figure 2. Sites of open scientific conferences supervised by the DNURT Library

In 2014, the first site was created of the scientific conference "Anthropological Measurements of Philosophical Research" (access to the conference: <http://conf-ampr.diit.edu.ua/>). Prior to the 2016 multi-format scientific and practical conference on library and information affairs in the format of open conferences with live broadcast through the YouTube channel, the site of the second scientific conference "The University Library at a New

"Stage of Social Communications Development" was created, the materials of which can be viewed at the following link <http://confliib.diit.edu.ua/> (Pominova, 2016). All this was done through the use of the latest technologies.

Librarians have mastered all the processes involved in creating electronic copies of print editions (FineReader, Photoshop, ScanTailor, Adobe Acrobat) to join the new workflow that has now spread around the world to digitize the most valuable library stock. To date, collections of "Abstracts of Dissertations" (<http://eadnurt.diit.edu.ua/jspui/handle/123456789/39>) have been created and placed on the library's website, which contains 542 records, of which approximately 350 contain scanned documents and "Railway ukrainika" on the Rare and Valuable Editions" page (<http://ecat.diit.edu.ua/zu/index.html>), which gives you access to documents published between 1877 and 1940 and for which copyright has expired (Matveyeva, Yunakovska, 2017).

The coverage of the experience of the Scientific and Technical Library of the DNURT named after Academician V. Lazaryan makes it possible to see to the introduction of mobile technologies activates innovative changes in the activity of the library, makes it necessary to transform information and library activity in the direction of broader satisfaction of remote needs of users.

Conclusions

Processes of globalization and informatization, accessibility of electronic media, computerization of all spheres of public life, development and improvement of information technologies are leading to innovative changes in various spheres of modern activity of educational and library institutions. Today, online libraries are gaining in popularity, and distance learning is becoming a promising form of educational services today. The use of online information services makes the process of knowledge acquisition more flexible, mobile and convenient for those wishing to acquire knowledge.

The analysis of the practical activity of the Scientific and Technical Library DNURT named after Academician V. Lazaryan confirms the thesis that the introduction of digital network technologies in the activity of the institution modernizes the library, contributes to its popularity among users. So, STB DNURT changed the vector of its activity, expanded the list of services in the field of remote user services. Librarians have mastered new activities (editorial and publishing activities, digitization of valuable sources of library funds, creation of websites of open conferences, scientometric and bibliometric analytics, etc.). Library specialists are able to organize and successfully conduct practical video seminars and conferences, webinars for the scientific community, to help university scientists to navigate well in the scientific virtual space. The Scientific and Technical Library has the potential to continue to actively master these technologies through the development and support of open networking courses, distance training for employees, exchange of experience between educational and library institutions through various activities through multimedia.

The introduction of networked information technology has a positive impact on the innovative development of academic libraries, as it facilitates the transformation of the institution into a modern media center with a wide range of comfortable mobile services for users.

The results of the researches provide a better understanding of current trends in the development of academic libraries, and encourage further research of this topic in the search for new means of improving the field of user service quality content.

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МЕРЕЖЕВІ ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ ЯК ЗАСІБ ІННОВАЦІЙНИХ ЗМІН В АКАДЕМІЧНИХ БІБЛІОТЕКАХ

Мета. У статті передбачено розглянути сучасні світові тенденції, які вимагають від освітньої та бібліотечної інфраструктури суттєвих змін. Розгляд та аналіз цих тенденцій, а також сучасного стану розвитку освітньої та бібліотечної сфери дасть змогу зрозуміти, як упровадження мультимедійних технологій і розширення сфери дистанційних послуг впливає на діяльність академічних закладів. **Методика.** На сучасному етапі різко зростає популярність дистанційних технологій, бо вони якнайкраще здатні задовольнити нові потреби сучасних користувачів бібліотечних мереж. Автори виявили чинники популярності та сфери застосування цих технологій, а також дослідили, як упровадження інноваційних технологій впливає на різні аспекти діяльності університетських бібліотек. **Результати.** Висвітлення практичного досвіду роботи Науково-технічної бібліотеки Дніпровського національного університету залізничного транспорту імені академіка В. Лазаряна демонструє, яким чином застосування новітніх технологій змінило, удосконалило та розширило сферу послуг бібліотечного закладу. **Висновки.** Проведене дослідження дозволяє зробити висновок, що засвоєння бібліотекарями нових знань та навичок роботи з дистанційними інформаційними технологіями, а також упровадження їх у практичну діяльність сприяє подальшому розвитку академічної бібліотеки, допомагає поліпшити форми обслуговування віддалених користувачів цифровим контентом.

Ключові слова: академічні бібліотеки; мережеві інформаційні технології; інноваційний розвиток; цифрові носії інформації; віддалені користувачі

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INFORMATION ANALYTICS IN THE ORGANIZATIONAL STRUCTURE OF LIBRARIES OF TOP-RATED UNIVERSITIES IN UKRAINE

Objective. To study of the organizational information and analytical structures of libraries of top-rated universities in Ukraine, in particular, of 4 domestic universities that entered the World University Rankings 2019.

Methods. The methodological basis of the study is the basic provisions of the general theory of social communications. Comparative analysis, sociocommunicative, information, adaptive and other approaches are used. **Results.** The form of organization of information and analytical activities in the library depends on its place in the library system and the existing organizational structure therein. There are two options for its organization. The first option involves the distribution of tasks between the existing library departments. The second one is the creation of an independent analytical unit in the organizational structure of the library. In the libraries of the universities under study, information and analytical functions are performed by other departments, primarily by the information and reference (bibliographic) units, information service as well as scientific and methodological (research) departments.

Conclusions. Thus, information and analytical activity, even for scientific libraries of leading Ukrainian universities, remains primarily a tool for improving internal library processes, and not a separate product (service) that is purposefully produced and offered to readers. Meanwhile, the intensification of the use of information and analytical technologies in libraries, the creation of specialized units therein is one of the effective tools for optimizing library work.

Key words: library; information analytics; information and analytical activity; organizational structure; information and analytical unit

Introduction

The complexity and ambiguity of processes occurring in the world, the diversity and redundancy of information, the need for its selection, the lack of reliable knowledge are prerequisites for activation of the information-analytical activity (IAA) in modern society. Social processes, the study of which is necessary for the effective management of complex social systems, are associated with the analysis of such a volume of factual data that at a certain stage of the study there is a need for more advanced methods of concentrated presentation of this information. Hence the ever-increasing role of the information-analytical component arises in the activities of leading libraries both in the world and in Ukraine.

Methods

The methods used are determined by the specifics of the study and are based on the use of a set of approaches and methods. The methodological basis of the work is the basic provisions of the general theory of social communications, which reflect the diversity of manifestations, the fundamental purpose of social communication in the system of social relations. The application of the socio-communicative approach made it possible to clarify the scope and content of the concept “information analytics”; to prove the communication essence of the information and analytical activity of libraries, to determine its place and functions in the social communications system of modern Ukraine. The information approach, in combination with comparative analysis, allowed

us to trace the evolutionary processes of the information and analytical activity of libraries and identify the main factors of its development, to identify the prerequisites for the development of information and analytical activity in the library, to identify and characterize the main stages and patterns of its evolution, the impact on library activities and on the formation and functioning of the library social institution within the conditions of changes in the sociocultural environment.

The systematic approach made it possible to identify the structure, connections and functions of the information and analytical activities of libraries in the field of meeting public information needs, to identify trends in its development as a necessary prerequisite for improving the quality of meeting users' information needs by the libraries in Ukraine. The use of the adaptive approach allowed considering of the information and analytical activities of libraries as a mechanism for libraries to adapt to the changes in the modern turbulent social and communication environment.

Results and Discussion

Studies of IAA in the libraries of Ukraine provide the opportunity to state that information analytics in libraries is an evolutionarily objective process, an indicator of strengthening of their communication functions in the context of complicated social and communication interaction. A significant influence on the development of information and analytical activities in libraries has such a factor as the transformation of the library itself, which has now become a leading communication center, having gone a long way from the accumulation, storage, processing and distribution of documented information, organizing information services to working with knowledge constructs. Among the range of issues solved by library analytics we can name the following: analysis and evaluation of rapidly growing data flows, including network ones, their processing and production of information and analytical products in accordance with the needs of the corresponding category of users; their preparation for use in a convenient form through the study and forecasting of the information needs of users, (Voroshilov, 2008; Gordukalova, 2009; Ilganaeva, 2007; Kobelev, 2012).

The evolution of the social communications system resulted in the establishment and development of library information and analytical production, the emergence of its new electronic forms – corporate information retrieval systems, virtual reference services, library systems based on multiple communication channels; abstract, factual databases, which in the information product and service market are gradually becoming competitors for its other entities; creation of special information and analytical services, the activities of which are based on the use of own generated resources as well as global network resources as information ones. (Kobelev, 2012; Kolesnykova, Matveyeva, Manashkin, & Mishchenko, 2019; Kolesnykova, Pominova, & Kolesnykov, 2016).

The form of organization of IAA in the library depends on the size of the latter and its existing organizational structure. In small libraries, all the duties of conducting informational and analytical work can be performed by one person; the large and medium-sized ones require collective efforts. There are two options for organizing the information and analytical activities of libraries. The first one involves the distribution of tasks of information and analytical activities between the existing departments of the library. This makes sense for those libraries where the creation of an information-analytical unit (department) on the ongoing basis is impractical or impossible, for example, due to lack of resources (financial, personnel, etc.) for its maintenance.

The second option is the creation of an independent analytical unit (service, department) in the organizational structure of the library. We consider this form of organization of library IAA more promising, allowing to build the work of analysts by different types and areas of activity more efficiently.

But at the same time, the results of studying by O. Kobelev and N. Chzhen (2014) of the sites of leading domestic libraries revealed a dominant trend in the distribution of functions and tasks of IAA among individual library departments. In particular, among 32 analyzed libraries, only 6 have 9 specialized departments of information analytics. In most of the leading Ukrainian libraries, information and analytical work is "scattered" across several departments. First of all, these are information-bibliographic (reference) departments and departments for scientific and methodological work.

The same trend was confirmed by the analysis of the organizational structures of the libraries of top-rated universities in Ukraine, in particular, 4 domestic universities that entered the World University Rankings 2019, which includes more than 1250 universities in the world selected by their main tasks: teaching, research, knowledge transfer and international authority. Evaluation is based on 13 carefully calibrated performance indicators. The following Ukrainian universities entered this ranking: Ivan Franko Lviv National University; Lviv Polytechnic National University; Taras Shevchenko National University of Kyiv, V. N. Karazin Kharkiv National University. The organizational structure of the scientific libraries of these universities has no specialized information and analytical departments, despite the fact that they are actively involved in this activity. Of particular note is the presence of analytical units in the university organizational structure, for example, the Information-Analytical and Career Center of Ivan Franko Lviv National University, Documentation Center of V. N. Karazin Kharkiv National University, etc. In the libraries of the universities under study, information and analytical functions are performed by other departments, primarily by the information and reference (bibliographic) units, information service as well as scientific and methodological (research) departments. This gives reason to state that information and analytical activity, even for scientific libraries of the highest rated universities in Ukraine, remains primarily a tool for improving internal library processes, and not a separate product (service) that is purposefully produced and offered to readers. This situation, in our opinion, is due to several factors. Firstly, these are financial problems, which, unfortunately, are faced by libraries of even the most successful universities. Secondly, there is the lack of trained analysts. Indeed, the creation in the library of a stable system for the production of high-quality analytical information depends not only on the level of its information, organizational, technological and financial security, but also on the state of organizational and personnel support. Yet it should be noted that this resource of information and analytical activity of the library is just beginning to take shape.

Conclusions

The prospects for further research on the IAA development in the library and information sphere are to intensify the use of analytical technologies in libraries, restructuring libraries and creating specialized information and analytical units therein as one of the means of adapting them to a new social and communicative reality.

In this context, the development of theoretical, methodological, personnel, organizational, technological and other areas is promising for optimizing the information and analytical activities of Ukrainian libraries in the context of formation of a knowledge society.

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ІНФОРМАЦІЙНА АНАЛІТИКА В ОРГАНІЗАЦІЙНІЙ СТРУКТУРІ БІБЛІОТЕК ТОП-РЕЙТИНГОВИХ УНІВЕРСИТЕТІВ УКРАЇНИ

Мета. Вивчення організаційних інформаційно-аналітичних структур бібліотек топ-рейтингових університетів України, зокрема, 4 вітчизняних закладів вищої освіти (ЗВО), які потрапили в World university rankings 2019. **Методика.** Методологічною основою дослідження є базові положення загальної теорії соціальних комунікацій. Використано порівняльний аналіз, соціокомунікативний, інформаційний, адаптивний та інші підходи. **Результати.** Форма організації інформаційно-аналітичної діяльності в бібліотеці залежить від її місця в бібліотечній системі та існуючої в ній організаційної структури. Можливі два варіанти її організації. Перший передбачає розподіл завдань між існуючими відділами бібліотеки. Другий варіант – створення самостійного аналітичного підрозділу в організаційній структурі бібліотеки. У самих же бібліотеках досліджуваних ЗВО, інформаційно-аналітичні функції виконують інші відділи, перш за все, інформаційно-довідкові (бібліографічні), інформаційного сервісу, науково-методичні (дослідні). **Висновки.** Таким чином, інформаційно-аналітична діяльність, навіть для наукових бібліотек передових університетів України, залишається, перш за все, інструментом для поліпшення внутрішніх бібліотечних процесів, а не окремим продуктом (послугою), які цілеспрямовано виробляються і пропонуються користувачам. Тим часом, активізація застосування

інформаційно-аналітичних технологій в бібліотеках, створення в них спеціалізованих підрозділів є одним із ефективних інструментів оптимізації бібліотечної роботи.

Ключові слова: бібліотека; інформаційна аналітика; інформаційно-аналітична діяльність; організаційна структура; інформаційно-аналітичний підрозділ

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IS OUR COLLECTION ENOUGH OR UNDERUTILIZED? A CITATION ANALYSIS OF MASTER'S THESES IN THE FIELD OF EDUCATION

Objective. The quality of library collection depends on how the librarians select materials for purchasing based on existing collection development policy. In the absence of approved policy, working guidelines take effect so there would be a selection guidelines criteria. The use of available selection tools, online book reviews, faculty recommendations, and standard lists will help the collection building. This paper aims to provide an overview of the type of materials Kazakh students utilize to complete their master's thesis. Specifically, it will have the following objectives: 1) to categorize the types of sources graduate students use in their thesis; 2) to compare the actual count of e-journal titles available in our collection versus the number of e-journal titles used in the reference list; 3) to identify the common journal titles used by the students and its overall journal ranking credibility based on prestige; to further develop the e-resources collection based on the citation analysis. **Methods.** In 2019, 20 e-theses were uploaded in the repository coming from one school (may also be called college or faculty). It was decided to select from one school only to determine the relevance of the collection coming from one discipline. A sample of 10 theses (50%) was analyzed in this study. Citation analysis was used to measure which materials are currently available in the library. It will also give an impression of whether the material is being used or not. Collection of data was done in an organized manner. A table was created to list the number of referenced items found per thesis. The researchers identified the number of print books, e-journals, conference proceedings, theses and other types of materials. To determine the specific journal titles, they were carefully extracted. Duplicate titles were combined and were counted as one unique entry. Using the SJR online, the researchers identified the quartiles of each title and determined the impact of the journals based on the ranking. Journal titles were searched and availability was verified using the online journal finder A-Z journal title list provided by the EBSCOHost. Non-quartile journal titles were also verified using Scopus. **Results.** An average of 59 references was listed by a graduate student in his/her master's thesis. Each student may have used 17.6 print books to cite in their thesis and 32.4 journal articles in which some of them may have referenced a suspected predatory journal. There are 199 unique journal titles cited in 10 master's theses. 19.6% of which is unavailable in the subscription but needs to be verified if they are indexed in leading citation databases. At least 50% of the theses had more journal titles categorized as Q1 journals. Another 50% the theses included more Q2 journals than Q1. One thesis cited more journal publications with no quartile but was able to reference 68% of journal titles coming from Q1-Q4 journals. In terms of journal availability, the library holds 80% of the journal titles cited in the reference list that are available whether by subscription or Open Access. **Conclusions.** It is apparent that master's students from the graduate school of education will likely cite more journal articles than books. At least 50% of the students get their references from Q1-ranked journals based from the SJR ranking. The library has a promising and huge collection of e-journal titles as it has almost 80% of the titles available in the library subscription. The sample revealed that the library is capable of providing a good quality of journal collection that can be used by the students and faculty members as well. We can proudly say that our collection is above the average. We need to still dig deeper how much of our collection is used extensively by the other members of the academic community.

Keywords: citation analysis; master's theses; e-resources; e-journal usage; collection assessment

Introduction

The Graduate School of Education (GSE) of Nazarbayev University has produced about 56 master's theses since its inception in 2012. More than 300 master's and PhD students have graduated from the GSE but due to a competitive environment, only some of the best thesis are uploaded in the NU Repository. With this in mind, only 20 master's theses were qualified to be uploaded and for the purpose of this study, only 10 were examined as sample to generate some partial results. This paper deals with citations analysis to determine the types of sources used by

the students in their thesis and to identify common journal titles extensively used by the graduate students.

Citation analysis scholars would argue that as early as 1984, librarians have already used the method of citation analysis as their basis for collection development and retain journals that are important in a specific field of research (Beile, Boote, & Killingsworth, 2003). Citation analysis is also about reputation. Gaining some expertise in the field, authors and journals cited in a research gives them prestige. A citation analysis study for the journal “International Journal of Educational Leadership Preparation” revealed that several authoritative scholars are always being cited because of their professional background and increase in publication outputs (Borgemenke & Brown, 2013). By this way, they were able to identify the well-known experts in the field. Aliyu (2018), conducted a citation analysis study of doctoral theses in Nigeria and he was able to identify top twenty core journals in the field of education. He also revealed that most post graduate students cited more books and monographs compared to journal articles.

Objectives of the Study. The quality of library collection depends on how the librarians select materials for purchasing based on existing collection development policy. In the absence of approved policy, working guidelines take effect so there would be a selection guidelines criteria. The use of available selection tools, online book reviews, faculty recommendations, and standard lists will help the collection building. Results of citation analysis would also be a good method to follow when evaluating the existing collection. This paper aims to provide an overview of the type of materials Kazakh graduate students utilize to complete their master’s thesis. Specifically, it will have the following objectives:

1. To categorize the types of sources graduate students use in their thesis.
2. To compare the actual count of e-journal titles available in our collection versus the number of e-journal titles used in the reference list.
3. To identify the common journal titles used by the students and its overall journal ranking credibility based on prestige.
4. To further develop the e-resources collection based on the citation analysis.

Review of Related Literature. Different fields of discipline conducted their own citation analysis study. Brush (2015), a subject librarian for physical sciences and engineering, shared the results of her study on the citation analysis of engineering master’s theses. She was able to identify the oldest book cited by an engineering student and that six is the average number of books cited. In terms of analyzing the journal publications cited in thesis, she gave a good report on the number of unique journal titles cited and the journals that the university subscribe to. Students also cited conference papers and other sources such as websites, newsletters, and personal communications. It was interesting that less than half of the books cited were not owned by their library. Timms (2018) studied 72 marine biology master’s theses and extracted a huge number of journal citations. He was able to extract 5, 747 references coming from journal articles. He also tabulated more than a thousand unique journal titles. His study gave him the opportunity to provide an evidence of how the library collection is being used by the graduate students. Other similar citation analysis studies mostly have the same objectives. It is to determine the types of materials used by each student and to identify if the library was able to cater those materials based on existing holdings (Becker & Chiware, (n.d.); Miller, 2011; Sherriff, 2010). It is worth noting that each discipline have unique citation preferences. Historical researchers use more monographs than journals (Sheriff, 2010).

Methods

Most citation analysis encompass a number of years to compare the citation trend per year. The sample given in this paper is just an overview of the current citation situation in the graduate school of education since we are a young university. With only 56 master's theses as of 2019, only 10 were studied (17.86%) from the total number of available theses in the repository.

In 2019, 20 e-theses were uploaded in the repository coming from one school (may also be called college or faculty). It was decided to select from one school only to determine the relevance of the collection coming from one discipline. A sample of 10 theses (50%) was analyzed in this study. Citation analysis was used to measure which materials are currently available in the library. It will also give an impression of whether the material is being used or not. Collection of data was done in an organized manner. A table was created to list the number of referenced items found per thesis. The researchers identified the number of print books, e- journals, conference proceedings, theses and other types of materials. To determine the specific journal titles, they were carefully extracted. Duplicate titles were combined and were counted as one unique entry. Using the SJR online, the researchers identified the quartiles of each title and determined the impact of the journals based on the ranking. Journal titles were searched and availability was verified using the online journal finder A-Z journal title list provided by the EBSCOHost. Non-quartile journal titles were also verified using Scopus.

Results and Discussion

A total of 590 references were extracted and examined from 10 master's theses in education. 30% of the theses came from MA Multilingual Education and 70% of the theses came from MS Educational Leadership. Figure 1 shows the distribution of references by type of source.

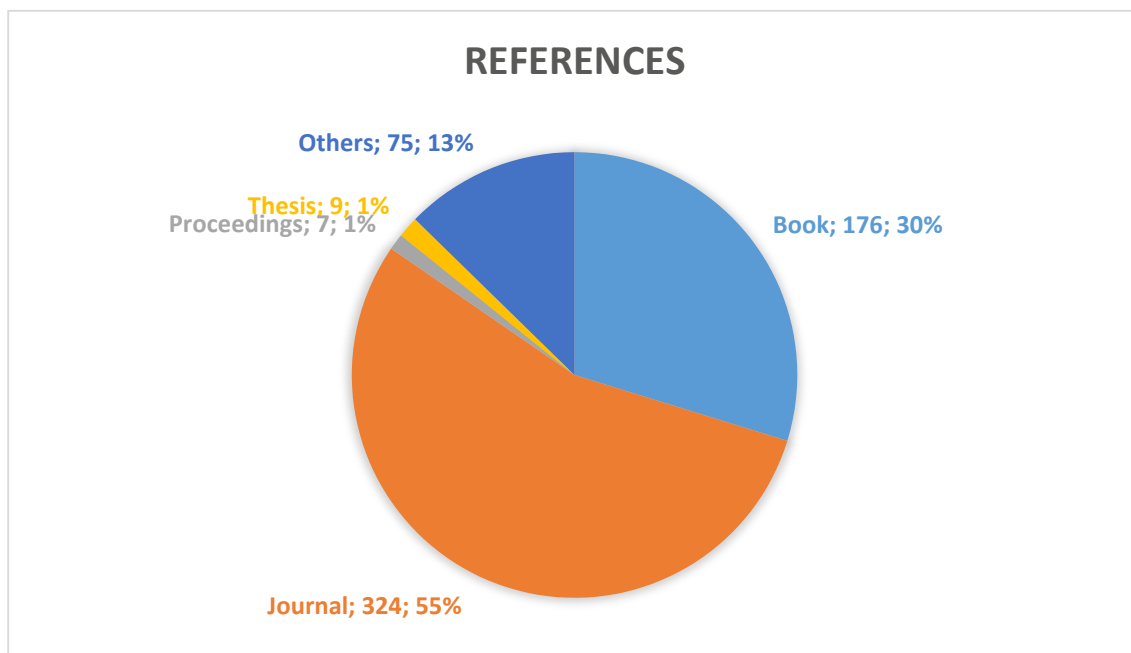


Figure 1. Pie chart representing the kind of reference sources the student used in their theses

Students cite more journal articles (55%) compared to print books (30%). Only a few students cited thesis and conference proceedings.

Table 1. The number of references found in each thesis

Thesis Number	Number of References Used
1	55
2	55
3	76
4	56
5	62
6	54
7	45
8	55
9	64
10	68
Total	590

The smallest number of references used is 45 and the highest number of citations is 76. The cited reference mean is 59, median is 55.5 and mode is 55. The range is 31.

Table 2.

Journal Title	Number of Student Thesis Where the Journal Appeared	Total Number of Citations
Asia Pacific Education Review	4	4
Asia Pacific Journal of Education	2	2
Current Issues in Education	2	2
Education	2	2
Educational Administration Quarterly	3	3
Educational Policy	2	2
Educational Research for Policy and Practice	3	3
Educational Sciences: Theory and Practice	2	2
Gifted Child Quarterly	2	14
Higher Education	2	3
International Journal of Bilingual Education and Bilingualism	2	3
Journal of Advanced Academics	2	4
Journal of Educational Change	2	4
Journal of Language, Identity & Education	2	3
Journal of Multilingual and Multicultural Development	3	7
Language Teaching	2	3
Oxford Review of Education	2	3

Table 2 (continuation).

Journal Title	Number of Student Thesis Where the Journal Appeared	Total Number of Citations
Phi Delta Kappan	3	3
Procedia – Social and Behavioral Sciences	4	6
Qualitative Research Journal	2	2
RELC Journal	2	3
Remedial and Special Education	2	2
Research Papers in Education	2	2
Review of Educational Research	2	3
Studies in Educational Evaluation	2	2
Studies in Higher Education	2	2
System	3	4
Teaching and Teacher Education	3	11
Theory into Practice	2	2

From this amount, 324 (55%) are citations coming from journals. There are 199 unique journal titles identified. 29 of these journal titles (Table 2) appeared in several theses and 39 are unavailable in the collection.

Table 2 shows that the journal *Gifted Child Quarterly* appeared in two student theses but was cited 14 times. *Teaching and Teacher Education* which appeared in three studies received 11 citations. The *Journal of Multilingual and Multicultural Development* appeared in three student theses and was cited 7 times. The *Asia Pacific Education Review* and *Procedia-Social and Behavioral Sciences* which appeared in four different studies received four and six citations respectively. It is noticeable that journal titles appear in two or three studies but they were only cited either once in each study.

Table 3. Example of Journal Titles used in the Reference List but not available in the collection

Title	Publisher	SJR Quartile
Asia Pacific Education Review	Springer	Q2
Educational Research for policy and practice	Springer	Q2
Higher Education Studies	Carfax Publishing	Q1
International Journal of Educational Advancement	Palgrave Macmillan	Not yet assigned
Tertiary Education and Management	Taylor & Francis	Q3

Students also cite journal articles that are not existing in our subscription. They were able to access these sources from their own referral systems or from Inter-Library Loan service. It is recommended to add these titles in the future acquisition plan of the library.

Scholars are critical on what sources to cite. Given the ease of access for online resources, it is advisable to consider those items with high impact and just use the electronic databases of the library. Five theses cited more Q1 ranking journal titles. These are theses 2, 3, 4, 5 and 10. Theses 1, 6, 7, 8, and 9 cited more Q2 journals. In any case, they were able to choose good quality resources rather than choosing the predatory ones.

Table 4. SJR Quartile Distribution of Journal Titles Used in Theses

Thesis Number	Q1	Q2	Q3	Q4
1	4	5	1	1
2	14	4	1	6
3	13	6	3	1
4	6	5	2	4
5	17	7	1	2
6	8	10	1	1
7	4	7	1	4
8	7	8	4	2
9	2	11	3	1
10	9	3	2	1

Conclusions

Timms (2018) believed that the best evidence to identify if the serial or journal is being used is by the numbers. Citation analysis will provide us evidence-based record that our journal subscriptions are being used and accessed by our patrons. The high cost of e-journals will prevent us from renewing any database or journal title but if there is usage, then we will not be scared to ask for budget. Meanwhile, although each journal is being used, there is still low usage as one journal title entry in the reference list equates to one journal article only. The students should also increase their use of relevant articles coming from expert and discipline-oriented journals. It is apparent that master's students from the graduate school of education cite more journal articles than books. At least 50% of the students get their references from Q1-ranked journals based from the SJR ranking. With 199 unique journal titles identified, only 29 were used in more than one thesis. With two kinds of graduate programs, it is noteworthy that students have a diverse selection of journal titles that the library has to offer. The library has a promising and huge collection of e-journal titles as it has almost 80% of the titles available in the library subscription. The sample revealed that the library is capable of providing a good quality of journal collection that can be used by the students and faculty members as well. We can proudly say that our collection is above the average. We need to still dig deeper how much of our collection is used extensively by the other members of the academic community.

Further Directions. This study needs to be expanded and add explore the theses submitted prior to 2019. It will provide a more comprehensive view of the types of sources used by the students and the quality of journals they select as part of their thesis.

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ДОСТАТНЬО ЧИ НЕДОСТАТНЬО ВИКОРИСТАНА НАША КОЛЕКЦІЯ? АНАЛІЗ ЦИТУВАНЬ В МАГІСТЕРСЬКИХ РОБОТАХ У ГАЛУЗІ ОСВІТИ

Мета. Якість бібліотечного зібрання залежить від того, як бібліотекарі вибирають матеріали для придбання на основі існуючої політики розвитку колекцій. За відсутності затвердженої політики діючі керівні принципи набувають чинності, якщо будуть критерії відбору. Використання доступних інструментів відбору, огляди книг в Інтернеті, рекомендації викладачів та стандартні списки допоможуть створити колекцію. Ця стаття спрямована на огляд типу матеріалів, які казахські студенти використовують для виконання магістерської роботи. Зокрема, він матиме такі завдання: 1) класифікувати види джерел, які студенти використовують у своїй дипломній роботі; 2) порівняти фактичну кількість найменувань е-журналів, наявних у нашій колекції, з кількістю е-журналів, використаних у списку посилань; 3) визначити загальні назви журналів, якими користуються студенти, та загальну репутацію журналу на основі престижу;

4) розвивати й надалі колекції е-ресурсів на основі аналізу цитування. **Методика.** У 2019 р. в сховище було завантажено 20 електронних робіт із однієї школи (також званої коледжем або факультетом). Було вирішено вибрати одну школу тільки для того, щоб визначити актуальність колекції з однієї дисципліни. В цьому дослідженні була проаналізована вибірка з 10 тез (50%). Аналіз цитування використовувався для визначення того, які матеріали в даний час доступні в бібліотеці. Це також створить уявлення про те, чи використовується матеріал чи ні. Збір даних було проведено організовано. Була створена таблиця для перерахування кількості посилань на документи, знайдені в тезах. Дослідники визначили кількість друкованих книг, електронних журналів, матеріалів конференцій, тез та інших матеріалів. Щоб визначити конкретні назви журналу, вони були ретельно вивчені. Дублюючі назви були об'єднані та вважалися одним унікальним записом. Використовуючи SJR онлайн, дослідники визначили квартилі кожної з назв і вплив журналів на основі рейтингу. Назви журналів та їх доступність були підтверджені з використанням списку назв журналів A-Z онлайн-пошуку, наданого EBSCOHost. Неквартильні назви журналів також були перевірені за допомогою Scopus. **Результати.** У середньому 59 посилань було зазначено студентом у своїй магістерській роботі. Кожен студент, можливо, використав 17,6 друкованих книг, щоб цитувати в своїй дипломній роботі, та 32,4 статті в журналах, причому, можливим є деякі посилання на підозрілий хижацький журнал. Є 199 унікальних заголовків журналів, цитованих у 10 роботах. 19,6% із них недоступні в підписці, але їх потрібно перевірити, якщо вони індексовані у провідних базах цитування. Щонайменше 50% тез мали більше назв журналів, віднесених до журналів Q1. Ще 50% тез містили більше журналів Q2, ніж Q1. В одній тезі було вказано більше публікацій із журналів, що не входять до жодного із квартилів, але з них, можливо, посилалися на 68% назв журналів із видань Q1-Q4. Щодо доступності журналу, то бібліотека містить 80% назв журналів, що цитуються у переліку використаної літератури та доступні за підпискою чи у відкритому доступі. **Висновки.** Вочевидь, що студенти-магістри вищої школи, скоріш за все, цитуватимуть більше журнальних статей, ніж книг. Щонайменше 50% студентів отримують свої посилання з журналів Q1, що базуються на рейтинзі SJR. Бібліотека володіє багатообіцяючою й величезною колекцією назв електронних журналів, оскільки вона має майже 80% назв, наявних у передплаті для бібліотеки. Вибірка показала, що бібліотека здатна забезпечити високу якість колекції журналів, якими можуть користуватися студенти та викладачі. Ми можемо з гордістю сказати, що наша колекція вище середнього. Нам потрібно ще ясніше зрозуміти, яка частина нашої колекції широко використовується іншими членами академічної спільноти.

Ключові слова: аналіз цитування; магістерські роботи; електронні ресурси; використання електронних журналів; оцінка колекції

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MODELS TO EVALUATE OF SCIENTISTS' RATING

Objective. This publication purpose is to review the models by which we can evaluate the scientists' ranking.
Methods. Two models to estimate scientist rating was described. One model proposes to use data from international scientometric databases to evaluate the scientists rating. Three approaches using to estimate rating was shown. Formula calculations have been developed for two of these approaches. The example of scientist rating calculation according to data from the international scientometric database Scopus is given. Another model proposes to use the TRUST National Higher Education Quality Assurance Portal to estimate the higher school's rating. **Results.** This allows you to store information about publications and other achievements of the scientist, including full texts, to estimate scientists rating using more factors and to design necessary output forms for later use. **Conclusions.** The first model can be used to evaluate the scientists rating in a higher education institution using the Web of Science and Scopus science databases at the current time. The second model allows to store information about publications and other achievements of the scientist, including full texts.

Keywords: scientometric database; researcher's rating; scientometric indicator; TRUST

Introduction

Almost every university employee participates in different scientific researches.

At the present development stage on the one hand the leadership of Ukrainian universities seeks to best serve the achievements of their institutions, and on the other hand, every scientist also tries to submit his achievements both at the national and international levels.

The leaders of domestic higher education institutions are guided by western models and are trying to bring science back to Ukrainian universities.

Such efforts are confronted with a number of national problems, the most striking among them: limited funding, weak scientists' integration from Ukrainian universities into the world scientific space, localities of the vast majority of Ukrainian scientific publications and the complexity of conducting an appropriate expert assessment of the scientific work results of university employees. Actually, at first, for the addition of the latter, and then for other important decisions in the process of managing research activities in institutions, the leaders of many Ukrainian universities began to use scientometric indicators.

Accounting the scientometric factors by all authoritative world rankings of university such as Academic Ranking of World Universities, Times Higher Education World University Rankings and QS World University Ranking, has become an additional factor in the popularity growth of the practical application of scientometric in the domestic higher education. Leading international university rankings measure the publishing activity of university employees on the basis of indicators of scientometric computer platforms Web of Science Core Collection from the corporation Thompson Reuters and Scopus owned by the publishing corporation Elsevier. Therefore, the leading Ukrainian universities are guided by the presentation of the scientific results of activity precisely at the bases of these two platforms (Hryshchenko & Nikitenko, 2017; Nikitenko & Plechenko, 2017), although this is not enough.

This publication purpose is to review the models by which we can evaluate the scientists' ranking.

Methods

In order to stimulate the growth of scientific productivity and display its results in the mentioned scientometric resources, the leadership of many domestic universities introduced a ranking calculation for publications' authors. It is clear that in the Web of Science and Scopus databases different types of documents are indexed that have different scientific values, so it is not expedient to determine the ratings only for the mentioned indicators. Therefore, in many universities, additional scientometric factors are introduced for the rating calculation. As a rule, the impact factor of the journal where the article was published, is taken into account.

It should be noted separately that impact-factors count exclusively for magazines. However, in some scientific disciplines, not only magazines play the most important channel of scientific communication (for humanities – these are scientific monographs, and for the natural sciences and IT sciences – the conference materials which occupy a prominent place) (Nazarovets, 2016).

Another significant drawback is the use of impact factors to calculate the ratings of scientists – not taking into account the number of co-authors of publications. Today, most of the scientific works in the world are written in co-authorship.

To solve this problem, there are several approaches that typically use a variety of normalized science metrics (Nazarovets, 2016).

In this regard Science library of Kharkiv national university of radio electronics proposed such approaches for determining the ranking of scientists with the help of scientometric indicators:

- total number of publications;
- calculation of marks for publications, taking into account the type of publication: journal article or proceeding one;
- the calculation of marks for publication, taking into account the type of publication and part of the contribution to the publication of each co-author.

The first approach is the easiest. But this approach does not take into account the type of publication and the number of co-authors of the publication. This, on the one hand, leads to a leveling of the time spent on creating a particular publication. But it can shift the direction of publications to the creation of abstracts due to less time spent on their preparation and less stringent requirements for registration. On the other hand, in general, each publication will be taken into account as many times as it co-sponsors.

The second approach requires the introduction and justification of weighting factors for each type of publication. Based on the order № 200 on 15.7.2015 "On the time limits for planning and accounting of educational, methodological, scientific, organizational and educational work of scientific and pedagogical workers of Kharkiv National University of Radio Electronics" the scientific library proposed as weight coefficients to choose the meaning of normative hours for the implementation of scientific research: 70 points per article in the journal and 20 points for the thesis of reports at the conference.

In this approach of rating the scientists we proposed the calculation of the rating to perform as follows:

$$R = 70n + 20m$$

where n – the number of articles;

m – number of report theses.

But in this case, as in the previous approach, each publication will be taken into account as many times as it co-authors.

The third approach, besides taking into account the type of publication, also requires determining the portion of the contribution of each co-author to create a publication. Because

those who rate the ranking of scholars are not related to the publication, they can not evaluate the contribution of each of the co-authors. In this regard, we are suggested to consider that each of the co-authors of the publication makes identical efforts to create it. Consequently, taking into account the above, one can propose the following formula for calculating the ranking of scholars:

$$R = 70 \sum_{i=1}^n \frac{1}{a_i} + 20 \sum_{j=1}^m \frac{1}{p_j}$$

where a_i – the number of co-authors of a particular article;
 p_j – number of co-authors of a particular report.

As an example, we present the results of computing the scientific metrics for one employee who entered the top10 of the university according to the Scopus science-based database.

- Total number of publications: 45
- Of these articles - 7, reports - 38
- Separate articles and reports based on weighting factors:
 $7 \times 70 = 490$
 $38 \times 20 = 760$
 Total value: 1250
- Separate articles and reports with co-authors: 43/12 1111/60
- Separate articles and reports taking into account co-authors and weighting coefficients:
 $1505/6$ 1111/3
- Total value: **3727/6 \approx 621**

In order to compare the scores obtained from different approaches to evaluation, four authors with ten publications were selected from Scopus's science-research database.

Results and Discussion

Figure shows the calculation results of scientometric factors according to the described approaches. The total publication number in the picture is blue. The calculation of the second approach (indicated by red) showed that only taking into account articles and reports with different weight coefficients can differentiate the overall scientific achievement of the author. The application of the third approach provided an opportunity to more precisely determine the contribution of a separate scientist.

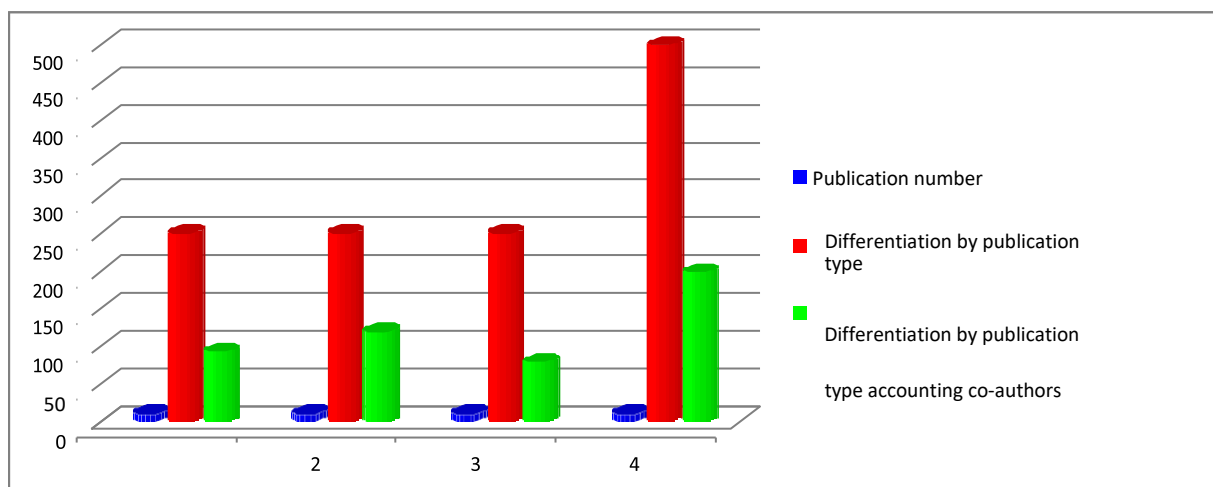


Figure. Publication activity indicators taking into account types of publications and co-authors

By the value of aggregate indicators, you can determine the rankings of the authors of the publications.

Thus, the calculation based on the above formulas allows to take into account not only the number of articles, but also the number of co-authors, as well as to separate articles from the abstracts.

Unfortunately, the proposed model takes into account only those publications that are reflected in the abovementioned international bases. University scholars have publications that are not reflected in these science databases. In addition to scientific publications, the University staff is involved in many activities that are not directly related to scientific publications.

For this purpose, it is desirable to be able to obtain an up-to-date objective assessment of their quality and achievements. This is the purpose of the TRUST National Higher Education Quality Assurance Portal. A comprehensive description of the portal concept is available at <http://www.cs.jyu.fi/ai/Quality>.

The TRUST portal is a publicly available personal portfolio manager for educators and educational institutions. Its users are both education sector representatives and end their work users.

The portal is a tool for public control and influence on the higher education quality. It aims to help educators openly share their own teaching and scientific achievements, and society to evaluate them on an up-to-date values scale (O. L. Shevchenko, Horobets, O. Yu. Shevchenko, & Sokol, 2014). The TRUST National Higher Education Quality Portal is the only point of access to the cloud repository of entities providing educational services and their achievements and supporting documents. It is also a tool for generating and storing personalized ratings of registered resources, as well as storing, reviewing and comparing the value systems on which such ratings were or can be constructed. A convenient portal feature is also the ability to dynamically generate CVs and personal web pages of educational entities based on their achievements recorded in the portal.

Conclusions

So, the portal gives the average user (academic employee) the following opportunities:

- from any point of the globe to have unlimited 7/24/365 on-line access to information both about themselves and about other educational resources registered in the portal;
- maintain, manage, and dynamically generate and update self-generated information about your CVs, reports and personal web pages;
- search for registered educational resources, not even having the full resource name, but only its fragments, thanks to the Semantic Web technology used;
- find the right resources by category using the advanced filter;
- to find experts in the relevant field through registered achievements (articles, grants, authoring courses, etc.). For all articles registered in the portal, the impact factor is calculated based on the publication level where the article is published. The publication level is taken from an external resource (source) recommended by European experts. It was an international publications' list, carefully compiled by the Finnish Academy of Sciences and recommended for publications. European experts regularly update this list, leading to its automatic updating in the portal. The list includes about nineteen-and-a-half thousand editions (scientific journals and conference reports) summarized in the Scopus and Web of Science databases with relevant impact factors. According to the recommendations of the Finnish Academy of Sciences, all gains have their level (1 – 3). Level 4 added – lowest, recommended for publications not included in the list by European experts.

For educational institutions, the portal provides the following features:

- access to information about registered educational resources: about employees, their achievements, not collected in the form of statistics, but with the ability to view and evaluate any achievement, including supporting documents;
- the possibility of transparent processes management, in the result of which the best indicators should be determined by the selected criteria, that is, those aimed at ranking: selection of candidates for the vacant position, best employees' motivation, units, material resources' distribution;
- the ability to flexibly adjust the rating system based on current goals and objectives, as well as save value systems and compare the results of ratings made at different times by different indicators to track the change dynamics. This capability is the basis for the internal quality assurance system in defining the unit / university development strategy and the quality assurance system's compliance with the chosen strategy, its defined goals, objectives and success criteria;
- finding experts in the relevant field, determining the scientist's work level based on reported achievements, including articles and reports at conferences, the impact factor of which is calculated by the above principle.

And much more, based on the analytical processing of the information registered in the portal.

The portal is built on the social system principles: portal users are the main information providers and consumers, its reliability controllers and its content evaluators.

So, we describe two models that can be used to evaluate the scientists rating.

The first model can be used to evaluate the scientists rating in a higher education institution using the Web of Science and Scopus science databases at the current time.

The second model allows to store information about publications and other achievements of the scientist, including full texts. This allows you to evaluate the scientist's rating on a larger number of parameters and create the necessary source forms for their further use.

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МОДЕЛІ ОЦІНЮВАННЯ РЕЙТИНГУ НАУКОВЦІВ

Мета. За основну мету цієї публікації ми ставимо огляд моделей, за якими можна здійснювати оцінювання рейтингу науковців. **Методика.** Розглянуто дві моделі оцінювання рейтингу науковців. За першою моделлю запропоновано використовувати дані з міжнародних наукометричних баз даних. Показано використання трьох підходів під час оцінювання рейтингу. Для двох із підходів розроблено формули обчислення рейтингу. Наведено приклад обчислення рейтингу науковця за даними з міжнародної наукометричної бази даних Scopus. За іншою моделлю для оцінювання рейтингу науковців запропоновано використовувати національний портал забезпечення якості вищої освіти TRUST. **Результати.** Розглянуті моделі дозволяють зберігати інформацію про публікації та інші досягнення науковця, включаючи повні тексти, оцінювати рейтинг науковця за більшою кількістю параметрів і створювати необхідні вихідні форми для подальшого їх використання. **Висновки.** За першою моделлю можна оцінювати рейтинг науковців певного закладу вищої освіти за наукометричними базами даних Web of Science та Scopus на поточний момент. Друга модель дозволяє зберігати інформацію про публікації та інші досягнення науковця, включаючи повні тексти.

Ключові слова: наукометрична база даних; рейтинг науковця; наукометричний показник

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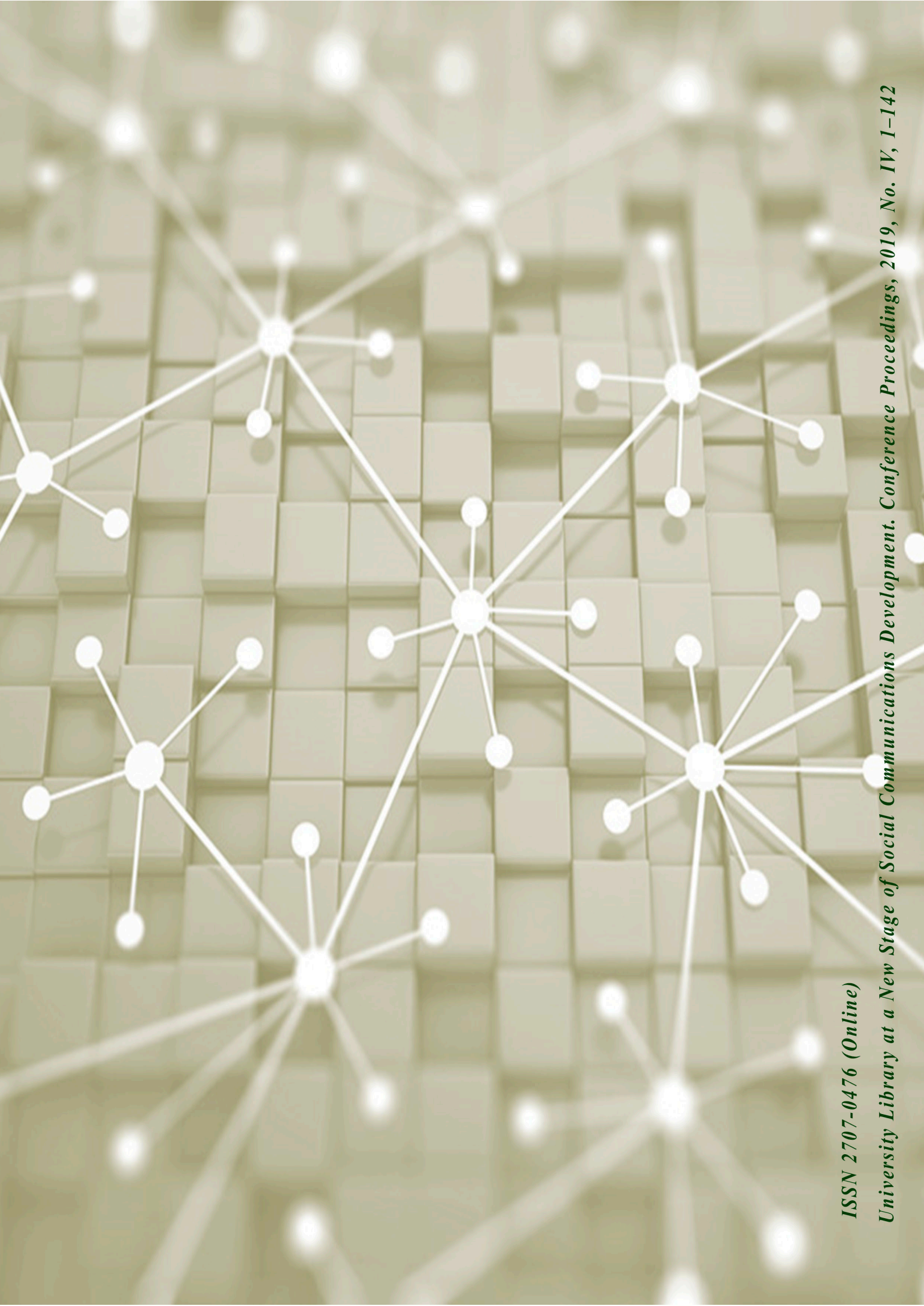
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