E-ENVIRONMENT OF VASYL STEFANYK NATIONAL SCIENTIFIC LIBRARY OF UKRAINE IN LVIV: IMPLEMENTATION OF MODERN REQUESTS OF SCIENCE AND EDUCATION

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This article aims to highlight the structure of the Library's electronic environment and its role in the implementation of modern scientific and educational requests of researchers. The main objective of the presented research is to conduct an in-depth study of the features of the Library's electronic environment and its modernization, considering the latest demands of science and education. The scientific novelty consists in the comprehensive analysis of the electronic environment of the scientific library and the determination of the place and role of electronic and digital resources in satisfying the scientific requests of users. In the actual developmental phase of the library, two critical priorities have emerged. Firstly, implementation of the latest information technologies in library activities, fostering not only the introduction of new service provisions but also facilitating the representation of domestic information resources into the world scientific e-environment. The formation of the e-environment will allow to organize open and effective access to a wide range of researchers to the Library's unique digital collections. Along with that, the creation and preservation of insurance copies will provide an opportunity to reproduce unique and rare documents from Vasyl Stefanyk National

Scientific Library of Ukraine in Lviv in the event of their destruction. This task is especially relevant during russian aggression in conditions of constant missile fire. The research methodology involves a broad analysis of the structure of the library's electronic environment, an assessment of the implementation of modern scientific and educational requests of researchers.

Keywords: *electronic environment, information technologies, library collection, digital library, online services, research databases.*

Problem Statement. Vasyl Stefanyk National Scientific Library of Ukraine in Lviv (hereinafter – VSNSL of Ukraine in Lviv) is an important information-analytical and socio-cultural center, a state depository of unique handwritten and printed monuments of book culture, works of Ukrainian and foreign art, and other documents in which national information potential created in Ukraine and the world is concentrated.

As of 2024, the Library's fund has more than 8 million digital copies of unique storage documents. Among them, there are many which are classified as scientific objects that are of exceptional importance for Ukrainian science and are designated as the national property of Ukraine. It is worth noting that one of the main task of VSNSL of Ukraine in Lviv from the beginning of its foundation to the present day remains ensuring the rational use of all documents that make up its fund, as well as the widest access to them of all categories of readers with scientific, cognitive, cultural requests, for educational and production purposes. In connection with the global pandemic of COVID-19, as well as the full-scale invasion of the russian federation on the territory of Ukraine, the management of the book collection increased the representation of its activities in the interactive media environment. An important component of the communication of Library support has become not only the presentation of new services in the virtual information environment, but also the establishment of effective remote user service, communication and interaction with them in online mode. Thus, it is worth emphasizing that a comprehensive study of the issue of use in the work processes of VSNSL of Ukraine in Lviv, electronic information technologies and electronic resources are quite important and relevant.

The purpose of the article is to highlight the structure of the Library's electronic environment and its role in the implementation of modern scientific and educational requests of researchers.

The research status. The basis of the study was the work of such leading domestic researchers, specialists and experts in the library science and informology as: O. Vasylenko *[2]*, O. Marina *[4]*, Th. J. D. Bothma *[8]*, I. Borodai *[1]*, L. Tatarchuk *[1]*, T. Pidhaina *[1]*, I. Fourie *[8]*, B. Lomachinskyi *[3]*, S. Terentiev *[7]*.

Among the research sources, a significant role belongs to normative acts of national legislation: The Laws of Ukraine: "On Libraries and library affairs" (dated 27.01.1995. N 32/95-VR), "On copyright and related rights" (dated 01.12.2022. N 2811-IX), "On the National Informatization Program" (dated 01.12.2022. N 2807-IX), "On electronic documents and electronic document management" (dated 22.05.2003. N 851-IV), "On electronic trust services" (dated 5.10.2017. N 2155-VIII), "On information protection in automated systems" (dated 07.05.1994. N 80/94-VR); The Order of the Ministry of Culture of Ukraine: "On approval of the Procedure for the selection of manuscript books, rare and valuable publications for the State Register of National Cultural Heritage" (dated 14.06.2016. N 437).

Presentation of the Main Research Material. The Library's own electronic environment include the Library's official website – https://www.lsl.lviv.ua. Its pages contain information about the Library's operating mode, its activities, electronic catalog, digital archives and collections, access to research databases, virtual help and virtual exhibitions.

The formation of Library's electronic environment began with the creation of an electronic catalog. At the initial stage, re-archiving of documents was carried out, as well as retrospective conversion of card library catalogs. Work was carried out with a part of the general alphabetical card catalog (editions before 1990), which was not reflected in the electronic catalog. The first step in retro-cataloging was the scanning of catalog cards and the creation of the so-called image catalog, which today is available for viewing by remote users on the website of VSNSL of Ukraine in Lviv. So today the electronic catalog of the book collection includes more than 717,458 bibliographic records (1,329,957 copies of documents), the volume of the image catalog is 4,240,000 cards, and the database of authoritative records is more than 30,000. In the future, it is planning to carry out a bibliographic description of publications from the retrospective part of the Library's fund *[5]*.

Free access is organized on the website of Vasyl Stefanyk National Scientific Library of Ukraine in Lviv (https://www.lsl.lviv.ua) in the

structure of the electronic environment: "Electronic resources", "Search systems of scientific information", "Open access sources", "Electronic materials" etc.

The "Electronic Resources" web page has collected and structured information about access to open access sources, electronic journals of Ukraine, digital global electronic catalogs and libraries, open electronic archives and repositories in Ukrainian institutions, journals on library science, journals and archives in open access, systematized information for scientists and researchers.

VSNSL of Ukraine in Lviv provides access to abstract and scientometric databases to remote users. In 2018, applications and agreements signed to provide access to electronic scientific databases with the provider of the service of connecting to scientometric databases, the State Scientific and Technical Library of Ukraine. The concluded public contracts provided accessibility to the electronic scientific platform of the publishing house "Elsevier", including the bibliographic reference database "Scopus", full-text resources "ScienceDirect" (e-books), electronic products "Springer Nature", as well as the scientometric platform "Web of Science". In the conditions of an unprovoked full-scale war unleashed by the russian federation, in an effort to provide support to the scientific community of Ukraine, scientific literature publishing houses "Elsevier", "Research4Life", opened free access to full-text electronic resources to Ukrainian scientists. Publishing company "Elsevier" provided for readers of VSNSL of Ukraine in Lviv access to her own research tools and databases: "Researcher Discovery", "Researcher Academy" and "Mendeley". With the help of the "Research4Life" portal users can study books and journals from more than 200 foreign publishers, including: "Elsevier", "Springer Nature", "John Wiley & Sons", "Taylor & Francis", "Emerald", "Sage Publications", "Oxford University Press", "Cambridge University Press", "IOP Publishing" (in total, more than 154 thousand non-periodical and periodic publications). As part of the cooperation of VSNSL of Ukraine in Lviv and the producers of scientific information products EBSCO Information Service GmbH (Association "Informatio-Consortium", LLC "Informatio"), according to the signed bilateral agreement, in the period 2019–2020, access to the prepaid products Academic Search Complete and Energy & Power Sources (EBSCO Energy). From 2018 to 2023, according to the signed

bilateral agreements between VSNSL of Ukraine in Lviv and PP "Archive Information Systems", the book collection provided free access to the full-text electronic archive of Ukrainian historical periodicals LIBRARIA. "Onleihe" eLibrary: the Goethe-Institut's digital library provides a wide range of digital media, such as eBooks, ePapers, eMusic, eAudios and eVideos. This offer is available to all Goethe-Institut library users.

Since 2022, after the invasion of the russian federation into Ukraine, esteemed American issues with a long history have provided Ukrainian citizens with free open access to their full-text materials. Access to electronic versions of foreign periodicals "The Economist", "The Wall Street Journal", "Financial Times", "The Washington Post" was organized on the Library's web portal.

So for the period of the last five years (2019–2024), the number of sessions of working with the online complex of scientific reference databases of the Library is 154,463. This is a component of the indicator of the number of sessions of working with the electronic environment of VSNSL of Ukraine in Lviv.

General activity of users of the Web of Science™ Core Collection platform can be seen in this data.

The number of regular searches is 1,670. The total number of studies is 678. Web of Science™ Core Collection 2018–2023: Requests in total – 1670. The total number of studies is 678; Subsessions – 300. Web of Science™ Core Collection Subsession and Query Report: Arts and humanities – 1,009; Social and humanitarian sciences – 1,041; Books – 1,041; Conference materials (social sciences and humanities) – 1,009.

General activity of users of the "Elsevier" platform, bibliographic and abstract database Scopus: Scopus "Elsevier" (Scopus.com): Number of regular searches – 1,096. The total number of studies is 1,250. Number of views in Scopus – 1,128. Total number of users of the Scopus platform – 2020. Number of regular searches – 92. The total number of studies is 120. The number of views in Scopus is 103. EBSCO Energy for 2018–2020 Academic Search Complete / Image Collection / Energy & Power Source (Regular Database, Multimedia/Images): The total number of requests is 470. The total number of searches is 101.

There is also access to many other domestic and foreign databases of scientific and popular science information, open electronic resources

and open access sources, digital libraries. Within the framework of international cooperation, access to electronic information resources of partner libraries was provided for users of VSNSL of Ukraine in Lviv. In particular, in the online catalog of the digital collections of Ossolinsky National Institute in Wroclaw and the Silesian Digital Library, which present digitized manuscript documents, rare and periodicals from the collection of Vasyl Stefanyk National Scientific Library of Ukraine in Lviv. Presented digital copy is owned by Ossolinsky National Institute of Poland (Katalog zbiorów cyfrowych, Dolnośląska biblioteka cyfrowa. 02, Zakład Narodowy im. Ossolińskich).

"Collection of Ossolineum collection" contains more than 4 million scans. This mainly includes the funds of the "Ossolineum" (Ossolinsky National Institute in Lviv), which according to the will of its owner, Maximilian Ossolinski, bequeathed to the city of Lviv, as well as a number of other Polish sets of documents, which constitute the national heritage of the Polish people. In particular, during 2019–2020, 86 units issued for digitization (27,361 pages) and 47,032 scan-copies made. These are documents from archival funds N 37, 59, 63, which contain personal data about the families: Goluchowski, Kzechunowicz, Kozlowski. And the specifics of their activity is also considered.

At the current stage, digital Library projects are actively implemented, which are presented both on the website of the Library. Including:

Lviv Diocesan Information ("Lvivski Arkhyieparkhialni vidomosti") is a full-text digital image of the magazine of the Metropolitan Ordinary of the UGCC in Lviv, which was published in 1889–1944 (with a break in 1940). At the request of the Archdiocese of the UGCC, together with specialists of the Central State Historical Archives of Ukraine in Lviv, the Library specialists formed a collection of publications, which today is freely accessible on the scientific and educational Internet portal "Metropolitan Andrey Sheptytsky" (sheptytsky.com.ua).

Proceedings of the mathematical-naturalistic-medical section of Shevchenko Scientific Society ("Zbirnyk matematychno-pryrodopysno-likarskoi sektsii NTSh") – full-text digital image of the periodical published in Lviv during 1897–1939 (32 volumes). The collection consists of several parts:

– most of the articles digitized thanks to the cooperation of the teams of VSNSL of Ukraine in Lviv, the Institute of Physics of Condensed

Systems of the National Academy of Sciences of Ukraine and the Shevchenko Scientific Society;

– digital versions of some articles from the collection on the website of the Mathematical Bulletin of the Shevchenko Scientific Society used;

– individual files founded in public access on various resources.

To satisfy modern scientific and educational requests, the Library offers registered readers full-text online access to eleven problem-oriented databases (digital collections). Digital collections and sub-collections for the following types and types of library documents have been developed and formed using ILS Aleph tools:

– for electronic resources;

– for the electronic version of periodicals;

– for electronic archives and archival documents;

– for electronic book publications of mixed content and type.

In total, the electronic environment of the Library presents 11 Digital Collections, containing: 1,894 descriptions and 3,647 digital copies of documents, of which:

– Electronic book publications, including: Scientific publications of VSNSL of Ukraine in Lviv; Stefanikyana; Electronic book editions, including Yaroslav Dashkevych; Dmytro Buchynsky's book collection: totally of 74 descriptions and 84 digital copies of them attached;

– Electronic resources, includes sources and electronic resources of open access, digital libraries of the Library's partners – 12 descriptions attached;

– Electronic version of the periodical – 92 descriptions electronic documents for 16 titles of periodical documents (Ukrainian's and Polish issues, published between 1848 and 1939), of which – 774 digital numbers and yearbooks attached;

– Collection "Rehabilitated book" – 1,001 descriptions and 1104 digital copies attached;

– Book heritage of Shevchenko Scientific Society (1874–1913) – 423 descriptions and 508 digital copies attached;

– Archive of Shevchenko Scientific Society from the National Library of Poland in Warsaw – 274 descriptions of archival files created and 1,143 digital archival electronic documents attached;

– Archives of Shevchenko Scientific Society from Ossolinsky National Institute in Wroclaw – 20 descriptions of archival cases and 20 digital archival electronic documents attached.

This corpus of documents was evacuated from Lviv to the Republic of Poland by order of the German occupation authorities in April 1944, and in the post-war period these important archival documents stored in the National Library of Poland in Warsaw and Ossolinsky National Institute in Wroclaw. In October 2019, during the 91st special Ossolinsky Meeting, a solemn presentation and transfer of digital copies of archival documents of Shevchenko Scientific Society to VSNSL of Ukraine in Lviv took place.

Work on creating of insurance funds for digital copies of documents continues. The insurance copy involves the preservation of a full-text copy of the original (manuscript, book, archival funds, collections of specialized publications) in order to preserve information, as well as organize access to it for a wide range of users. The digitization method used to produce insurance digital copies – a method of obtaining images by direct scanning or digital photocopying of documents. Digitized documents are usually saved in *.tiff, *.jpg, *.pdf formats. The tiff format used for scanning materials, the *.jpg format is used for creating working and service copies, and the *.pdf format used for outputting a copy in electronic form *[9]*.

Constantly growing demand for various electronic services led to the emergence of reference and information service in electronic form. Virtual help can be obtained by anyone who wishes by leaving a corresponding request on the official website of the Library – www.lsl.lviv.ua. This service is not only aimed at prompt execution of one-time requests of remote users, which are related to the search for necessary information, including those related to the development of the Library industry, but also provides an opportunity to receive information about the Library, its funds and resources, to provide services to remote users electronic information resources.

Prompt and high-quality satisfaction of remote users of the Library on the basis of wide access to Library and information resources is also carried out with the help of the "Electronic delivery of documents" service *[6]*. The service is available both for individual users and for organizations or institutions. It is possible to order the following electronic copies of documents:

– individual pages or sections of books;
– articles from continuing and periodical publications;
– legislative and regulatory documents.

During 2020–2024, the needs of 350 users from Ukraine and abroad met, to whom more than 18,000 scanned copies of original documents from the Library fund made and sent.

A special place among information resources is the presentation on the portal of VSNSL of Ukraine in Lviv of the full-text electronic publication "Bibliographic index of publications on the problems of librarianship, bibliography and bibliography" (2004–2024). Its formation and filling are carried out by experts and leading specialists of the Department of Library Science. It contains annotated analytical descriptions of articles on librarianship, bibliography and bibliography. To date, both the volume of the publication itself and the number of annotated descriptions of articles have increased (see Table 1).

Table 1. The volume of the Bibliographic index of publications
on the problems of librarianship, bibliography and bibliography 2020–2024

2020	2021	2022	2023	2024
VOL. 1. – 50 p. VOL. 2 – 87 p.	VOL. 1. – 46 p. VOL. 2. – 40 p.	VOL. 1. – 44 p. VOL. 2 – 44 p.	VOL. 1. – 47 p. VOL. 2 – 41 p.	VOL. 1. – 40 p. VOL. 2. – [41] p.

The proposed bibliographic index contains annotated articles devoted to the history of librarianship, current problems of its development at the present stage; peculiarities of the work of Ukrainian libraries, issues of organization and preservation of cultural heritage of Ukraine in the conditions of martial law; implementation of the latest library technologies, in particular, the formation of digital collections and libraries and the organization of free access of readers to book monuments, etc. The issue is published twice a year and contributes to the expansion of the source base for bibliographic and librarian studies, to the improvement of the quality of scientific, scientific-pedagogical, library and information activities.

The index includes publications from specialized periodicals and continuing editions, as well as collections of scientific works: "Library Science. Record Studies. Informatology", "Ukrainian Journal on Library and Information Science", "Library Mercury", "Presoznavstvo. Press Studies", "Library Bulletin", "Library Forum of Ukraine", "Bulletin of the Book Chamber", "Scientific and technical information", "Libraries of national Academies of Science: problems of functioning, trends of development tendencies", "Bulletin of Kharkiv State Academy

of Culture", "Proceedings of Vasyl Stefanyk National Scientific Library of Ukraine in Lviv", "Academic Papers of Vernadsky National Library of Ukraine" etc., which were sent to the Department of Library Science of Vasyl Stefanyk National Scientific Library of Ukraine in Lviv.

Until 2008, the magazine was published in printed form mostly three times a year (14 issues). Since 2009, a decision was made to create an index only in electronic form and place its full-text version on the book collection portal (https://www.lsl.lviv.ua/index.php/uk/povnotekstovi-materialy/) as part of the "Full-text materials" electronic resource. Today it is published twice a year.

The Library has page on Facebook social networks, which are used as an additional channel of communication with readers. By its structure, the account differs from the website of the institution, which is the official page of the Library on the Internet and performs certain functions.

The Facebook social network plays a special role in informing the public about cultural, educational and informational events. According to the results of statistical data generated by Meta Ads Manager, the audience reach of the Library's page increased by 65.15% to 53,095 people (see Table 2). In 2023, this indicator increased by 3.4 times. 76.12% of visitors interacted with the page in any way, including liking the material, leaving comments, reposting and saving posts.

Table 2. Statistical indicators of the Facebook page
of Vasyl Stefanyk National Scientific Library of Ukraine in Lviv

Indicators	2018	2019	2020	2021	2022	2023	Total	Dynamics of changes, %
Coverage	32149	36529	38176	42176	43141	53095	245266	165,15
Visiting	4047	5240	7817	8014	5562	18771	49451	463,83
Interaction with content	5697	5785	5437	5683	6278	8762	37642	153,80

The Library's Facebook page was created in 2015. Brief information about the Library and its services are presented here. A link to the official website of the book collection is placed, an announcement of important events is added, as well as links to interesting pages, video and audio files are presented, which can be added by group members.

In addition, the content in social network aimed at informing library specialists and providing them with advisory support in solving problems of the practical work of libraries. For this purpose, on Library's page a virtual display of various components of methodical work is carried out, as well as a wide range of issues of Library activity and related fields are discussed.

Support of the electronic page of the Library's Facebook page is a continuous process that requires specialists to have not only deep knowledge and painstaking work, but also a creative approach.

The scientific novelty of the work is:

– a comprehensive study of electronic environment of VSNSL of Ukraine in Lviv was conducted;

– the structure of the Library's electronic environment has been analyzed and characterized;

– a number of modern electronic resources that influence the satisfaction of scientific and educational requests of researchers outlined;

– it was established that due to the expansion of on-line service services, effective remote user service was established.

Conclusions. At the current stage of development of VSNSL of Ukraine in Lviv, priority is the improvement of an electronic environment that will provide an opportunity to more effectively satisfy the scientific and educational needs of users. To solve this problem, it is necessary to introduce the latest information technologies into the work of the Library. This will make it possible to increase the number and quality of new services and contribute to the inclusion of domestic information resources in the international system of scientific electronic communications. The creation of a digital insurance fund of the Library and digital collections will contribute to the preservation and presentation of the unique and rare fund, archival documents and materials to a wide range of users. The task is especially relevant in wartime conditions due to the danger of material destruction and destruction of the Library. The electronic environment of the Library provides the possibility of open and effective remote access of domestic and foreign readers and researchers to various collections of VSNSL of Ukraine in Lviv.

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Електронне середовище Львівської національної наукової бібліотеки України імені В. Стефаника: реалізація сучасних запитів науки та освіти

Мета запропонованої статті – виокремити та проаналізувати основні компоненти е-середовища ЛННБ України ім. В. Стефаника і пов'язані з цим переваги, які впливають на реалізацію сучасних науково-освітніх запитів користувачів і дослідників. Основне завдання дослідження охоплювало поглиблене вивчення особливостей електронного середовища бібліотеки та його модернізації з урахуванням новітніх запитів науки й освіти. Наукова новизна полягає в комплексному аналізі е-середовища наукової бібліотеки; визначенні місця та ролі електронних і цифрових ресурсів у забезпеченні наукових запитів користувачів. Об'єкт наукового аналізу й узагальнення: використовувані засоби і способи бібліотечно-інформаційного обслуговування: сучасні інформаційні технології презентації цифрових ресурсів наукової бібліотеки в інтернеті, інтенсивність використання передплачених ресурсів Бібліотеки, структура запитів на послугу електронного доставляння документів і особливості їхнього задоволення. На сучасному етапі розвитку бібліотеки виникли важливі пріоритети. По-перше, впровадження новітніх інформаційних технологій до бібліотечної діяльності, що сприятиме не лише появі нових видів послуг, а й репрезентації вітчизняних інформаційних ресурсів у світовому науковому електронному середовищі. Його формування надасть можливість організувати відкритий та ефективний доступ широкого кола дослідників до унікальних електронних колекцій бібліотеки. Водночас, створення і збереження страхових копій дасть змогу відтворити унікальні та рідкісні документи з ЛННБ України ім. В. Стефаника у разі їхнього знищення. Це завдання особливо актуальне в умовах російської агресії. Методологія дослідження передбачає широкий аналіз структури електронного середовища бібліотеки, оцінку реалізації сучасних наукових і освітніх запитів дослідників. Методи дослідження ґрунтуються на загальнонаукових принципах єдності теорії і практики, комплексності та всебічності пізнання, застосуванні системно-структурного підходу та аналітико-синтетичної обробки даних науково-освітніх запитів користувачів.

Ключові слова: електронне середовище, інформаційні технології, бібліотечний фонд, електронна бібліотека, онлайн-сервіси, дослідницькі бази даних.