



Research Article

An Analysis of Digital Library Publishing Services in Ukrainian Universities

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Received: 24 Sep. 2018

Accepted: 3 Sep. 2019

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DOI: 10.18438/ebliip29510

Abstract

Objective – The objective of this study was to assess the current state of digital library publishing (DLP) in university libraries in the Ukraine. The study was conducted in the hopes of gaining a better understanding of the DLP landscape, namely institutional operations, as well as their varying publishing initiatives, processes, and scope.

Methods – The current study was conducted from January to June 2017 using a mixed methods approach, involving semi-structured interviews and an online questionnaire. Semi-structured interviews were conducted ($n = 11$) to gain insight into participants' experiences with DLP. The interviews helped in the creation of the questions included in our online questionnaire. The questionnaire was distributed to 195 representatives (directors and leading specialists) of university libraries in the Ukraine. Replies were received from 111 of those institutions. The

questionnaire consisted of 11 open- and closed-ended questions to allow the researchers to obtain a holistic picture of the process under investigation.

Results – Analysis of the 111 questionnaires showed that for 26 libraries, DLP services were performed by employees of a separate structural unit of the library. For 34 libraries, employees of various departments were involved in performing certain types of services. The other 40 respondents' libraries were planning to do this in the near future. Only 11 respondents replied that they did provide DLP services now nor planned to in the future. Among the libraries providing DLP services, the following results were observed: 54 of 60 work with digital repositories, 47 provide digital publishing platforms for journals, 26 provide digital publishing platforms for books, and 23 provide digital publishing platforms for conferences.

Conclusions – The results obtained indicate a growing trend of expanding digital services in university libraries to support study, teaching, and research. Despite the still spontaneous, chaotic, and poorly explored nature of the development of the library publishing movement in the university libraries of the Ukraine, the readiness of librarians to implement publishing activities is notable. At the same time, the survey results point to specific aspects, such as organizational, economic, personnel, and motivational, that require further study.

Introduction

Over the past 10 years, digital library publishing (DLP) services have become increasingly popular in many countries around the world. To date, it is impossible to specify their exact number. But it is possible to judge the popularity of library publishing. For example, according to the data of the Library Publishing Coalition (LPC), the number of libraries registered with the LPC that provided library publishing services increased from 120 in 2015 to 156 in 2018, an increase of 30% (LPC, 2019). At the same time, DLP is a narrower concept than the broad library publishing offered by the LPC (LPC, n.d.). For the purposes of our study, we defined DLP as a set of activities conducted by college and university libraries to support institutional communities in developing, managing, and distributing online publications, including journals, conference materials, monographs, and other scholarly content. DLP services help scholars share their research through new and emerging publishing models in a constantly changing academic communication environment, and help control and solve the problems and issues related to

electronic publishing (Bains, 2017; Ginther, Lackner, & Kaier, 2017; Raju, & Pietersen, 2017; Tracy, 2017). This trend becomes evident when examining how localized digital publishing services are in high demand by researchers in the United States (USA), Canada, Australia, Germany, the United Kingdom, Austria, Sweden and other countries (Bonn, & Furlough, 2015; Depping, 2014;). This demand has placed increasing importance on the library and the services it provides, making libraries partners in the production of knowledge (Perry et al., 2011).

While this phenomenon has gained traction in North America and Western Europe, the notion of library as a publisher is relatively new in Eastern European countries. Over the last decade, DLP services in the Ukraine have evolved from the development of institutional repositories, to the establishment and maintenance of electronic academic journals, conference proceedings, and monographs. The current state of DLP in the Ukraine is understudied. As of 2017, no comprehensive study or environmental scan had been done. This study was conducted in the hopes of gaining a better understanding of the DLP

landscape in the Ukraine, namely institutional operations, including their varying publishing initiatives, processes, and scope.

Literature Review

Growth of Library Publishing Services

There is growing evidence that many university libraries have expanded their activities with DLP as one of the new models of scholarly communication. Publications and research support services are areas with some of the greatest potential for the future development of academic libraries (Simser, Stockham, & Turtle, 2015; Watkinson, 2016; Wolff-Eisenberg, Rod, & Schonfeld, 2016). Okerson and Holzman (2015) asserted that the role of the academic library in the scientific work of an institution was changing and becoming an active player—promising, inquisitive, and ready to experiment—through in library publishing. Libraries, having decided to strengthen their positions in universities, are not afraid to experiment, challenge the status quo, and put new services into practice in accordance with new users' requests and new development strategies for their universities (Kolesnykova, 2017; Lippincott, 2016; Okerson, & Holzman, 2015). Being interested and active in comprehending modern digital opportunities, as well as having systematic and diverse skills in working with publications, librarians hope for the success and sustainability of DLP initiatives (Calarco, Shearer, Schmidt, & Tate, 2016; Ginther et al., 2017; Lippincott, Schlosser, Ballard, & Maron, 2018).

Library publishing efforts in the USA began as early as the 1900s, but the form of DLP that we recognize today did not begin to take shape until the end of the century (Bonn & Furlough, 2015). By the 1990s there was a technological boom that brought about new and innovative partnerships, emphasizing the digitization of older publications. By the end of the decade, the collaboration environment shifted to an emphasis on advocating for open access (OA) as

a result of the increase in subscription costs of materials as well as the need to increase publishing services for informal scholarly outputs traditionally referred to as gray literature (Newman, Blečić & Armstrong, 2007; Watkinson, 2014).

The early part of the twenty-first century was marked by a series of innovative publishing initiatives at USA university libraries with the creation of institutional repositories and electronic academic journals, specifically the development and deployment of DSpace and Open Journal Systems (OJS) (Bonn & Furlough, 2015). These developments allowed libraries to meet the publishing and research needs of scientists and researchers (Hahn, 2008). Through these developments, academic libraries acquired a new paradigm, allowing them to evolve "... from a focus on reader services to a focus on author services" (Borgman, 2010, p. 13).

For almost 20 years, we have witnessed the continued growth and strengthening of the synergy between publishing and librarianship, a fact two Association of Research Libraries studies, conducted in 2007 and 2012, demonstrated. The data showed the growth in the number of libraries providing services in scholarly communication, which rose from 75% in 2007 (Newman et al., 2007) to 93% in 2012 (Radom, Feltner-Reichert, & Stringer-Stanback, 2012). A significant part of these services relates to the DLP field. For example, libraries indicated that they helped scholars manage their scholarly identities, understand the intricacies of copyright, study and publish materials in the public domain, and create their own online journals. Analysis of data on LPC libraries for 2016 and 2017 further demonstrated this growth. The libraries reported a steady increase in the number of articles they published in 2017, including 436 faculty journals for campuses (compared with 404 for 2016), 905 monographs (compared with 773), and 65 textbooks (compared with 58). In addition, the number of publications issued by library publishers for external groups increased from 189 in 2016 to

249 in 2017. Data were analyzed for 118 institutions in the USA, Canada, Brazil, the United Kingdom, Germany, and Australia (Skinner et al., 2017). Almost all libraries in the study indicated that they were seeking to provide OA to the results of research from their institutions that were previously invisible to outsiders.

The topic of diversity and features of publishing services has been studied quite often (Bonn & Furlough, 2015; Depping, 2014; Mullins et al., 2012; Nazarovets, 2012; Perry et al., 2011). For example, Ginther, Lackner, and Kaier (2017) emphasized that library publishing support includes the provision of infrastructure, university press, and institutional repository, as well as the dissemination and evaluation of information. Agreeing with this, Lippincott, Schlosser, Ballard, and Maron (2018) clarified that there is still no complete list of services, and their diversity depends on the skills and abilities of library staff and the specific needs of teachers and students.

Library activities for the direct publication of books, journals, conference proceedings, theses and dissertations, technical reports, and other works are fueled by the OA movement. Libraries, while striving to provide high-quality OA content, at the same time extend scientists' capabilities to exert influence in the publishing process (Bonn & Furlough, 2015; Chadwell & Sutton, 2014). Traditional commercial publishers confer on authors the limited rights to their work and limited control over how to distribute it. Giving authors greater control over their work, including distribution, is a common promise of libraries as publishers.

The evolution of DLP has some distinguishing characteristics. Libraries, having become knowledge production partners (Perry et al., 2011), actively cooperate with faculty, various campus organizations, IT support services, and university presses (Kolesnykova & Kliushnyk, 2015; Perry et al., 2011). Gradually, there is an increased interest in the idea of such cooperation

from academic libraries and university presses, which should be natural allies in an effort to create a more equitable scientific publishing system (Okerson & Holzman, 2015). For example, in the AAUP Biennial Reporting Structure Survey of 2016 revealed that 30 of the 133 members of the Association of American University Presses reported to libraries, which is a doubling over 5 years (Watkinson, 2016). At the same time, important developments in the cooperation between the university press and the library offer economic benefits and technological opportunities.

Another feature in the development of DLP is its business model, which does not concentrate on making a profit (Bains, 2017; Raju & Pietersen, 2017; Skinner, Lippincott, Sper, & Walters, 2014). This was evident in the description of the publishing services offered at the Virginia Technical Libraries: "Library publishing services are free" (McMillan & Lawrence, 2013, p. 28). The number of library publishing programs of any size which relied entirely on library budgets to fund their operations has ranged from 50%-56%. According to the Library Publishing Coalition, "in the 2016 Directory, 56% of programs relied entirely on the library's operations budget; in 2017, the percentage had fallen to 48%; this year, it settled in the middle at 50%" (Schlosser, Hamilton, Neds-Fox, Bielavitz, & Hoff, 2018, p. ix). The reason for this fluctuation is not yet clear. It is likely that further full DLP financing from the library operational budget can no longer be guaranteed in the long run. In any case, libraries need to search for new models of financial stability for development and experimentation.

The changing landscape that has put university presses under the auspices of library administrators has also helped transform the library into a modern service-oriented model (Bonn & Furlough, 2015; Ginther et al., 2017; Kolesnykova, 2017; Radom et al., 2012; Watkinson, 2014). At the same time, there are various types of activities performed by libraries with different types of publishing arrangements,

such as having work performed by one librarian, an entire department, or different librarians working in different departments (Tracy, 2017). Organizational changes aimed at improving library services may include the creation of a new library or administrative position, a new department or the restructuring of an existing one, the creation of new working groups or the reorganization and/or integration of several university departments, including university presses and IT Services. Publishing services at the University of Graz in Austria are an example of how the library's publishing initiative, the needs of scholars, and the willingness of other administrative departments to cooperate helped create an inter-department group (Ginther et al., 2017). In this new organizational form, the new community of practitioners with an expanded service portfolio, a library assumes the role of a service provider, partner, and leader. At the same time, the philosophy of library science is expanding, which is manifested in the philosophy of library publication (Kolesnykova, 2017), including the provision of DLP services based on a core value of libraries—the open dissemination of information and knowledge. Often, DLP services come about as a result of private initiatives by individual librarians for the public good (Hahn, 2008; Raju & Pietersen, 2017). For example, librarians at universities in South Africa developed programs and their own skills to provide reliable publishing services and free access to information/knowledge to any member of their academic communities. These librarians often provided these services on their own time and developed curricula to help educate their colleagues about these issues (Raju & Pietersen, 2017).

Of course, the changes taking place require new competencies from librarians (Calarco et al., 2016; Keller, 2015; Lippincott et al., 2018; Wesolek et al., 2017). The need to disseminate and evaluate information actualizes the services of an expert librarian to help university publishers make their content accessible for viewing. Library research support services suggest that competent librarians themselves

must become active researchers who know and understand the entire life cycle of the research process in addition to issues relating to metadata standards, scientific communication, copyright, and OA (Ginther et al., 2017; Mullins et al., 2012; Perry et al., 2011).

Digital Publishing Services in the Ukraine

Higher education in the Ukraine is made up of institutions that are governed at either state or municipal levels, and private forms of ownership. In total, there are about 300 universities and academies that train specialists possessing educational qualifications no less than a master's degree (Ministerstvo osvity i nauky Ukrainy, 2017). The network of libraries at state-owned institutions (hereafter, referred to as university libraries) numbered 195 as of 2017 (Yakunina, 2017). Libraries at institutions of higher education that are not state owned, as a rule, have very small staffs (1-3 people) and do not deal with DLP.

The protracted economic crisis in the Ukraine and the actuality of being in a state of war have an increasing negative impact on the development of Ukrainian science. The possibilities of librarians to support scholars are also limited due to the meager funding for acquiring resources from the leading publishers. In addition, the salary of a Ukrainian librarian in 2018 was \$144 per month (Nazarovets, 2019). At the same time, the average monthly salary of a full-time employee was \$318 (Serednia zarplata v Ukraini u dolarakh dosiahla rivnia 2013 roku (infohrafika), 2019). The minimum wage in Ukraine in January 2018 was \$142 per month (Harkusha, 2019). But the desire of Ukrainian librarians to improve the reputational value both of their universities and libraries encourages them to search for and introduce new solutions in the provision of digital services.

The development of institutional repositories in the Ukraine has become more prevalent over the past few years. The beginning of this activity occurred as a result of the initiative of the

libraries themselves. The first university library that began in 2007 to work with an institutional repository was the National University of Kyiv-Mohyla Academy Library. By 2012, there were 23 repositories (Nazarovets, 2012). In 2018, this initiative received support at the state level. At that time, there were already 99 digital archives of institutions, most of which were supervised by the university libraries. The repository services are part of the library publishing services. Special research on this topic in the Ukraine has not been conducted. But on the basis of theoretical and practical experience, we are confident that the repositories were the first stage of DLP in the universities of the Ukraine, and all the libraries with journal support services, conference material publishing, and book publishing started from the repositories.

The digital repositories in the Western regions of the Ukraine managed by university libraries archive dissertations, journal articles of teachers and students, conference materials, educational literature, and research reports (Lutsyshyna, 2015). In addition to discussing the varying functions of the digital archives, Levchenko (2018) also noted the role that library support of digital repositories plays in increasing the prestige (ranking) of the university and its library. Additionally, DLP is an attractive alternative to the traditional subscription-based access models, especially as the availability of quality OA publications continues to rise. This is particularly true in conditions of a protracted economic crisis in the Ukraine (Nazarovets, 2019).

In the Ukraine, library services for digital publishing of journals, as in the case of institutional repositories, are an initiative of the libraries themselves. The first example (2011) of the university library as a digital publisher of academic journals belongs to the Scientific and Technical Library of the Dnipropetrovsk National University of Railway Transport (Kolesnykova & Kliushnyk, 2015; Kolesnykova & Myrhorodska, 2015). All Ukrainian university libraries providing journal publishing services

use the OJS software. Since 2016, the Scientific and Technical Library of the Dnipropetrovsk National University of Railway Transport (http://conflib.diit.edu.ua/BUN_16) has also initiated conference support services using the Open Conference Systems software (OCS). Participation in the publication of books (monographs, textbooks) has begun to be included as an area of libraries' interests, and the Open Monograph Press (OMP) is often used. Despite the significant increase in scientific publications at Ukrainian universities, the main issue facing the future of DLP is that there is no direction in the system of training and further education of librarians.

Aims

Currently, no in-depth study has been conducted examining and evaluating the DLP landscape, as it exists in the Ukrainian context. We hoped to fill this gap in the literature, breaking out of the embrace of scientific provincialism and isolation of Ukrainian library and information science. This study sought to explore the current state of the DLP movement as a new tool for scholarly communication in higher education institutions. This study analyzed the number of libraries providing publishing services and the extent of the services they provide.

In the course of the study, we tried to answer the following questions:

- (1) How many Ukrainian university libraries provide DLP services or plan to do so in the future?
- (2) What types of DLP services are Ukrainian university libraries providing and what types of publications are they supporting?

Methods

A mixed methods approach was used in carrying out this study. Eleven semi-structured interviews were conducted with library

directors and leading specialists overseeing established digital publishing services at academic institutions. The selection of respondents was carried out according to the following main criteria: level of competence, work experience, position, and participation in professional events. The interviews were conducted in an effort to gain a greater understanding of the DLP landscape prior to formulating the questions for the online questionnaire. Two questions were asked:

- (1) Does your library provide DLP services, in addition to supporting institutional repositories?
- (2) What types of materials/publications are included?

The interviews lasted up to 20 minutes and were conducted both personally ($n = 9$) and by telephone ($n = 2$). The average interview duration was 14 minutes. Personal interviews were held at the seminar “Professionals Competences of Libraries in the Terms of Media Reality: Media Culture and Copyright” (Dnipro, January 2017) ($n = 6$) and during the Scientific Communication in the Digital Age Conference (Kyiv, March 2017) ($n = 3$). Audio recordings of the opinions and comments of all participants were made; audio to text were translated using the Express Scribe program. The most important passages in the interviews relating to the research questions were coded. Then the codes were recorded and analyzed using Microsoft Excel.

An online questionnaire (see Appendix A) was created in Ukrainian using Google Forms and distributed to 195 library directors and leading specialists working in academic settings in the Ukraine, via email, Facebook, and the “Library Synergy: Support of Scientific Research” website of the Section of University Libraries of the Ukrainian Library Association (<http://bibliosynergy.ula.org.ua/>). The first series of questions were created to ascertain the extent of DLP services currently being provided at their institutions and plans for the creation or

expansion of existing services. The questionnaire remained open for a period of 49 days in the spring of 2017. Participants were asked to indicate their educational institution, followed by six questions about the degree of participation of the university in the provision of DLP and the specific available services. Of these questions, three were semi-closed and three closed. In the three semi-closed questions (B3.2.1, B3.2.2, and B3.3), respondents could add their own answers. Certain types of services were specified in the response options. Respondents who selected the “Other” option could add their own answers.

The questionnaire received responses from 115 institutions. After eliminating incomplete answers, we were left with 111 respondents, giving us a 60% response rate. The majority of respondents (75%, $n = 83$) were affiliated with academic libraries in regional centres of the Ukraine. The remainder of respondents were affiliated with academic libraries in Kyiv (capital of the Ukraine) (14%, $n = 16$) and academic libraries in small towns (11%, $n = 12$).

An additional questionnaire was also issued (see Appendix B) to study the distribution of publications and their indexing in databases. It contained four questions: one closed and three open. The checklist was distributed using the same methods described above. The additional questionnaire received responses from only 81 institutions. This questionnaire was distributed 14 days after the first. From 81 respondents, six did not answer the first questionnaire, while 75 responded to both.

We assumed that it would take up to 20 minutes to complete each questionnaire. The results were analyzed in tabular form using Google Forms and Excel.

Results

Semi-Structured Interviews

All 11 respondents said that their libraries

provide other types of DLP services in addition to supporting repositories. The following services were indicated:

- Monitoring, analysis, and visibility ($n = 9$)
- Supporting the journal archives on their websites (including digitizing the retrospective editions) ($n = 6$)
- Providing training on open science principles and on copyright and licensing ($n = 6$)
- Providing training for the editors of publications ($n = 5$)
- Registration of publications (ISSN, ISBN, DOI) and distribution of DOI among university editorial boards ($n = 5$)
- Support for publishing scientific journals through supporting the individual editorial processes (metadata, plagiarism checks, coordinating of manuscripts) ($n = 4$)
- Hosting and administering the websites of journals ($n = 4$)
- Registration of publications, transfer of metadata or full texts to databases (national, thematic, international) ($n = 4$)
- Support for open conference sites ($n = 3$)
- Trainings for conference organizing committees ($n = 1$)

It can be seen from the list that in the field of publishing infrastructure, librarians want to play the role of partners by providing technical services and content placement services. Also, thanks to their communication skills, librarians have good opportunities to conduct interviews, consultations, and trainings. The variety of DLP services mentioned confirmed that researchers with a new worldview, requiring fundamentally new services, have knowledgeable and reliable partners in the theoretical and practical development of these issues through libraries' assistance. The last item was mentioned in only one interview: "By telling and teaching the conference organizers, answering their questions, you realize that it is you who

enhances the reputation of the library." While this concept was only stated once, we assumed that this activity was promising and could be practiced by other university libraries.

Respondents mentioned the following types of publications that their libraries supported: journals ($n = 8$), conference materials ($n = 5$), and books ($n = 4$).

During the interviews, it became clear that respondents did not always know what their role will be in supporting journals, conference materials, and books in the future and whether they will be promising. For example, if at the initial stage technical support for the OJS system was provided, then, with the gaining of practical experience and authority, support for the publishing of academic journals could grow through the support of separate editorial processes (e.g., metadata, plagiarism check, coordination of manuscripts). If at the initial stage advocacy practices and technical support of the OJS system was provided, then, with the obtaining of practical experience and authority, support for the publication of scholarly journals could also expand due to the support of individual editing processes (e.g., metadata, plagiarism verification, manuscript approval). But the negative aspects associated with insufficient funding, staff reduction, and the drift of highly qualified library staff due to low salaries, did not give confidence in the guaranteed long-term perspective.

At the same time, unexpectedly for the authors, there was a constant comparison with repository support services, which Ukrainian libraries have practiced for more than 10 years. Analysis of the interview transcripts allowed us to identify the publication types that are supported and the types of services provided. Analysis also revealed that there are six common objectives associated with library-managed repositories:

- To preserve scientific works of university scientists ($n = 11$)
- To comply with OA (policies,

- features, motivations, etc.) ($n = 11$)
- To fulfill institutional missions for research ($n = 10$)
 - To increase external visibility of institution ($n = 8$)
 - To manage institutional archives and digital collections ($n = 6$)
 - To fulfill institutional missions for education ($n = 4$)

During the interviews, there was no intention of discussing the DLP's impact on library staff, but the issue came up occasionally. For example, one library director stated: "In a short time, to switch to new technologies, to the field of scientific publishing is psychologically and physically very difficult." Another stated: "Communication with authors is different from communication with scientists who just need books, journals, electronic information. It is much more difficult . . . more disturbing." The reasons for this concern with the impact on staff could involve overload of information, adaptation to new systems, concern about performance, poor motivation, and lack of computer experts.

According to some respondents ($n = 4$), it is advisable to conduct a study of techno-stress as a negative psychological connection between people and the introduction of new technologies in university libraries in the future. We think that this is very important, since the facts of dependence of the psychological status and productivity of librarians on new computer information technologies are obvious.

Online Questionnaire

Some respondents, 54% ($n = 60$), stated that they currently provide digital library services, while 36% ($n = 40$) responded that while they currently do not provide DLP, they plan to in the future. Only 10% ($n = 11$) of respondents stated that they have no plans to develop services now or in the future. In 26 libraries, DLP services were a special area of work, performed by employees of a separate structural unit of the library. In 34

libraries, employees of various departments are involved in performing certain types of services (e.g., registration of publications [ISSN, ISBN, DOI], distribution of DOIs among university editorial boards, metadata creation, plagiarism check), because it is difficult to immediately organize a new formal structure in Ukrainian libraries. The 36% who responded positively to the creation of DLP in the future identified the need to build infrastructure and conduct preparatory activities such as staff training, negotiations with university management and editorial boards, improvement of technical facilities, etc.

The 60 respondents who answered affirmatively to providing DLP services were asked to answer additional questions detailing the scope of the services they provide. Some responding institutions, 90% ($n = 54$), supported an institutional repository. Another 78.3% ($n = 47$) provided support for journal publishing, with 38.3% ($n = 23$) providing support for conferences, and 43.3% ($n = 26$) providing support for books.

When asked to describe the types of services they provide in relation to various publication types (i.e., journals, conference proceedings, and online books) associated with their DLP services, the results show that they are quite varied in scope and practice. Of all respondents, 78.3% ($n = 47$) stated that they support the publishing of academic journals through the support of separate editorial processes (e.g., metadata, checking for plagiarism, coordination of manuscripts), the support of journal archives on their websites (including digitizing retrospective issues), software training, and the hosting and administration of journal websites (see Table 1).

When asked to provide descriptions of other services they provide, the respondents indicated that they provided support for indexing in scholarly databases and applying appropriate identifiers for published content including ISSNs and DOIs. In addition, publications are checked for compliance with international

Table 1
Library Support of Journals ($n = 60$)

Services	Number of Libraries	Percentage
Support for digital archives of the editions	26	43.3%
Support of separate editorial processes	26	43.3%
Trainings for editorial staff	20	33.3%
Hosting and administration of journal websites	15	25.0%
Other services	5	8.3%
Not practiced or not answered	13	21.7%

Table 2
Library Support of Conference Publishing ($n = 60$)

Services	Number of Libraries	Percentage
Support of the sites of open conferences	20	33.3%
Posting conference proceedings in the repository	2	3.3%
Trainings for organizational committees	1	1.7%
Not practiced or not answered	37	61.7%

Table 3
Aspects of Common Services in DLP ($n = 60$)

Services	Number of Libraries	Percentage
Advising on OA publishing specifics	49	81.7%
Monitoring and analysis of efficiency, visibility, and impact of publications	27	45.0%
Advising on intellectual property issues	25	41.7%
Registration of publications (ISSN, ISBN, DOI), distribution of DOIs to university editorial boards	19	31.7%
Other	4	6.7%
Not answered	6	10.0%

publishing standards and ethic guidelines of publications.

When asked to describe the services they provide relating to conferences, the majority of respondents (61.7%, $n = 37$) stated that they did not provide conference support services at all, while 33% ($n = 20$) provided hosting support and digital publishing of conference proceedings and reports (see Table 2).

When asked whether or not book publishing is part of their DLP service, only 43.3% responded in the affirmative, while the majority (56.7%) did not support this mode of publishing.

When asked to list the DLP services they offered in addition to the online publication of materials, respondents stated that they advised on issues relating to OA publishing (81.7%); the monitoring and analysis of efficiency, visibility, and impact of publications (45.0%); intellectual

property issues (41.7%); and the registration of publications (31.7%) (see Table 3).

Thus, among the libraries providing DLP ($n = 60$), the following support results were observed: institutional repositories, 90% ($n = 54$); journals, 78.3% ($n = 47$); conferences, 38.3% ($n = 23$); books, 43.3% ($n = 26$).

Of the 111 responding institutions, only 75 libraries (67.6%) answered questions regarding the practice of registration of publications and transferring metadata or full texts to databases (national, thematic, international) (see Appendix B). Of the respondents ($n = 81$), 28.4% ($n = 23$) answered in the affirmative, while 71.6% ($n = 58$) responded in the negative. Of those respondents

not currently providing these services, 54.3% stated that it was part of their future plans.

Tables 4, 5, and 6 show the databases to which the information is being transferred.

Of the respondents, 23 libraries were involved in registration of publications, or transfer of metadata or full texts to databases. The most popular is the work with the National Polythematical repository of the Vernadsky National Library of Ukraine "Scientific Periodicals of Ukraine." Among thematic databases, Dzherelo (bibliographic database of Ukraine) is more popular than other databases. Index Copernicus and Google Scholar are the most popular among International Information Systems.

Table 4

National Information Systems ($n = 23$) (See Appendix B, B4.2.1)

National Information Systems/Databases	Number of Libraries	Percentage
"Scientific Periodicals of Ukraine" (polythematical repository of the Vernadsky National Library of Ukraine)	18	78.3%
Bibliographic database "Ukrainika Naukova"	7	30.4%
Bibliographic database "Dzherelo"	5	21.7%
Ukrainian Research and Academic Network (URAN) (journals on the OJS-platform)	4	17.4%
Information portal "Science of Ukraine: Access to Knowledge"	4	17.4%
Ukrainian scientific journals (USJ)	2	8.7%
Others	3	13.0%

Table 5
Thematic Databases ($n = 23$) (See Appendix B, B4.2.2)

Thematic Databases	Number of Libraries	Percentage
Abstract Database "Dzherelo" by themes Series: 1. Natural sciences; 2. Engineering; Industry; Agriculture; 3. Social sciences and humanities; Arts; 4. Medicine; Medical sciences	9	39.1%
"Consolidated Database of Theses on Education, Pedagogy and Psychology" (V.O. Sukhomlynsky SSPL)	2	8.7%
Business Source International platformed by EBSCO	1	4.3%
Chemical Abstracts Service (CAS)	1	4.3%
ICONDA®Bibliographic (The International CONstruction DAtabase)	1	4.3%
RePEc (Research Papers in Economics)	1	4.3%
Legal education. Legal culture: a consolidated e-catalog	1	4.3%
Social communications: a consolidated e-catalog	1	4.3%
No or not answered	12	52.2%

Table 6
International Databases ($n = 23$) (See Appendix B, B4.2.3)

International Scientific Information Systems/Databases	Number of Libraries	Percentage
Index Copernicus	8	34.8%
Google Scholar (Bibliometrics of Ukrainian Science)	8	34.8%
WorldCat	7	30.4%
Bielefeld Academic Search Engine (BASE)	7	30.4%
Ulrich's Periodicals Directory (Ulrichsweb™ Global Serials Directory)	5	21.7%
Web of Science	4	17.4%
ResearchBib	4	17.4%
Directory of OA Journals (DOAJ)	3	13.0%
OpenDOAR	3	13.0%
Directory of Research Journal Indexing (DRJI)	3	13.0%
OpenAire	3	13.0%
CrossRef (2) + Cited By Linking (1)	3	13.0%
EBSCO	2	8.7%
Scopus	2	8.7%
Universal Impact Factor	2	8.7%
JournalTOCs	2	8.7%
Open Academic Journals Index (OAJI)	2	8.7%
No or not answered	3	13.0%

Discussion

University libraries in Ukraine are actively involved in the creation of a new infrastructure for scholarly communication, which is particularly evident in DLP. Like university libraries from around the world, academic libraries in the Ukraine have dealt with issues associated with DLP, including economic viability, technological opportunities, potential business models, and OA. The results of the research demonstrated the level of interest that librarians have in the development of DLP. This is demonstrated by the fact that DLP is happening across the country. The intention of Ukrainian university libraries to focus on maximizing the openness and accessibility of publications within the international academic field and promoting the free flow of knowledge, as well as increasing activity in internal communications with researchers, is the main driving force of the acceptance and development of DLP services. However, these concepts are not always clearly defined by institutions. This vagueness was demonstrated among some of those interviewed by concerns for the uncertainty and stability in long-term DLP development, partly because of the negative aspects of the economic situation in the Ukraine.

While the potential for expansion and future development of these services is important, we must acknowledge the existing issues that may hinder its ongoing progress, primarily insufficient funding, which can lead to a reduction in staff. It also does not allow for updating of computers, purchasing new licensed software, etc. The loss of qualified personnel due to low salaries has particularly negative effects. In addition, the question of how to strengthen DLP by strengthening the infrastructure that supports it, whether that infrastructure be workflows, production support, or platforms, has not yet been answered. Therefore, we can consider these topics to be particularly interesting and requiring further study.

Only 11% ($n = 12$) of the first questionnaire participants were representatives of small cities, while in the country as a whole, 17.4% (34 from 195) of the population were from small cities. The remaining respondents ($n = 99$) were from the capital and regional centers (administrative centers of oblasts). Considering that a lack of financial resources is a common problem for all libraries in the Ukraine, we assumed that the heightened interest in creating, providing and supporting DLP services in the capital and regional centers is the result of increased and continuous training activities for librarians. These opportunities include access to guest speakers from Germany, the U.S., and the United Kingdom, sessions that are held mainly in Kiev and occasionally in large regional centers, but not in small towns. Although the protracted economic crisis reduced the opportunities for the professional development of librarians throughout the Ukraine, in small towns it is felt more acutely. Therefore, librarians traveling to other cities for conferences, seminars, and workshops was difficult due to insufficient financial support from their home institutions. Unfortunately, DLP webinars in Ukrainian or Russian are non-existent, which hinders a librarian's ability to further develop their competencies. Without opportunities for professional development, DLP may not develop fast enough to serve as a viable alternative to expensive traditionally published titles, which might have resulted in significant savings.

Integrating institutional research into international databases will continue to be a challenge. Traditionally, it has been widely believed that the more databases a journal is indexed in, the greater its impact will be. The problem is the growing number of misleading metrics and the general misunderstanding of what they represent. We assume that working with some dubious companies is a situational and temporary measure to increase the reach of the studies conducted by Ukrainian scholars and

make them more visible. But journal editors and librarians in Ukrainian universities are becoming more and more selective, choosing which databases to cooperate with.

This study may be interesting to librarians from different countries for at least two main reasons. First, Ukrainian librarians have already created and continue to create a large and diverse array of OA information that may be of interest not only for researchers living in the Ukraine, but also for Ukrainian scientists and students living and working in different countries of the world. According to the Analytical Center CEDOS in 2016-2017 (Stadny, 2019), 77,424 students with Ukrainian citizenship were trained outside the Ukraine: 33,370 in Poland, 11,440 in Russia, 9,638 in Germany, 3,425 in Canada, and 2,471 in the Czech Republic, as well as in Austria, Italy, Spain, and Bulgaria. In addition, in many countries there are large Ukrainian diasporas. In particular, according to the 2016 census, 1,359,665 Canadians indicated their Ukrainian ethnic origin (Statistics Canada, 2019). Literature from Ukrainian repositories, electronic journals, and other OA resources can be used directly by researchers as well as by librarians seeking to satisfy the interests of their readers as much as possible.

The second reason for possible interest of librarians from other countries in the Ukrainian DLP experience is the widespread introduction of these services throughout the country in the presence of formidable financial barriers. By creating DLP, Ukrainian librarians are trying to minimize the negative attitude of researchers towards libraries due to the lack of a sufficient range of modern publications and access to information resources.

In difficult economic conditions, university libraries have taken the initiative to support the development, management, and distribution of reliable scholarly content created in their institutions. The model of library as a publisher is developing in the Ukraine, overcoming a number of difficulties. In addition to economic

difficulties, one can also name the linguistic ones (poor knowledge of English), lack of methodological assistance and educational programs, the deficit of highly qualified staff, and difficulties with updating computer equipment. Therefore, it seems to us that this movement is slow compared to the university libraries of the developed countries. But it does not stop attracting an increasing number of enthusiastic librarians as its allies. This study can provide an inspiring example to developing country libraries for planning and implementing new DLP services.

Conclusions

This study was conducted in the hopes of gaining a greater understanding of the current state of DLP services offered at university libraries in the Ukraine. The results of the questionnaire demonstrated that the current state of DLP is strong, with 54% of responding libraries already providing the service. The results show that future growth is inevitable, with 36% of respondents stating that while they currently do not provide DLP services, there are plans for program development in the future. The results from the interviews showed that the six most common objectives for providing digital library services are to fulfill the institutional missions for research and education, to increase the external visibility of the institution and its research output, to preserve scientific works of university scientists, to manage institutional archives and digital collections, and to ensure OA compliance. The main challenges participants identified related mainly to institutional repositories: their installation, maintenance, and the submission processes. Of the barriers to service implementation and growth, respondents identified the need to build infrastructure and to improve training and awareness for staff, librarians, researchers, and university administrators. The authors consider it necessary to build the capacity of librarians to support the new roles of libraries in the field of

scientific communications and electronic research, including DLP.

Acknowledgments

The authors of the article are sincerely grateful to O. Serbin, the director of the Scientific Library of the Taras Shevchenko National University of Kyiv, and the staff of the Scientific and Methodical Department of this library for the organizational assistance in conducting the online survey, as well as the staff of the Ukrainian Library Association. The authors also thank Kealin McCabe (Geoffrey R. Weller Library, University of Northern British Columbia, Canada) for her invaluable assistance in working on the manuscript.

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Appendix A

Library Publishing Services at Higher Education Institutions of Ukraine Questionnaire

- B1. Your higher education institution
- B2. Library Publishing services at your university are (choose one of the options):
- a) a special area of work
 - b) a certain type of service
 - c) not practiced but planned
 - d) neither practiced nor planned
- B3. If you chose answer a) or b) in block 2, please specify the services.
- B3.1. Support of the institutional repository ("yes" or "no")
- B3.2. Scientific Publishing
- B3.2.1. Journals (choose one or more options or add your own)
- Trainings for editorial staff
 - Hosting and administration of journal websites
 - Support of separate editorial processes
 - Support for digital archives of the editions
 - Not practiced or not answered
 - Other services
- B3.2.2. Conferences (choose one or more options or add your own)
- Support of the sites of open conferences, posting reports
 - Not practiced
 - Other
- B3.2.3. Online books (monographs, textbooks) ("yes" or "no")
- B3.3. General LP services (choose one or more options or add your own)
- Registration of publications (ISSN, ISBN, DOI) and distribution of DOIs among university editorial boards
 - Advising on intellectual property issues
 - Advising on Open Access publishing specifics
 - Monitoring and analysis of efficiency, visibility, and impact of publications
 - Other

Appendix B

Library Publishing Services at Higher Education Institutions of Ukraine Addition to the Questionnaire

B4. Your higher education institution

B4.1. Does your library practice the services of integration of university research results into international and national information systems / databases? (choose one of the options)

- Yes
- No, but we are planning to
- No, and we are not planning to

B4.2. Please indicate geography and systems

- B4.2.1. Indicate national information systems
- B4.2.2. Indicate thematic or industry databases
- B4.2.3. Indicate international databases