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Modern trends in the training of library and information specialists

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Abstract. Global transformations necessitate a re-evaluation of training models for library and information specialists and the modernisation of educational programmes to meet new professional challenges and competencies, including entrepreneurial skills. The aim of the article is to analyse the conditions for ensuring the development of entrepreneurial competence elements among bachelor's degree students in the specialty 029 "Information, Library and Archival Affairs" at higher education institutions in Ukraine through the lens of evolutionary transformations in higher library and information science education. The research employs a systematic approach, including analysis, synthesis, generalisation, and various analytical methods. Effective professional training in the library and information field relies on adapting educational programmes to rapidly evolving professional demands. Analysis of educational programmes at four institutions shows their potential to develop entrepreneurial skills through a variety of mandatory and elective courses, fostering competencies such as creative thinking, management, communication, and teamwork. Mastery of these skills is increasingly crucial for modern library and information professionals. It has been found that the compulsory educational components as well as the elective educational components from the catalogue of elective disciplines, selected from the educational programmes to assess the development of entrepreneurial competence in future specialists, highlight the uniqueness of each programme and reflect the educational institution's overall approach to training bachelor's students in this field. It is noted that the list of compulsory and elective educational components, according to a particular educational and professional programme, demonstrates a positive tendency in understanding the current needs of the industry and social requirements in general. The research results can be used to improve the content and structure of educational programmes for training specialists in the specialty 029 "Information, Library and Archival Affairs", as well as to develop new syllabi and working programmes for educational components

Keywords: information, library, and archival field of activity; higher education; professional training; educational and professional programme; soft skills; individual educational trajectory; entrepreneurial competence

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Introduction

The information society is characterised by dynamic changes in all spheres of human life. Modern transformation processes have a significant impact on politics, science, economics, labour resources distribution, cultural processes and other aspects social life. The global restructuring of socio-economic relations imposes new requirements on the quality of specialist training, as modern youth, in order to be competitive in the labour market, must possess not only a wide range of hard skills but also well-developed soft skills.

O. Litvinova *et al.* (2020), analysing the psychological aspects of soft skills development in students, emphasise their significant importance in the professional activities of the new generation youth. L. Saunders (2019), in a nationwide survey of library and information science practitioners on the necessary knowledge, skills, and aptitudes (KSAs) for their professional activities, identifies 11 main KSAs, seven of which are soft skills recognised as critically important. These include interpersonal communication, writing, customer service, teamwork, cultural competence, interacting with diverse communities, and reflective practice grounded in diversity and inclusion. L. Saunders & S. Bajjaly (2022), focusing on the primary goal of ensuring graduate employment and their professional success, emphasised the importance of integrating soft skills into the educational process and maintaining a constant dialogue among all stakeholders in LIS educational programmes regarding the alignment of their content.

L. Bakumenko (2023), emphasising the universalisation of the librarian profession in the context of the modern dynamic realities of the information society, highlights the importance of developed soft skills (personal, communicative, organisational-managerial, cognitive-informational, entrepreneurial, civic) as a key component of a librarian's professional competence. The author notes that soft skills not only form the basis for the effective performance of professional duties but also ensure the ability to constructively respond to new challenges and successfully adapt to changes in the professional environment.

To address the significant challenges facing Ukrainian higher education institutions in preparing professionals in information, library, and archival studies, the educational process for first-level (bachelor's) students in the specialty 029 "ILAA" should focus on equipping graduates with an understanding of modern paradigmatic approaches successfully implemented in global documentary and information institutions, while also considering their relevance to the evolving needs of society and changing consumer demands.

Modern libraries and museums exemplify how information service providers adapt to contemporary challenges. They are increasingly popular as makerspaces – inclusive environments where a culture of shared values is fostered, and creativity, information, and technology exchange support users in developing, creating, and experimenting with technologies like 3D printing, robotics, and electronics. J.A. Arévalo (2019) provides a comprehensive review of the idea of makerspaces and their potential for library environments; the author details the process of creating such spaces, offers practical recommendations for their organisation and equipment, and emphasised the importance of makerspaces as innovative environments that foster educational activities, the development of inventive skills, creative initiatives, and innovative approaches.

V. Ilnytskyi (2024), considering makerspaces in the context of creating creative environments and implementing information technologies in children's libraries, emphasised that the implementation of the makerspace concept contributes to the formation of various spatial forms: environments for digital literacy, knowledge exchange and collaboration, as well as the development of creativity, interactivity, and communication, which are necessary and relevant for the younger generation.

A modern form of library utilisation is Smart Spaces, which focus on integrating innovations to optimise and enhance functional space. These spaces employ internet technologies, data analytics, automation systems, virtual reality, and interactive platforms for learning and communication, contributing to increased convenience, efficiency, and comfort for users. F. Wang (2024) emphasised the causal relationships between the transformation of traditional libraries into modern institutions of a new format and the development of digital intelligence through the concept of a comprehensive digital ecosystem meta-universe, reflecting the continuous growth of individual user needs and the implementation of innovative approaches to library services in the modern educational environment.

The concept of the open and resonant library, developed in 2010 by researchers from the Royal School of Library and Information Science, which proposes that a library should have four spaces: the inspiration space, the learning space, the meeting space, and the performative space, is gradually gaining popularity in Ukraine (Rasmussen *et al.*, 2022). Ukrainian libraries are adapting this experience to Ukrainian realities and consumer needs. A detailed analysis of the library model that integrates these four spaces, along with examples of successful implementations of such projects in Ukraine, is highlighted in the textbook prepared by a team of authors compiled by O. Boiarynova *et al.* (2020).

Implementing innovations in documentary and information institutions requires significant investments

and the training of qualified, creative personnel capable of performing key functions. Adapting educational programmes for bachelor's students in the 029 "ILAA" specialty to meet modern requirements is crucial. These programmes should focus on developing competencies such as generating and promoting creative ideas, project management, coordinating innovative initiatives at all stages, and analysing the impact of these innovations to identify improvements and adjust strategies. These skills are the basis of entrepreneurial competence, which was included in the list of key competences for lifelong learning in the European educational field back in 2007, when the European Commission for Education published the document "Key competences for lifelong learning – a European reference framework" (European reference..., 2007).

The aim of the article is to analyse the opportunities for developing components of entrepreneurial competence in bachelor's degree students specialising in 029 "ILAA" at higher education institutions in Ukraine, taking into account current transformational trends in the library and information sector.

The scientific novelty of the work lies in the attempt to analyse entrepreneurial competence as an important element in the training of specialists for the information, library, and archival field.

Literature review

In modern conditions in Ukraine, new conceptual possibilities and prospects for the development of institutions providing information services are emerging. This process is accompanied by a significant increase in the number of publications by Ukrainian scholars, who study various aspects of the functioning of documentary information institutions and the peculiarities of improving library and information education.

In contemporary scientific discourse, there are several studies focusing on the formation and development of digital competence among students specialising in 029 "ILAA". One such work is the article by O. Pluzhnyk (2022), which analyses aspects of developing digital competence in future specialists in documentation and information activity through the example of two educational programmes: "Professional Education (Documentation)" and "Information, Library, and Archival Affairs", offered at Hryhorii Skovoroda University in Pereyaslav. The researcher emphasises the importance of implementing a competence-based approach to education, which involves the development of information and digital competence as a critical element of professional training. The article also discusses a developed set of courses ("Analytical and Synthetic Processing of Document Information", "Electronic Governance", "Electronic Document Management", "Social and Information Security"), aimed at shaping and enhancing digital competence in future specialists in documentation and information activity. The synergy of these components contributes to building a strong foundation for preparing professionals in line with the demands of the modern labour market.

O. Matvienko & M. Tsyvin (2021) highlight the relevance of integrating the educational programme "Web Project Management, Digital Content Design" within the specialty 029 "ILAA" at Kyiv National University of Culture and Arts. The authors highlight the importance of "digital orientation" in educational programmes, emphasising the need to train specialists in managing digital transformations within the library and archival sectors. They stress the role of "digital curation" in developing competencies in digital technologies and information resource management, advocating for the introduction of a "Digital Curation" course. Additionally, they propose creating an integrative course titled "Educational Services in Conditions of Digital Inequality", focusing on the psychological, pedagogical, methodological, and organisational aspects of digital education and consultation.

A. Humenchuk (2020), studying the current state of bachelor's training in the specialty 029 "ILAA", focuses on acquiring relevant competencies for librarians. He proposes a concept of a systematic approach to developing a set of general and professional digital competencies for bachelor's students in this specialty, and justifies a model of comprehensive (cross-platform) competency development, which is integrated into the content and teaching methods of library science educational programmes. Additionally, the scientist argues for the necessity of this approach in the context of the development of the digital economy, where the criterion for the formation of a modern librarian's digital competency system is the presence of "digital intelligence", which includes three basic components: "digital citizenship", "digital creativity", and "digital entrepreneurship". The author also emphasises the importance of developing soft skills: "In the context of the digital economy, these qualities are no less important than professional skills, as they ensure flexibility and adaptability to new challenges and the demands of digitisation, competitiveness against robotics and artificial intelligence, ongoing self-development, and the ability to learn throughout life".

T. Yaroshenko & O. Serbin (2023), analysing foreign theoretical and practical experience in the field of digital curation, particularly in the library and information sector, emphasise that one of the main concepts for the development of the specialty 029 "ILAA" in Ukraine is the implementation of interdisciplinary educational and professional programmes that meet contemporary societal demands and are relevant to the field of documentary and information activities. Researchers

note that the Ukrainian academic community often lacks readiness to integrate library science, information science, and computer science into educational programmes, limiting the development of data management skills and the use of innovative technologies in documentary and information activities. By citing examples from leading international library schools, the authors emphasise the need for new educational programmes in Ukraine and outline the necessary competencies for library specialists in a digitised society.

T. Novalska & V. Kasian (2021) emphasise the need to adapt the specialty 029 "ILAA" to technological and social changes brought about by the widespread use of internet technologies. They also substantiate the theoretical and methodological foundations for implementing educational innovations, specifically the educational and professional programme "Management of Social and Communication Networks. Internet Marketing" within the specialty 029 "ILAA". The authors highlight digital competencies as a necessary component of the professional training of specialists.

N. Bachynska (2022b) offers research on the consideration and justification of the value and relevance of interdisciplinary programmes. Providing a detailed description of the interdisciplinary programme "Online Journalism and Blogging", which covers knowledge areas from specialties 061 "Journalism" and 029 "ILAA", the author identifies and justifies the competencies required for the successful implementation of this interdisciplinary specialisation. The researcher emphasises the programme's alignment with key concepts such as "information resource", "social communications", and "information product", focusing on their interconnections and the role of digital technologies. By grounding the theoretical and methodological foundations for developing the interdisciplinary educational and professional programme "Media communications and digital production" within the specialty 029 "Information, Library, and Archival Affairs", N. Bachynska (2022a) underscores the pedagogical appropriateness of training specialists in this area. The author determines that this appropriateness is based on revealing the essence and dominant connections between key concepts such as "social and media communication", "digital media space of libraries", and "digital resources", which shape the content of the specialty 029 "ILAA" and the proposed educational and professional programme.

An analysis of Ukrainian scientific papers reveals numerous studies aimed at improving educational programmes for students in the 029 "ILAA" specialty, with a focus on developing digital competencies and introducing new components to meet modern demands. However, there is a lack of research addressing entrepreneurial competence as a key element in training specialists for the information, library, and archival fields, despite its relevance in modern context.

Materials and Methods

The achievement of the research goal was ensured based on the principle of objectivity, which involved an impartial approach to data collection and analysis according to clearly defined criteria. This approach allowed for revealing the multifaceted nature of the research object and creating a reliable and valid knowledge base for further analysis of the conditions for developing elements of entrepreneurial competence.

The research is based on a systemic approach, which involves considering educational programmes for training specialists in the library and information field as integrated systems that adapt to contemporary trends and societal demands, which define new requirements for professional competence and social skills. The methodology of the study relies on general scientific and specialised methods of cognition, which provided a comprehensive approach to data analysis and interpretation. The logical method was used to structure research questions and develop a coherent argumentation in the framework of examining current trends in the training of library and information specialists. The method of generalisation was applied to systematise the research findings and formulate conclusions. Analysis and synthesis methods were employed to study the overall structure and content of forming elements of entrepreneurial competence within educational programmes, including identifying key components, systematising data, and formulating recommendations for future research. To examine the presence of entrepreneurial competence elements in educational components, the structural method was used, which allowed for identifying the main characteristics of these elements and analysing their contextual differences within curricula and educational programmes of various higher education institutions. The comparative analysis method allowed for comparing educational programmes in terms of the presence of components of entrepreneurial competence, identifying contextual differences, and outlining major trends in required and elective educational components. The application of content analysis enabled the processing of educational programmes, curricula, and syllabi to identify elements of entrepreneurial competence and assess their alignment with current professional environment requirements and higher education standards for the specialty 029 "ILAA". Within the research framework, the situational analysis method was used to study the components of entrepreneurial competence in educational programmes through the lens of individual educational trajectories of students. This approach helped uncover the peculiarities of forming such trajectories in the

context of contemporary challenges, with an example from Vasyl Stus Donetsk National University. To analyse the conditions for developing entrepreneurial competence among bachelor's students in the specialty 029 "ILAA", four higher education institutions in Ukraine were selected: Kremenchuk Mykhailo Ostrohradsky National University, Odesa Polytechnic National University, Vasyl Stus Donetsk National University, and Kharkiv State Academy of Culture. The first three institutions offer unique educational and professional programmes for training specialists: "Information, Library and Archival Affairs", "Information Activity", and "Documentary Studies and Information Activity", respectively. Kharkiv State Academy of Culture offers two programmes: "Digital Information Management" and "Information and Documentation Activities". The empirical basis for examining the issue comprised required and elective educational components within the educational and professional programmes, each characterised by a distinct set of educational components and content, as well as different approaches to implementing students' rights to choose in the context of individual educational trajectories. An analytical review of curricula, educational component programmes, and internal documents of higher education institutions, available on their official websites, provided the necessary information to create a comprehensive picture of the research subject.

Results and Discussion

The scholarly discourse on the need to reform the education system for training specialists in the library and information field began at the turn of the 20th and 21st centuries. During this period, Ukrainian scientific journals started to feature both translated articles by foreign authors, such as U. Kraus-Liaikhert (2008), and publications by Ukrainian scholars, including V. Ilhanayeva (1993) and V. Babych (2005). One of the first to advocate a fundamental reform of the library education system, rather than just gradual or cosmetic changes, was O.V. Ilhanayeva (1993). She emphasised that socio-information and socio-communicative approaches should form the basis of students' fundamental training, while also highlighting the importance of maintaining an optimal balance between foundational and applied preparation. T. Novalska (2015), in examining the key milestones in the development of higher library education in Ukraine, analyses contemporary concepts by Ukrainian researchers concerning the improvement of library and information education.

There are many researchers who devote their work to the study of certain aspects of the formation of students' general and special competences in the process of their professional training. The scientific article by V. Soshynska (2017), for example, is devoted to the study of the formation of communication competences in students of this specialty. The training of the first (bachelor's) level students in the specialty 029 "ILAA" is carried out in accordance with the "Standard of higher education of Ukraine for specialty 029 "ILAA" for the first (bachelor's) level of higher education" (Order of the Ministry of Education…, 2018). The standards define a list of general and special (professional, disciplinary) competences of graduates, as well as formulate learning outcomes.

The analysis of the competencies defined by the "Standard…" allowed for the identification of specific (professional, subject-specific) competencies that reflect the development of certain entrepreneurial skills and abilities in students within the field of information, library, and archival activities. The analysis of the learning outcomes enabled the identification of those outcomes associated with the formation of key components of entrepreneurial competence in students at the bachelor's level in the specialty 029 "ILAA", which are necessary for professional activity (Order of the Ministry of Education…, 2018) (Fig. 1). The analysis has shown that the vast majority of the learning outcomes in the standard relate to the main specific aspects of the development of entrepreneurial competence that will be used in future professional practice. It should be noted that the necessary components of entrepreneurial competence were developed with the involvement of European official institutions, which enshrined their conclusions in the relevant documents. Thus, in 2016, the European Research Center presented the European Framework of Entrepreneurial Competence for Citizens, known as EntreComp, developed by experts from the European Training Foundation as a guiding document for standardising curricula at all levels of education and employment to describe qualifications. EntreComp points out the significant influence of the learning environment on the development of the three main areas of entrepreneurial competence defined in the framework. Each of them includes five groups of competences. Taken together, these groups (15) constitute the main aspects of entrepreneurship as a key competence (Fig. 2) and include a comprehensive list of 442 learning outcomes (descriptors) (Bacigalupo *et al.*, 2016).

Within the framework of the national legal and regulatory base in the field of higher education and on the basis of information available on the websites of Ukrainian higher education institutions, in particular, educational and professional programmes for the training of first (bachelor's) educational level in the specialty 029 "ILAA", as well as the list of elective disciplines, an analysis of the opportunities for students of this specialty to develop entrepreneurial competence within the selected educational and professional programmes was conducted. In Table 1, a list of educational components offered to students within the educational programmes implemented at specific higher education institutions for the specialty 029 "ILAA" is presented.

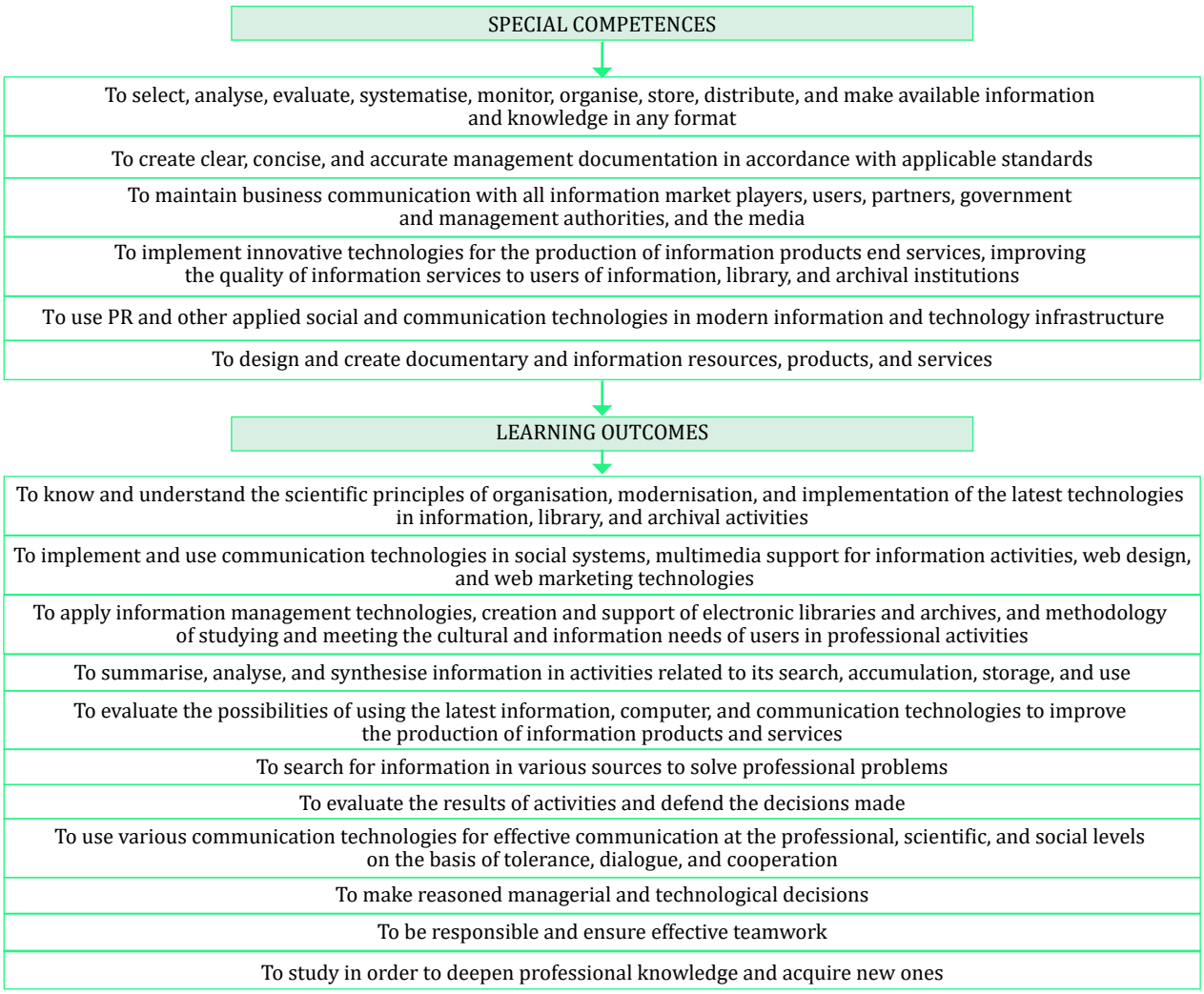

Figure 1. Special competencies and learning outcomes according to the "Standard of higher education of Ukraine for specialty 029 "Information, Library and Archival Affairs" for the first (bachelor) level of higher education", selected list

Source: compiled from data Order of the Ministry of Education ... (2018)

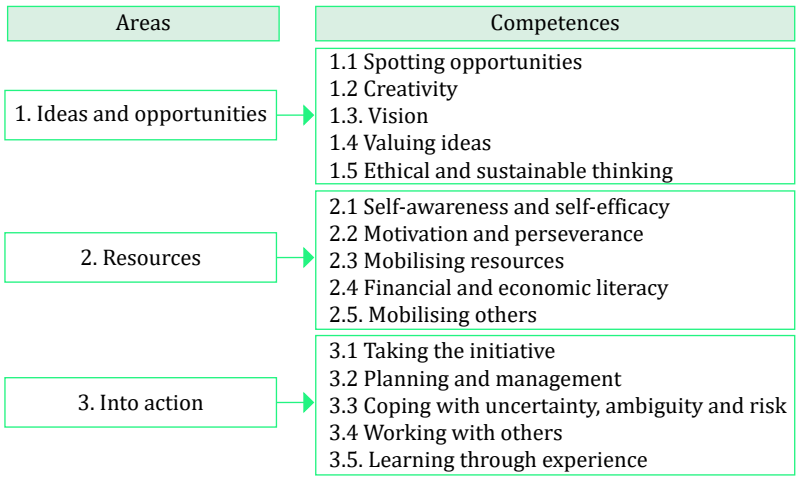

Figure 2. Components of entrepreneurial competence (according to EntreComp)

Source: compiled from data M. Bacigalupo et al. (2016)

Table 1. Teaching educational components to students of the specialty 029 "ILAA", selected list

Higher education institution	Educational and professional programme	Educational component	Type of EC/ number of ECTS credits
Kharkiv State Academy of Culture	Information and Documentation Activities	Social communications	compulsory/4
		Information and analytical management	elective/5.5
		Information support of entrepreneurial activity	elective/5.5
		Communication strategies of the institution	elective/4.5
		Project management systems	elective/4
	Digital Information Management	Content management	compulsory/4
		Management in document and information structures	compulsory/6
		Library and information production	compulsory/7
		Information marketing	compulsory/4
		PR in libraries	elective/4
		Imageology	elective/4
		Branding of libraries	elective/4
		Marketing activities of documentary and information institutions	elective/4
		Advertising activities of documentary and information institutions	elective/4
		Merchandising	elective/4
		Fundamentals of economic analysis	elective/4
		Library blogging	elective/4
		"Smart Library"	elective/4
		Market of information products and services	elective/4
Kremenchuk Mykhailo Ostrohradsky National University	Information, Library and Archival Affairs	Marketing of information products and services	compulsory/6
		Organising the activities of information institutions and information and documentary services	compulsory/5
		PR in the information sphere	compulsory/5
		Fundamentals of imageology and image-making	elective/5
		Corporate culture of information and analytical institutions	elective/5
		Brand management in information activities	elective/5
		HR management	elective/5
		Organising the activities of cultural institutions	elective/5
		Exhibition activity arrangement	elective/5
		Excursion activity arrangement	elective/5
		Exhibition activities of information centres	elective/5
Odesa Polytechnic National University	Information Activity	Marketing of information products and services	compulsory/4.5
		Fundamentals of PR	compulsory/4.5
		Theory and practice of advertising	compulsory/3
		Imageology	elective/1.5
		Conflictology	elective/1.5
		Leadership and career development	elective/1.5
		Economic studies	elective/3
		Economic fundamentals of business administration	elective/3
		Information business	elective/3
		Management of information, bibliographic and archival affairs	elective/4.5
		Fundamentals of market economy	elective/3
		Creative technologies in advertising and PR	elective/4.5

Source: compiled from data Official website of Kremenchuk Mykhailo Ostrohradsky National University (2024), Official website of Odesa Polytechnic National University (2024), Official website of Kharkiv State Academy of Culture (2024)

The selection of these educational components is made to demonstrate the potential of the educational programme in providing students with opportunities to develop key competencies, including entrepreneurial skills. For instance, at Kharkiv State Academy of Culture, within the educational programme "Digital Information Management", a significantly broader range of such courses is offered compared to the "Information and Documentation Activities" programme, considering its unique specificity and objectives.

The selected list of educational components includes both mandatory courses integrated into the curricula and elective courses offered to students for pursuing individual educational trajectories (Chymak *et al*., 2021; Fedorenko *et al*., 2021; Buinytska *et al*., 2024). The sample shows that the majority of educational components that allow students to develop certain elements of entrepreneurial competence are represented by elective courses, with this percentage being approximately the same across programmes. Specifically: in the "Information Activity" programme – 84%, in "Information, Library and Archival Affairs" – 73%, in "Digital Information Management" – 72%, and in "Information and Documentation Activities" – 80%. This indicates a significant emphasis on supporting an individual educational trajectory. The volume of these educational components mainly constitutes 4-5 ECTS credits.

It worth consider the peculiarity of acquiring elements of entrepreneurial competence at Vasyl Stus Donetsk National University during the implementation of the educational programme "Information and Documentation Activities". The university has its own methodology of individual trajectory of the student (Fedorenko *et al.*, 2021). In the 1st year of study, in the 1st semester, students choose the disciplines (1 worldview and 1 practice-oriented) that they will study in the 2nd semester. In the 2nd semester, students choose one of three individual trajectories, which ends in the 7th semester, as follows: the first trajectory is a minor programme; the second trajectory is a certificate programme; the third trajectory is elective courses (Official website of Vasyl Stus…, 2024).

The minor programme provides 50 ECTS credits (10 academic disciplines of 5 ECTS credits each). This is a block of interrelated disciplines that are studied sequentially from the 3rd to the 7th semester of training. A student may choose the minor programme in order to obtain additional qualifications in other fields and/or specialties. The results of this programme are recorded in the graduate's educational document. Among 19 different minor programmes, the most effective in developing entrepreneurial competence are the following: "Own Business", "Finance for Business", "Project Management", "People and Business Management", and "Marketing for Business". It is worth taking closer look at the minor programme "Own Business" (Official website of Vasyl Stus…, 2024). The minor programme "Own Business" is a block of interrelated disciplines that are beyond the basic qualifications of a higher education student and provide for the acquisition of additional qualifications. This programme is aimed at developing the competences necessary to start and run a business. It is divided into 9 academic modules (disciplines) and ends with a final project (Table 2).

Table 2. Academic modules (disciplines) of the minor programme "Own Business" (Vasyl Stus Donetsk National University, 2023-2024 academic year)

Title of the module (discipline)	Number of ECTS credits	Semester of study
Organising and managing one's own business	5	3
Business psychology	5	3
Startup lab	5	4
Taxation and pricing	5	4
Fundraising and grant writing	5	5
Family business management	5	5
Fundamentals of marketing on the Internet	5	6
Digital entrepreneurship	5	6
Business architecture	5	7
The final project	5	7

Source: compiled from data Official website of Vasyl Stus Donetsk National University (2024)

In the description of the minor programme "Own Business" for bachelor's degree students of the 2022 intake (3-7 semesters), the main competencies that students are expected to acquire, as well as the learning outcomes, are presented (Official website of Vasyl Stus Donetsk National University, 2024) (Fig. 3).

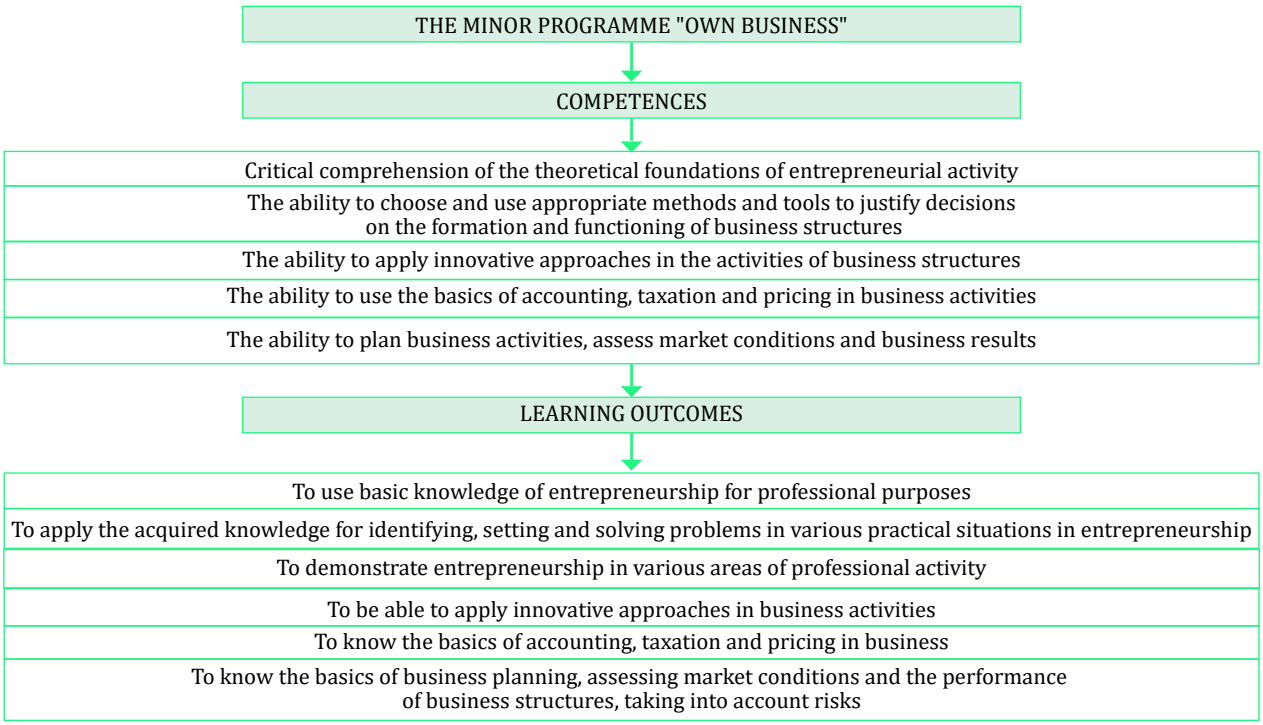

Figure 3. The core competencies and learning outcomes of the minor programme "Own Business" at Vasyl Stus Donetsk National University
Source: compiled from data Official website of Vasyl Stus Donetsk National University (2024)

The Certificate Educational Programme (CEP) is a specialised practice-oriented educational programme of interdisciplinary and intersectoral content aimed at acquiring additional knowledge, soft skills and abilities, and universal competences; it is studied over 3-7 semesters. It consists of 50 ECTS credits, 30 of which include six academic disciplines, each of them has 5 ECTS credits, and 20 credits include 4 educational components of the student's choice (elective disciplines, alternative practices and coursework). Among others, entrepreneurial competence is formed by the following CEPs: "Small Business Organising", "Internet Business", "Business Technologies in the Experience Economy", "Leadership and Team Building", and "Family Business" (Official website of Vasyl Stus..., 2024). The elective courses represented by the third trajectory are divided into worldview and practice-oriented. Each of them has 5 ECTS credits. The third trajectory has 50 ECTS credits, 30 of which include elective courses and 20 credits include 4 educational components (elective disciplines, alternative practices and coursework, if these educational components are not compulsory and are required by the standard of higher education), which are defined in the curriculum of the certain educational programme (Official website of Vasyl Stus..., 2024). Table 3 presents those educational components that contribute to the development of entrepreneurial competence.

Table 3. Elective educational components, selected list (Vasyl Stus Donetsk National University, 2023-2024 academic year)

Type of educational component	
Elective, worldview	**Elective, practice-oriented**
Creative business	Cryptoeconomics
Influence business	Recruiting: recruitment technologies
Professional and corporate ethics	Finance in the digital space
Economic security	Mastery of business communication and public speaking
Fundamentals of family business	Internet business
Fundamentals of leadership	Soft skills training
Business communications	Team building training
Fundamentals of conflictology	Time management

Table 3. Continued

Type of educational component	
Elective, worldview	**Elective, practice-oriented**
Self-management	Compliance of fallout for individual entrepreneurs
Personal finance	Psychology of advertising communications
Fundamentals of international business	

Source: compiled from data Official website of Vasyl Stus Donetsk National University (2024)

Thus, the analysis of the content of compulsory and elective educational components, their scope, the content of working programmes, and the mechanisms for selection in the context of individual educational trajectories has revealed the potential of the educational and professional programmes for fostering entrepreneurial competence among undergraduate students in the specialty 029 "ILAA".

Conclusions

The evolutionary transformations and patterns in the development of higher library and information education put forward requirements for a modern specialist in the field of documentary information activities. It must have a wide range of competences. Accordingly, the main mission of higher education institutions is to optimise educational programmes and adapt them to modern requirements and demands. This implies the inclusion of such components or their content elements in educational programmes that contribute to the development of entrepreneurial competence. This approach allows students not only to acquire traditional professional skills that have been established in practice, but also to master new ones aimed at developing entrepreneurial initiative and innovation.

The compulsory educational components selected from the educational and professional programmes, as well as the elective educational components from the catalogue of elective disciplines for the analysis of the possibilities of ensuring the development of entrepreneurial competence in future specialists in information, library and archival affairs, generally demonstrate the uniqueness of each of the educational and professional programmes and reflect the general concept of the educational institution for the training of bachelors in this specialty.

Thus, the analysis of the conditions for ensuring the development of elements of entrepreneurial competence in bachelor's level students majoring in 029 "ILAA" – based on a selected list of compulsory and elective educational components in accordance with specific educational and professional programmes – demonstrates a positive alignment with the current needs of the industry and general social requirements.

The prospects for further research involve analysing teaching methods aimed at developing entrepreneurial competence in educational programmes for specialists in the library and information field, evaluating their effectiveness in the context of current trends and professional environment requirements, and developing new methodological solutions in accordance with the needs of professional practice.

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Conflict of interest

None.

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Сучасні тенденції підготовки фахівців бібліотечно-інформаційної діяльності

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Анотація. Глобальні трансформації вимагають переосмислення моделей підготовки фахівців бібліотечної та інформаційної справи та модернізації освітніх програм, щоб відповідати новим професійним викликам та компетенціям, включаючи підприємницькі навички. Метою статті є аналіз умов забезпечення розвитку елементів підприємницької компетентності серед студентів бакалаврату за спеціальністю 029 «Інформаційна, бібліотечна та архівна справа» у закладах вищої освіти України крізь призму еволюційних трансформацій у вищій бібліотечній та інформаційній освіті. У дослідженні використано системний підхід, включаючи аналіз, синтез, узагальнення та різні аналітичні методи. Ефективна професійна підготовка у сфері бібліотечної та інформаційної справи ґрунтується на адаптації освітніх програм до швидко змінюваних професійних вимог. Аналіз освітніх програм у чотирьох закладах вищої освіти показав їх потенціал для розвитку підприємницьких навичок через різноманітні обов'язкові та вибіркові курси, сприяючи формуванню таких компетенцій, як креативне мислення, менеджмент, комунікація та командна робота. Оволодіння цими навичками стає все більш важливим для сучасних фахівців бібліотечної та інформаційної сфери. Виявлено, що обов'язкові навчальні компоненти, а також вибіркові навчальні компоненти з каталогу вибіркових дисциплін, обраних з освітніх програм для оцінки розвитку підприємницької компетентності у майбутніх фахівців, підкреслюють унікальність кожної програми та відображають загальний підхід навчального закладу до підготовки студентів-бакалаврів у цій галузі. Зазначено, що перелік обов'язкових та вибіркових навчальних компонентів відповідно до конкретної освітньо-професійної програми демонструє позитивну тенденцію у розумінні сучасних потреб галузі та соціальних вимог загалом. Результати дослідження можуть бути використані для вдосконалення змісту та структури освітніх програм підготовки фахівців за спеціальністю 029 «Інформаційна, бібліотечна та архівна справа», а також для розробки нових навчальних планів та робочих програм для освітніх компонентів

Ключові слова: інформаційна, бібліотечна та архівна сфера діяльності; вища освіта; професійна підготовка; освітньо-професійна програма; soft skills; індивідуальна освітня траєкторія; підприємницька компетентність

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EU experience in the digital transformation of administrative services

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Abstract. The EU's experience in the digital transformation of administrative services is important because it demonstrates effective approaches to increasing transparency and efficiency of public administration. Studying European practices helps improve digital services in other countries seeking to modernise their administrative systems, including Ukraine. The purpose of the study is to analyse and summarise the EU experience in implementing digital technologies in the field of administration, highlighting successful practices, challenges and opportunities for further development. The case study method, which examines particular instances of successful implementation of digital projects in the field of administrative services in various EU countries, highlighting success factors and challenges, and general scientific methods of analysis and synthesis are used in the research methodology. Such a comprehensive study can be an important contribution to understanding the processes of digital transformation in the administrative sector. Based on the results, the following recommendations are made for the use of the EU experience in Ukraine. Expanding administrative service delivery in Ukraine with the support of the European Union may include a number of initiatives and measures aimed at modernising and effectively using digital technologies. The main areas of EU support for the modernisation and effective use of digital technologies in Ukraine include the following: development of e-governance; development of a network of administrative service centers; further development of electronic identification; improvement of digital literacy; cooperation with European partners. In 2024, administrative services are viewed from the perspective of establishing communication between the government and society, where a number of factors are key to success, including the number of requests, the format of requests, response time, relevance, etc. These initiatives are aimed at improving the quality and accessibility of administrative services in Ukraine with the support of the EU and can contribute to improving the efficiency of public administration and meeting the needs of citizens and businesses. The practical value of this study is the possibility of improving public administration in Ukraine through the introduction of effective digital technologies and improving the quality of administrative services based on the EU experience. This will also help to increase the digital literacy of the population, strengthen cooperation with the EU, and create more convenient services for citizens and businesses, which will improve the economic climate in the country

Keywords: European experience; public administration; e-governance; electronic identification; administrative service centers; modernisation

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Introduction

The EU's experience in transforming administrative services through digital innovation is of great importance, as it offers successful strategies for improving the operation of government agencies and ensuring their efficiency. Analysing these practices is becoming an important tool for countries seeking to modernise their administrative systems, including Ukraine. The European Union has extensive experience in the digital transformation of administrative services. This initiative focuses on enhancing the accessibility, efficiency, and convenience of public services for both citizens and businesses. Key aspects of this transformation in the EU include the use of electronic identifiers and electronic signatures (EU is actively developing infrastructure for electronic identification of citizens and businesses. For example, many EU countries have introduced electronic ID cards that can be used to access various public services); electronic public service platforms (many EU countries have created special platforms where citizens and businesses can access various administrative services in one place. This facilitates the process of applying to government agencies); electronic submission of documents (a large number of documents and applications can be submitted electronically, which saves time and effort for citizens and businesses. This applies, for example, to tax applications, applications for social benefits, and other administrative procedures); digital process automation (some EU countries are implementing artificial intelligence and automation systems to process documents and decisions in administrative procedures. This helps reduce administrative burdens and increases the speed of service delivery); data protection and cybersecurity (EU pays great attention to the protection of citizens' personal data in the digital environment. Regulation such as the General Data Protection Regulation (GDPR) ensures a high standard of data protection across the Union); expanding accessibility (digital transformation also aims to ensure that public services are accessible to all groups, including people with disabilities and other vulnerable groups); international cooperation (EU cooperates with other countries and international organisations to share best practices in digital administration and create standards).

Overall, the modernisation of administrative services through digital technology in the EU is an important policy element to make life easier for citizens and create a more efficient and innovative public administration. The measures taken by EU countries can serve as an example for other regions in the world (including Ukraine) that are also interested in improving administrative services through digital technologies.

The analysis of the research theoretical basis showed that the issue of using digital services to improve public administration has been studied at a sufficient level. Scientists study this issue both in specific countries.

In 2021, Z. Patergiannaki & Ya. Pollalis (2021) analyse the European Commission's steps towards e-government at the national and European levels and compare the level of development of this area in Greece. According to the authors, the Greek government is lagging behind in accomplishing several objectives related to digital transformation (transparency, cross-border mobility, and critical variables). Greece's rates of digitalisation and penetration are therefore much lower than the EU average. In 2024, the same authors continue to study the peculiarities of the digitisation of public service delivery in Greece. Using technology acceptance mode (TAM) and cognitive theory, the researchers in this work investigate the quality of e-government services from the viewpoint of residents in 50 Greek municipalities. The authors contend that closing the digital divide fosters fair service delivery and citizen participation, and that doing away with demographic disparities guarantees inclusive e-government systems (Patergiannaki & Pollalis, 2024).

A. Simon *et al.* (2023) analyse the development of public administration in Montenegro. The authors contend that while the majority of the population can rely on assistive technology for communication, the nation's digital literacy is still in its infancy when compared to most other EU nations. A case study of Montenegrin e-services' assistive technological communication was offered by the writers. The following economic sectors are examined by the researchers in this paper: utilities, internet banking, healthcare, higher education, and national administrative services.

A. Popa *et al.* (2023) in their study analyse the level of digitalisation of public administration in Romania. The authors identified the obstacles that arose during the attempt to implement the civil transformation policy and the impact it had on administrative staff and citizens. M. Heuberger & C. Schwab (2021) investigate the development of Germany's digital transformation from the perspective of users – citizens. To do this, the researchers compare citizens' expectations of digital transformation of such processes, actual use, and level of user satisfaction. The study's findings indicate that people's expectations are higher than what e-services are really available for. Those who are younger and more educated in particular express greater levels of annoyance when utilising these services, although older customers are generally happy with the results. The availability of these services and the population's varying degrees of digital literacy account for this degree of happiness or dissatisfaction.

S. Kuhlmann & J. Bogumil (2021) have also studied the digital transformation of public service delivery in Germany. They contend that Germany's public administration is still a long way from digitalising to the extent indicated by the government. But unlike other studies who simply looked at the perceptions of those who

used these services, the authors also polled employees and residents as well as heads of staff councils and mayors in German towns.

D. Spacek (2018) argues that back in 2016, social media became the most popular means of spending time online. This is still the case in 2024, although the emphasis on other social networks has changed. In 2016, the author states that already 8 years ago (in 2016) social media were perceived as new tools that could increase the participation and involvement of citizens and other important stakeholders in public decision-making for several years. The researcher focused on the study of the use of Facebook by Czech public authorities.

S.V. Onyshchuk *et al.* (2020) examined how administrative and territorial reform is implemented in the European Union in relation to Ukraine's administrative and territorial reform. As a result, the researchers were able to pinpoint significant commonalities between European reforms and the idiosyncrasies of the administrative and territorial restructuring processes in various nations.

In addition, the authors presented the results of this study at the online conference "Sustainable Development of the EU: Best Practices for Ukraine". In particular, this paper already presents key aspects of EU support for decentralisation in Ukraine, including Key aspects of communication in Administrative Service Centers (Vovk & Markovets, 2024).

The European Union's experience in the digital transformation of administrative services is an important model for other countries seeking to modernise their public administration systems. There is a considerable amount of research that examines these issues in detail, both in specific countries and in the EU as a whole. The introduction of innovations such as electronic identifiers, electronic platforms for service delivery, process automation and cybersecurity significantly increase the efficiency and accessibility of services for citizens and businesses, which is confirmed by numerous studies.

The purpose of this article is to study and summarise the EU's experience in applying digital technologies in public administration, in particular, to identify successful examples, challenges, and prospects for future development. The scientific novelty of the work is to systematise the experience and analyse various data and information on the experience of implementing digital technologies in the field of administration in the EU.

Literature Review

In a world of rapid technological development and the spread of the digital environment, digital transformation is becoming increasingly important in all areas of society. One of the key areas that is subject to digital transformation is administrative services. This is especially true for the European Union countries, which are pursuing an active policy of expanding the use of digital technologies in public administration.

In 2024, there is a significant number of researchers studying the digitalisation of administrative services in the EU or in individual member states. Several researchers have examined how the digital divide and demographic factors affect citizens intentions on their behaviour, emphasising the importance of income and economic activity as determining factors.

I. Mariani *et al.* (2023) (present the results of an analysis of the EU-funded easyRights project, which explores the application of NLU (Natural Language Understanding) methods to improve the accessibility of services and, in particular, to extract effective and step-by-step descriptions of user experience from administrative documents. The study presents the results of the work carried out by applying NLU methodology to administrative documents related to the provision of services in four European cities.

In analysis B. Skoczyńska-Prokopowicz (2016) explores the unique aspects of applying the concept of electronic New Public Management (e-NPM) in Poland and evaluates the societal and business benefits of its implementation. She argues that Poland, by aligning with European Union standards, has established an organisational framework and legal regulations for advancing digitalisation in public administration. The study also defines various e-service models and outlines five levels of maturity for their implementation. In addition, B. Skoczyńska-Prokopowicz (2016) considers the peculiarities of creating the Electronic Public Administration Communication System and the Electronic Public Administration Services Platform.

Z. Zhang *et al.* (2023) identify the so-called "hot spots" of citizens' complaints in real time – appeals. They are received from citizens through the hotlines of local governments. The researchers suggest a public opinion identification and early warning system that applies a weighting method to assign weights to frequent patterns so that more significant information is given more weight. The system uses an advanced frequent pattern mining algorithm to accurately identify topics and pertinent case information.

Some researchers have studied the challenges faced by governments in the digital transformation. T. Mettler *et al.* (2024) conducted a detailed analysis of the national digital transformation policies of 27 governments, both EU and non-EU. The authors also considered the disparities in these nations' digital capacities as measured by the UN E-Government Development Index (EGDI). The contention put up by the researchers is that digital transformation strategies frequently reference the potential of digital platforms to capture value, deliver, and exchange information in both the public and private sectors, and that public actors are increasingly realising the necessity of implementing platform-based solutions. Social media is a popular method of digital transformation of the process of communication with citizens.

A study conducted by S. Al-Masaeed (2019) found that 1/3 of Jordanian government agencies do not use social media at all. Dialogue through social media platforms in Jordan is a one-way dialog with a very low level of interaction between the government and the user. The following results of the analysis indicate a low level of effectiveness of Jordanian government accounts on social media in using social media communication tools.

The use of social media has been already actively studied over the past decade. L. Raković & S. Dakić (2024) conducted a comparative analysis of the use of social media not in European countries, but in cities in the United States and Brazil. The study's findings demonstrated that the social system administrators in the nations under consideration acknowledge the significance of social media in the contemporary communication landscape.

W. Cho & W. Melisa (2021) cite an instance of a municipal government organisation using Twitter and other social media to promote public agendas. Government-to-citizen (G2C) interaction is the most common kind of social media co-creation in Indonesian local government, with a primary goal of informing and motivating citizens to take action. Y. Feng *et al.* (2024) argue that the operation and maintenance of some Government social media (GSM) is still not standardised and the published content is not consistent with the identification positioning, leading to a realistic dilemma of low utility of GSM information.

Some scholars have studied the use of specific social networks, in particular Facebook. P. Pang *et al.* (2021) investigated the use of Facebook by government agencies during the COVID-19 pandemic to inform and communicate with the public. The authors suggest that government social media can be used to increase vigilance and awareness in the prodromal stage.

G. Lappas *et al.* (2017) evaluated the information on the official and operational Facebook sites of Greek local governments. Their findings indicate that local governments use Facebook top-down, merely providing citizens with information from their perspective. Scholars are also actively researching the digitalisation of public services in Ukraine, focusing on the Ukrainian decentralisation reform, studying the EU experience for Ukraine. In 2017, O. Markovets & A. Peleshchyshyn (2017) presented the peculiarities of implementing a system for processing citizens' appeals from their posts and comments in heterogeneous web environments.

Thus, a significant number of studies show that the digital transformation of administrative services is a relevant topic that is being actively studied both within the European Union and in individual member states. These studies cover various aspects of digitalisation, including the use of electronic identifiers, service delivery platforms, process automation, data protection, social media, and other innovations. Studying these issues is important for countries seeking to modernise their public administration systems, including Ukraine, which can use the EU's experience to improve its administrative processes.

Materials and Methods

The research methodology is based on the use of general scientific methods of analysis and synthesis, as well as the case study method. The general scientific methods of analysis and synthesis allow for a detailed examination and integration of various aspects of the digital transformation processes. Analysis involves breaking down complex digital transformation phenomena into simpler components to understand their individual functions and interactions. Synthesis, on the other hand, involves combining these components to form a coherent and comprehensive understanding of the entire process. These methods were applied in the different areas (Table 1).

Table 1. Characteristics of the methods used in the research

Research method	Characteristics of the method
Analysis of general scientific methods	The study began with a review of general scientific methods, including analysis and synthesis of scientific publications, documents and statistics related to the the modernisation of administrative services through digital technology.
Case study method	The main aspect of the research was to study specific cases of successful implementation of digital projects in the field of administrative services in different countries of the European Union. A detailed analysis of these cases made it possible to identify key success factors and identify problems and challenges that arise in the implementation process.
Summarising the results	This method based on the analysis of the cases, the results were summarised, which allowed us to draw conclusions about the general trends in the digital transformation of administrative services in the European Union. The conclusions include successful strategies, best practices, and recommendations for future digital projects.
Comparative analysis	A comparative analysis of the study results was conducted to identify similarities and differences in the digital transformation of administrative services in different EU countries.

Source: developed by the authors

These methods offered a methodical way to investigate how administrative services are being digitally transformed across various EU nations. They enabled us to identify key success factors and challenges, and to draw conclusions and recommendations for future digital projects. Through the application of these methods, we were able to obtain a comprehensive view of the processes and trends in the digitalisation of administrative services. This insight is invaluable, as it will help to increase the effectiveness of future initiatives in this area. By understanding what works and what doesn't, policymakers and practitioners can better design and implement digital projects that meet the needs of citizens and improve the overall efficiency of administrative services.

Results and Discussion

The modernisation of administrative services through digital technology is an urgent issue not only in the field of public administration, but also in scientific research, both by European and Ukrainian scientists. Although the digitisation of administrative services in all European countries is taking place in a comprehensive manner, each sector has its own characteristics and speed of digitalisation. In particular, A. Simon *et al.* (2023) examined the nation of Montenegro's present and prospective digitalisation initiatives in the fields of healthcare, agriculture, and cooperative intelligent transportation systems (C-ITS). But Montenegro's C-ITS are still in their infancy, and there are no specific policies, guidelines, or plans in place to get ready for any pilot deployments.

The impetus for the digital communication technologies development in the provision of administrative services was the artificial intelligence (AI) use. Significant advantages are already being seen from the integration of artificial intelligence into public sector operations and procedures, such as improved service delivery efficacy and efficiency. Artificial intelligence has great potential to improve the provision of administrative services by government and municipal authorities. This can make the process of providing services more efficient, faster and more accessible to citizens. The Table 2 shows several ways AI can be used in this area.

Table 2. Ways to use artificial intelligence in the provision of administrative services

Ways of using	Description
Answering citizens' questions	Chatbots and virtual assistants can answer common questions from citizens, helping them get information about taxes, social services, permits, etc. without waiting for an operator.
Document processing	AI can automate document processing, including applications for services. This will help to reduce waiting times and reduce the number of errors.
Personalisation of services	Data analytics and machine learning allow developing personalised recommendations and services for citizens based on their individual needs.
Monitoring and analytics	AI can help government agencies track the effectiveness of service delivery and identify areas for improvement.
Forecasting the volume of services	AI can use data and analysis to predict the volume of citizen requests and prepare administrative resources accordingly.
Customer service automation	The use of speech recognition and natural language processing allows automating the processing of phone calls and online chats for citizens.
Fighting fraudsters	AI can help identify fraudsters and prevent fraud in administrative services by analysing and detecting anomalies.

Source: based on I. Mariani *et al*. (2023)

The EU-funded simple Rights project investigates the application of natural language understanding (NLU) methods to enhance service accessibility, specifically to extract efficient and methodical user experience descriptions from administrative documents. The project's goals are to make service delivery processes easier to understand and to give service users a better overall experience (Mariani *et al.*, 2023).

One of the digital transformation areas in Europe is the introduction of e-government. The European Commission has already taken substantial strides toward establishing e-government at both national and European levels. Nevertheless, the implementation of the digitalisation strategies recommended by the European Commission varies across EU member states. The Greek government lags behind in achieving specific digital transformation goals, such as transparency, cross-border mobility, and key enablers, according to the EU e-Government Benchmark 2020. As a result, their rates of digitalisation and penetration are significantly lower than the EU average (Patergiannaki & Pollalis, 2021). The European Commission and the Greek government have set strategic goals for e-government over time. Figure 1 shows a qualitative comparison of these aims.

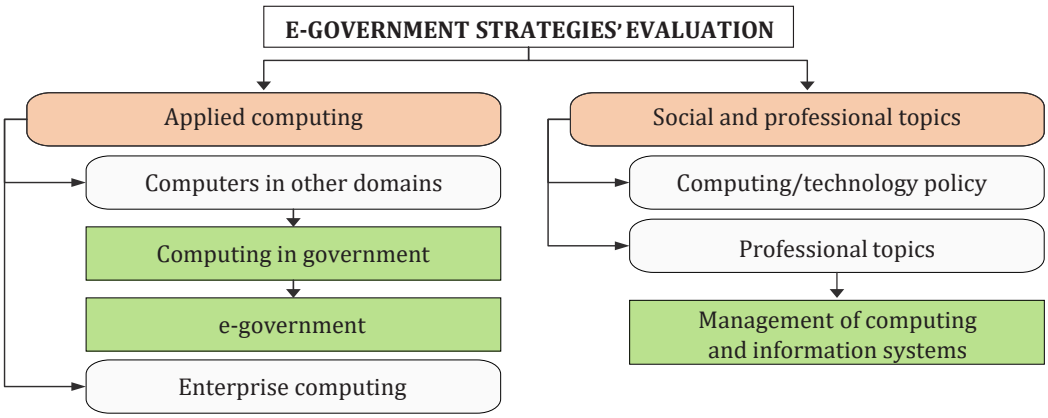

Figure 1. A common workflow for e-government services operations on a "single window"
Source: based on Z. Patergiannaki & Y. Pollalis (2021)

A typical workflow for executing transactions connected to these services is outlined in The Concept and Methodology for Developing Indicators and Metrics to Assess the Quality and Performance of Single Window e-government Services (Fig. 2). This is based on the CB-BUSINESS intermediation architecture. In accordance with this general one-stop shop workflow, end users can browse the CB-BUSINESS intermediary center's service offerings and submit requests for one-stop shop transactions (Gouscos *et al.*, 2007).

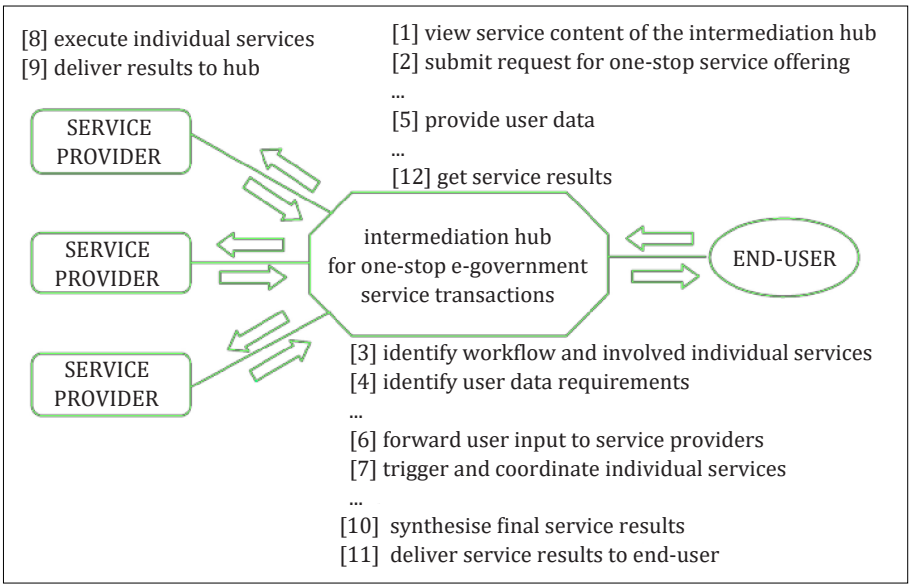

Figure 2. A standard procedure for conducting one-stop transactions for e-government services over the intermediation architecture created for the CB-BUSINESS project
Notes: [1], [2] ... [11] – list of operations for the provision of e-government services
Source: based on D. Gouscos *et al.* (2007)

Implementing the principles adopted in the European Union, Poland has created an organisational framework, including legal norms on informatisation, for the implementation of digitalisation and digitisation in public administration. The next step for the development of state administrative services digitalisation in Poland will be the creation of the Electronic Public Administration Communication System (SEKAP) and the Electronic Public Administration Services Platform (ePUAP), improvement of interoperability, integration of SEKAP and ePUAP, and implementation of an e-learning platform (Skoczyńska-Prokopowicz, 2016).

The study analysis makes it possible to conclude that the impetus for the use of information and communication technologies in the provision of administrative services was the transformation of cities into "smart cities". Smart cities use information and communication technologies to connect urban activities that have not been connected until now. The functional concept of using information and communication technologies

makes it possible to achieve many goals and objectives of developing communication with citizens, in particular, the provision of knowledge-based services using the collection of "big data" (Laconte, 2019).

In 2020-2024s, virtual communities (VCs) can help improve the accessibility and quality of administrative services by facilitating interaction between citizens, authorities, and other stakeholders via the Internet. VCs play an important role in the provision of administrative services, especially in the context of modern technology and digitalisation. The ways in which they can be used include forums and social networks; virtual advice centers; electronic public consultations; joint projects and innovations; training and information education; electronic petitions and appeals. As part of an innovation project sponsored by the EU, researchers are specifically examining the influence of the virtual user community on the creation of a new multimedia service. Researchers and related administrative staff managing cooperative projects or shared responsibilities in remote laboratories worldwide are the virtual communities taken into consideration in this context (Blažic-Džonova & Blažič 2016).

The European Union (EU) has been an active partner of Ukraine in implementing decentralisation. The EU has provided financial and technical support, advised the Ukrainian government on local government reform and provided expert assistance in this process. The EU also helped to create the necessary conditions for local business development and supported the implementation of local community development projects. Figure 3 shows some of the key aspects of EU support for decentralisation in Ukraine.

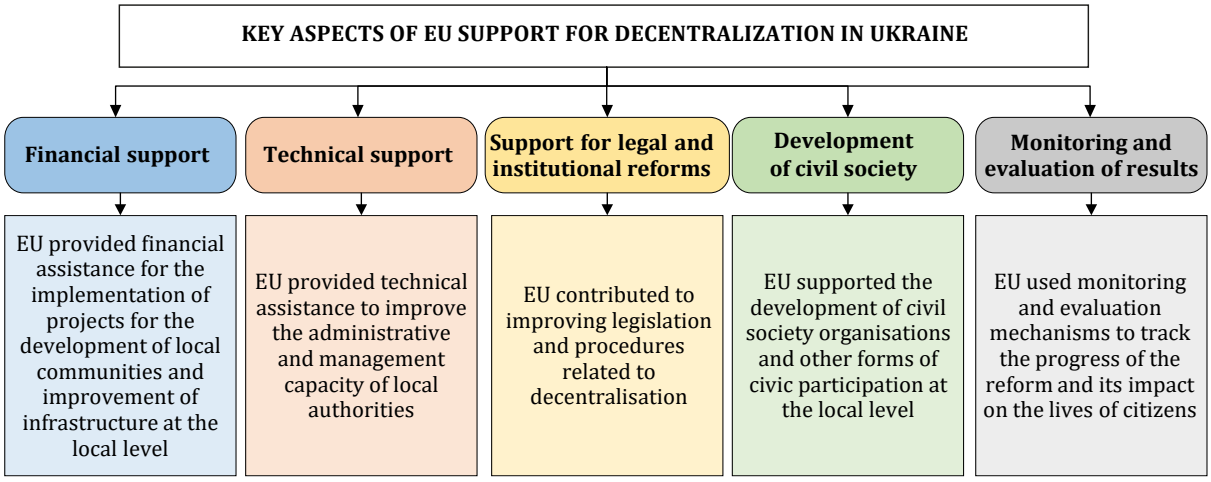

Figure 3. The key aspects of EU support for decentralisation in Ukraine
Source: developed by the authors

This support aims to achieve greater autonomy of local communities and improve the quality of Ukrainian citizens' lives through more effective local governance. Undoubtedly, the sustained partnership efforts between Ukraine and the European Union have played an important role in the implementation of decentralisation reforms in Ukraine.

One of the programs supporting decentralisation reform in Ukraine is U-LEAD (Ukraine – Local Empowerment, Accountability, and Development), also known as U-LEAD with Europe (2022). In order to create a multi-level governance structure that is open, responsible, and sensitive to the needs of Ukrainian citizens, the Ukrainian government, the European Union, and its member states – Germany, Sweden, Poland, Denmark, Estonia, and Slovenia – have joined forces to launch this initiative. The program's goal is to strengthen the ability of important players and stakeholders at the local, regional, and national levels in order to empower local governance in communities, particularly in times of rebuilding and conflict. The European Union is the primary donor for U-LEAD with Europe and a steadfast supporter of local government reform in Ukraine. The EU Delegation to Ukraine co-chairs the U-LEAD with Europe Steering Committee. Alongside other key EU bodies, such as the European Commission's Support Group for Ukraine, the EU Delegation has been consistently guiding the program. Furthermore, the EU's expertise is evident throughout all aspects of the program's implementation. For example, in cooperation with the Council of European Municipalities and Regions, Ukrainian communities gain first-hand experience, and through intensive interaction with municipalities from across Europe, learn about truly effective tools for achieving local development. Together with Germany and Denmark, EU has funded emergency support packages for 333 communities in connection with the war (Table 3). Figure 4 shows the main results of the program for 2016-2023.

Table 3. The priorities of the Program U-LEAD with Europe

Priority name	Priority characteristic
Support for reforms	Program partners support major players at the national, regional, and municipal levels in their efforts to guarantee the crucial role that local self-government plays in the current context of conflict and reconstruction by offering legal consultation and policy recommendations.
Recovery	The Program partners help Ukrainian communities to adapt to the conditions of war and reconstruction, organise trainings, consultations and various other activities aimed at increasing the capacity of Ukrainian communities; such capacity building activities balance individual and standardised approaches.
Reconstruction	Program partners support territorial communities in planning, coordinating and implementing reconstruction measures aimed at responding to the urgent needs of residents, providing quality basic public services and promoting local economic recovery.
Resilience	Program partners are encouraging Ukrainian communities to function and survive the ongoing military aggression, in particular, to be able to repair and rebuild their infrastructure faster and be more flexible in transporting their residents.

Source: based on U-LEAD with Europe (2022)

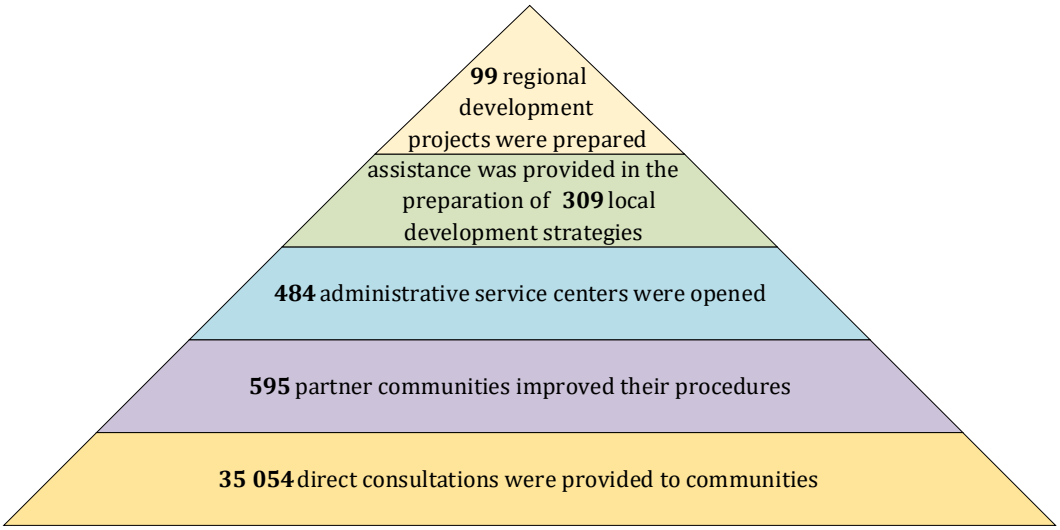

Figure 4. Results of the U-LEAD with Europe Program (2016-2023)
Source: developed by the authors based on U_LEAD with Europe (2022)

In Ukraine, the launch of Administrative Service Centers (ASCs) was part of the decentralisation reform and aimed at improving the quality of administrative services and providing more convenient access to them for citizens. It was an important initiative aimed at increasing the efficiency of governance and improving the quality of life of Ukrainian citizens.

ASC is one of the key tools for decentralisation and modernisation of administrative services in many countries, including Ukraine. It is an innovative model of providing state and municipal services to citizens and businesses that simplifies and improves access to administrative services.

An important segment of administrative service delivery in ASCs is the establishment of communication with citizens; as such, communication is an important component of the effective functioning of such centers and meeting the needs of citizens in the provision of administrative services. Figure 5 shows key aspects of communication in ASCs.

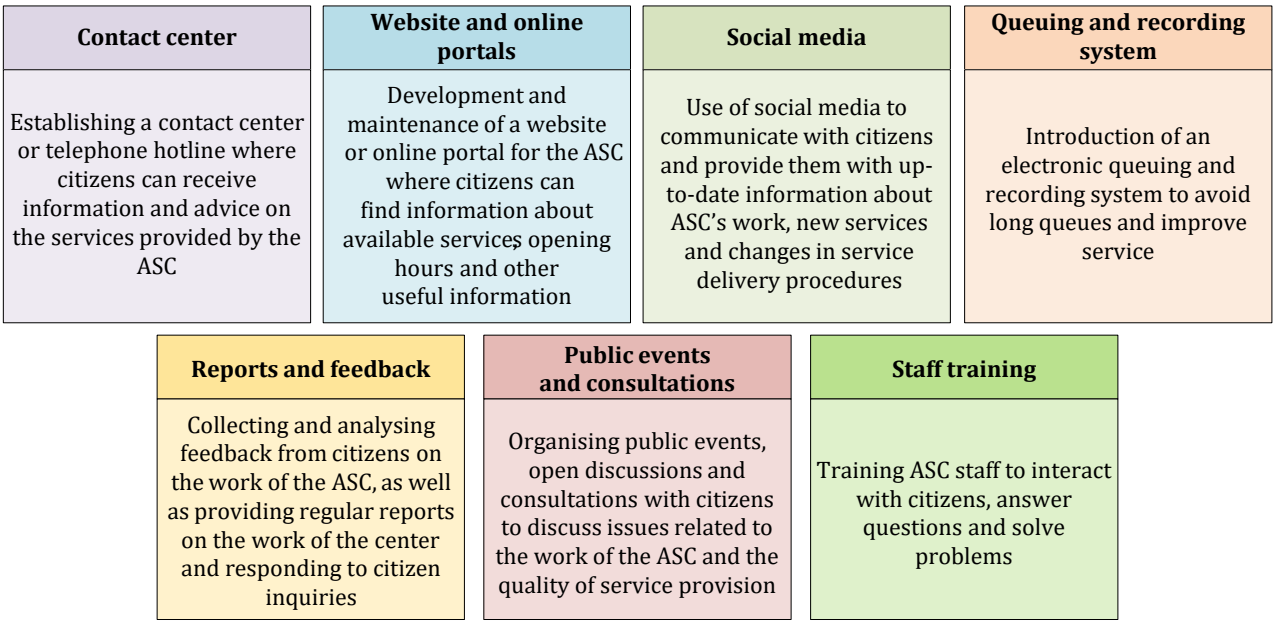

Figure 5. Key aspects of communication in Administrative Service Centers
Source: developed by the authors

Ensuring effective communication helps to improve the accessibility and quality of administrative services for citizens and contributes to the improvement of relations between government agencies and citizens.

Conclusions

The expansion of administrative service delivery in Ukraine with the support of the European Union may include a number of initiatives and measures aimed at modernising and effectively using digital technologies. The study identified specific areas of EU support for the modernisation and effective use of digital technologies in Ukraine. With EU support, e-governance systems can be developed in Ukraine to provide citizens and businesses with convenient and efficient access to administrative services via the Internet. This could include the introduction of portals for submitting applications and documents, online consultations, and the ability to track the status of applications. With the help of EU funding and expert support, administrative service centers can be established in different regions of Ukraine. These centers can combine different government services and provide services in one place, making the process of obtaining services more convenient and efficient. With EU support, further development of electronic identification is possible. The development and implementation of an electronic identification system similar to the EU's eID systems could contribute to the security and convenience of citizens' interaction with government agencies and administrative services.

With the support of the EU, programs can be introduced to educate and improve digital literacy among the Ukrainian population. This will help ensure that citizens can use digital services and resources effectively. In addition, the government of Ukraine can actively cooperate with European countries and EU bodies to exchange experience and best practices in the provision of administrative services. With the help of the EU, these projects seek to raise the standard and make administrative services easier to find in Ukraine. They can also help to increase public administration efficiency and better serve the requirements of enterprises and individuals alike.

Possible areas for further research in this area include assessing the impact of digital transformation on the quality and accessibility of administrative services, analysing the socio-economic impact of digital transformation, comparative analysis of digital transformation strategies, research on the ethical aspects of using artificial intelligence in public administration, and developing a legal and regulatory environment for digital technologies in the administrative sector. Such research will contribute to the understanding of digital transformation processes in the administrative sector and help develop strategies for the further development and improvement of digital administrative services.

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Conflict of Interest

None.

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Досвід ЄС у цифровій трансформації адміністративних послуг

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Анотація. Досвід ЄС у сфері цифрової трансформації адміністративних послуг є важливим, оскільки демонструє ефективні підходи до підвищення прозорості та ефективності державного управління. Вивчення європейських практик допомагає вдосконалити цифрові послуги в інших країнах, які прагнуть модернізувати свої адміністративні системи, зокрема в Україні. Мета дослідження – проаналізувати та узагальнити досвід ЄС у впровадженні цифрових технологій у сфері адміністрування, виокремити успішні практики, виклики та можливості для подальшого розвитку. У методології дослідження використано метод кейс-стаді, який розглядає конкретні приклади успішної реалізації цифрових проєктів у сфері адміністративних послуг у різних країнах ЄС, виокремлюючи фактори успіху та виклики, а також загальнонаукові методи аналізу та синтезу. Таке комплексне дослідження може стати важливим внеском у розуміння процесів цифрової трансформації в адміністративному секторі. На основі отриманих результатів запропоновано рекомендації щодо використання досвіду ЄС в Україні. Розширення надання адміністративних послуг в Україні за підтримки Європейського Союзу може включати низку ініціатив та заходів, спрямованих на модернізацію та ефективне використання цифрових технологій. Основними напрямами підтримки ЄС модернізації та ефективного використання цифрових технологій в Україні є: розвиток електронного урядування; розбудова мережі центрів надання адміністративних послуг; подальший розвиток електронної ідентифікації; підвищення цифрової грамотності; співпраця з європейськими партнерами. У 2024 році адміністративні послуги розглядаються з точки зору налагодження комунікації між владою та суспільством, де ключовими для успіху є низка факторів, серед яких кількість запитів, формат запитів, час реагування, актуальність тощо. Ці ініціативи спрямовані на підвищення якості та доступності адміністративних послуг в Україні за підтримки ЄС і можуть сприяти підвищенню ефективності державного управління та задоволенню потреб громадян і бізнесу. Практична цінність цього дослідження полягає у можливості вдосконалення державного управління в Україні шляхом впровадження ефективних цифрових технологій та підвищення якості адміністративних послуг на основі досвіду ЄС. Це також сприятиме підвищенню цифрової грамотності населення, посиленню співпраці з ЄС та створенню більш зручних сервісів для громадян і бізнесу, що покращить економічний клімат в країні

Ключові слова: європейський досвід; державне управління; електронне урядування; електронна ідентифікація; центри надання адміністративних послуг; модернізація

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Evolution of development and implementation of technological innovations in the activities of public libraries in Ukraine

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Abstract. The study of the evolution of development and implementation of technological innovations in the activities of Ukrainian public libraries is relevant in view of the growing role of information and knowledge in society, changing user needs, and the need to increase the competitiveness of libraries. The purpose of the study is to analyse the stages of introducing technological innovations into the work of libraries and the impact of new digital technologies on the services provided by libraries. The study used such methods as analysis, generalisation, explanation, and classification. A review of methods and stages of technological innovations was conducted, and articles by contemporary scientists and researchers who dealt with the issues of library technological innovations were analysed. The impact and prospects of the latest technologies in the work of libraries were investigated. The introduction of technologies raises several ethical issues, such as data privacy, algorithm bias, and the impact on freedom of speech. Technological progress opens up great opportunities for libraries. Artificial intelligence can automate routine tasks, improve information retrieval, and personalise services for users. Virtual and augmented reality will allow the creation of interactive educational and cultural programs, conducting virtual tours of libraries and museums. Blockchain can provide secure and transparent data management, as well as protect copyrights. Technological progress has expanded access to information resources beyond the physical walls of the library. E-books, online databases, and digital archives have made vast collections remotely accessible, especially valuable in geographically dispersed regions. Modern trends in the implementation of technological innovations in the activities of Ukrainian public libraries include the use of artificial intelligence, virtual and augmented reality, and blockchain. This research aims to help Ukrainian libraries successfully implement technological innovations to better serve their users and meet the needs of society in the digital age

Keywords: information technologies; web services; electronic resources; library innovations; blockchain; Internet of Things; artificial intelligence

Introduction

The world is changing rapidly, and Ukrainian public libraries are not staying behind. Their traditional role as repositories of books is transforming in the era of digital technologies. The implementation of innovations is becoming a key factor in their successful development and survival in the modern information environment.

Ukrainian libraries are implementing various digital initiatives to meet the needs of modern users. These include the creation of electronic catalogues, digital libraries, online resources, and platforms for distance learning. Such innovations not only facilitate access to information but also promote reading among young people and adults.

Research on this topic is relevant as it can help libraries adapt to the new needs of users by offering them access to digital resources and online services, becoming active participants in public life, providing access to information, education, and innovations, and preserving cultural heritage by using digital technologies for digitising, archiving, and sharing collections.

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The problems of implementing modern information technologies in library operations have been studied by many scholars. This issue encompasses a broad spectrum of challenges that libraries face on the path to digital transformation. Scientific findings regarding the use of modern information and communication technologies in library operations and their significance for the functioning of libraries have been made by scholars such as O. Onyshchenko (2021). The author investigated the use of IT in library activities and its significance for the functioning of libraries in the information society. The researcher concluded that IT provides libraries with new opportunities to serve users, improve access to information, and expand the range of services. K.S. Horbach (2022) analysed the digital transformation of libraries. The author argues that digitalisation is a key factor in the development of libraries in the 21st century. It allows libraries not only to store and disseminate knowledge but also to do so more efficiently, accessibly, and conveniently for modern users.

Y.V. Chashka (2022) also explored the innovative activities of libraries in the 21st century. The author paid attention to the role of innovations in the development of new services and products of libraries, as well as in improving their image and reputation. The regulatory framework governing innovative activities and the main achievements of innovative activities of libraries, specifically in the field of management were also studied by the author. L.O. Malanchuk & Y.V. Lishchuk (2023) studied digitalisation as an effective method of communication for modern libraries. The authors argue that digital communication channels allow libraries to better interact with users, offer them new services, and expand their audience. S. Khrushch (2022) explored the innovative media space of modern libraries. The author analysed new forms of library work with information and users that have emerged through the use of IT. Researcher V. Medvedeva (2015) analysed the evolution of library activities under the influence of innovative technologies in her study. The author considered ways to improve innovative technologies in library science and identified the main problems that arise in the process of organising modern data exchange. Authors V.I. Lyashenko & O.S. Vyshnevsky (2018) in their monograph conducted a more comprehensive study of the trends in the development of the digital economy, which influences the development of business models used in the digital environment. They emphasised that the development of the digital economy in Ukraine is closely related to the increasing volume of use of digital platforms. The authors also noted that a promising digital platform is blockchain technology, which continues to develop actively in 2024.

The study aims to analyse the impact of new technologies on the services provided by libraries and to assess the impact of new technologies on the behaviour of library users.

The scientific novelty lies in expanding the understanding of the need for further technological innovations in Ukrainian public libraries by analysing the prospects of such innovations and reviewing examples of the use of the latest technologies in the work of libraries abroad.

Materials and Methods

For the research on the evolution of the development and implementation of technological innovations in the activities of Ukrainian public libraries, historical analysis methods were used, including the study of scientific articles by such authors as K.S. Horbach (2022), Y.V. Chashka (2022) and L.O. Malanchuk & Y.V. Lishchuk (2023), and materials describing the development of libraries and the introduction of technologies. Data from "Innovative activities in libraries" (2022) and the "Ukrainian library encyclopedia of National parliament of Ukraine named after Yaroslav the Wise" (2024) was analysed, which allowed the identification of key stages of innovation implementation and their impact on library work. Legislative and regulatory acts were analysed, including Order of the Cabinet of Ministers of Ukraine No. 219-r "On Approval of the Strategy for the Development of Library Services for the Period up to 2025 'Qualitative Changes in Libraries for Sustainable Development of Ukraine' (2016), Law of Ukraine No. 32/95-BP "On Libraries and Librarianship" (2022). The Development Strategy of the Vernadsky National Library of Ukraine until 2025 (2024), the Development Plan of the Kyiv City Library Network for 2021-2025, and the National Program for the Development of Library Affairs for 2021-2025 were studied. The analysis of library modernisation programs allowed for assessing government policy and support for the implementation of technological innovations.

Analysis of the content of library websites, social media, publications, blogs, and other electronic resources allowed us to research how libraries use digital platforms for communication and innovation implementation. For example, the Vernadsky National Library of Ukraine actively uses its website and social media to inform about new acquisitions, events, and scientific research. This provides access to information for a wider range of users and promotes the library.

The case method, or the analysis of individual cases of technology implementation in specific libraries, enabled the selection and examination of successful examples and challenges faced by libraries. For example, some libraries implement electronic catalogues and automation systems, which simplify the process of searching and reserving books. Other libraries create virtual tours and interactive exhibitions, which attract younger generations and make libraries more appealing.

The comparative analysis of technology implementation in libraries in Ukraine with those in other countries allowed for the identification of international trends and best practices that can be adapted

in Ukraine. For example, in EU countries, libraries actively use augmented reality technologies to create interactive educational programs. Such practices can be useful for Ukrainian libraries that seek to attract more users and expand their capabilities. Thus, the use of digital platforms and the latest technologies in libraries contributes to their development and increases the accessibility of information for the general public. The implementation of successful international practices can help Ukrainian libraries become more modern and attractive to users.

Results and Discussion

Innovation and technological innovation are the driving forces of progress that constantly change the world. They lead to the emergence of new products, services, processes, and ideas that improve lives and open up new opportunities. Innovation is the process of implementing new ideas. This can include developing new products, services, processes, or even new ways of thinking. Innovations can be both incremental and radical. Incremental innovations make small improvements to existing products or services, while radical innovations lead to the creation of something entirely new (Karuk, 2018). Technological innovations have led to 21st-century society viewing the processes of creating, preserving, and disseminating knowledge, information, and other cultural values as strategies for development and conditions for dynamic changes in libraries. It is worth noting the definition of the term "library innovation" in the Ukrainian Library Encyclopedia (ULE), which emphasises not only the implementation of non-standard ideas and methods but also the creation and application of new information services in library practice that have modern qualities and approaches (Ukrainian Library Encyclopedia, 2024).

Technological innovations can be both "hard" and "soft". "Hard" innovations involve the development of new technological products, such as smartphones or computers, while "soft" innovations involve the development of new ways to use existing technologies, such as new business models or programs. Some innovations are driven by socioeconomic changes, including an ageing population, urbanisation, unemployment, and increasing migration (Hromnytska, 2016). The entire range of library innovations can be considered in several aspects (Table 1).

Table 1. Aspects of library innovations

Technological	Functional-content	Communicative-social
Focused on the implementation of new information technologies in the formation of the document-resource base of libraries and the system of library-information services for users	Aimed at expanding the content range of library activities	Related to the role and place of the library in society

Source: developed by the author based on research Y.O. Khimich (2012)

Innovative activity is one of the priority areas of library work, the purpose of which is to search for, evaluate, develop, and implement library innovations (Bezruchko, 2014). The main stages of the development and implementation of technological innovations in the activities of public libraries in Ukraine are defined in Table 2.

Table 2. Stages of development and implementation of technological innovations in the activities of public libraries in Ukraine

1990s - 2000s	2000s - 2010s	2010s - 2020s	2020s
Formation of the necessary infrastructure to ensure access to information via the Internet, with websites primarily used for reading (receiving) information rather than posting and promoting it. The first personal computers appeared, used for automating library processes such as cataloguing and book tracking. The first electronic catalogues were created, making information search easier for users. Online resources, such as e-books and journals, began to be used	Users became active participants in creating and accumulating data. Libraries gained access to the Internet, opening new opportunities for providing information services. Library websites emerged, becoming the primary source of information for users. Digitisation of library holdings began, making access to information more convenient	The era of social networks and messaging apps. Libraries began using social networks to communicate with users and promote their services. Online communities of librarians emerged as a platform for sharing experiences and knowledge. Libraries started using online tools to provide new services, such as virtual reference and online courses	This period involves the development of what is known as the neural network, where communication between people, animals, and things is conducted based on neurocommunication principles, artificial intelligence, and the Internet of Everything (people, things, data, processes, etc.). Libraries are using artificial intelligence to automate library processes and enhance information retrieval. Virtual and augmented reality emerge, opening new possibilities for providing information services

Source: developed by the author based on research V.I. Lyashenko & O.S. Vyshnevsky (2018) and K.S. Horbach (2022)

The main goal of all innovations in traditional library work is to provide efficient, high-quality, and comfortable service to readers. In line with this goal, traditional library funding and electronic funding have a close interrelationship and complement each other to provide high-level library and information services. Libraries with internet access use full-text databases and information resources to select, order, and collect documents for library holdings (Innovative activities in libraries, 2022).

Libraries are supplemented by electronic versions of publications, systematic and regulatory documents, and a collection of non-authorial scanned publications from library holdings. Using information systems, librarians can create their own information products to help readers navigate the information and educational space. The Internet opens up numerous opportunities for librarians to improve the level of service and popularise books through electronic resources. Among such tools are library blogs and social media, which have a significant impact on its popularisation and advertising in the international information space of the Internet. To ensure that electronic resources are as effective as possible and meet user needs, various modern innovative approaches are being applied in 2024 (Fig. 1).

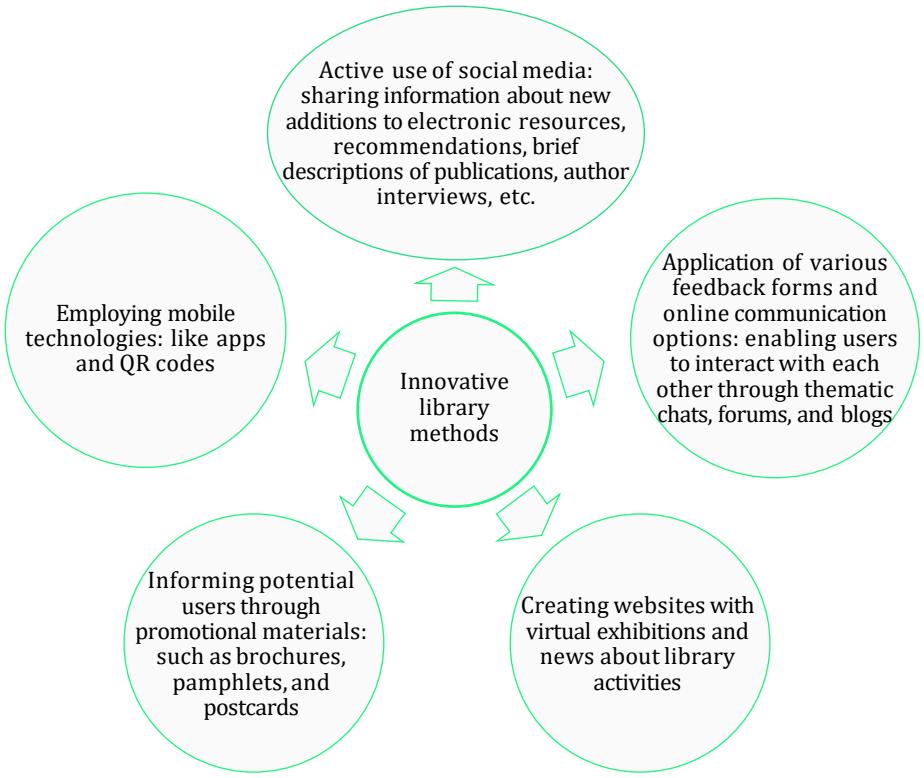

Figure 1. Innovative methods of libraries
Source: developed by the author based on materials O. Litvak (2022)

Websites, blogs, web services, and social media can become the most powerful tools for promoting reading and popularising information, positively influencing the development of reading skills. Modern technologies possess significant potential for promoting books and stimulating interest in reading. They can be effectively used in both group and individual interactions with library visitors. The choice of an optimal strategy for popularising literature depends on the librarian's practical skills, broad knowledge, professional training, and ability to engage and retain the audience's attention. This allows the librarian's work to be more effective, for example, through the use of library media lessons, media games based on the content of books, the introduction of multimedia presentations into every mass event, conducting library quests, flash mobs, virtual tours of unusual museums and libraries around the world, and organising library weekends.

Among the innovative web services offered by libraries, British Whichbook stands out. It assists users in selecting books based on various criteria such as emotional tone, protagonist description, plot, or setting. The system automatically generates millions of combinations and recommends books that best match each reader's preferences. The service also provides themed lists, searches by author and book title, and the ability to find works similar to those already read.

Whichbook offers links to library catalogues for ordering books and indicates the possibility of purchasing on Amazon with a reward for Whichbook for each purchase. Readers can also email information about books (Whichbook, 2024).

Ukrainian libraries are fundamental institutions that shape the country's cultural, scientific, educational, and informational infrastructure. They play a crucial role in enhancing the information and linguistic literacy of society, as well as in the patriotic, legal, and environmental education of citizens. Additionally, libraries contribute to fostering a deep interest in national history and culture, promoting the expansion of knowledge and understanding of these important aspects. They play a key role in the formation of a reading and thinking nation, providing free access to knowledge, cultural heritage of Ukraine and the world, and actively supporting educational activities (Lyashenko & Vyshnevsky, 2018).

Internet centres in libraries are one way to ensure free access to knowledge. They are structural units that provide users with access to the Internet, implement projects and targeted programs, and provide access to scientific and journal publications. Internet centre specialists work to form the information culture of users, teaching them to search for the necessary information and helping them communicate on the Internet. All Internet centres have educational programs that help users of all ages adapt to the information environment. Virtual and practical classes help to satisfy the educational, recreational, and professional interests of organisers of reading for teenagers and young people (Bashun *et al.*, 2016).

The activities of the Internet centre have become an integral part of library services, helping users browse online information resources, supporting educational activities, and developing intellect and creativity. Internet resources are unlimited and very dynamic: new materials appear, addresses change, or resources disappear. Thus, traditional forms of bibliographic work are supplemented by modern library technologies, such as web bibliographic indexes, lists, and multimedia presentations.

Access to and analysis of Internet resources distinguishes libraries from Internet cafes, transforming them into information intermediaries and navigators (Maryina, 2018). The Internet centre also strives to develop its own resources to support the learning process, self-improvement, and leisure. When forming holdings, conducting book exhibitions, mass events, and preparing scenes, specific websites are selected on the Internet.

Serving readers using internet centre resources has become a standard library service. Internet centers have expanded the range of services, offering assistance with online searching and web navigation, using complex search queries, accessing full-text electronic databases, and the ability to print and save selected information on electronic media. However, it is important to note that since the 2020s, libraries in Ukraine have taken steps to address these issues (Fig. 2).

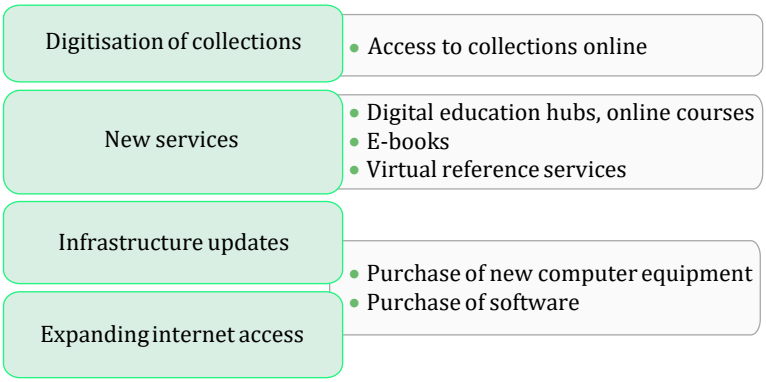

Figure 2. Major technological transformations of Ukrainian libraries in the 2020s
Source: developed by the author based on S.G. Klochok (2013)

Libraries are actively exploring cutting-edge technologies such as artificial intelligence and machine learning to personalise search, tailor content, and automate repetitive tasks (Onipko & Kozoriz, 2020). Virtual reality programs are being tested to create immersive learning environments, while open access initiatives promote the dissemination of research findings.

New technologies, particularly artificial intelligence, promise personalised learning experiences and automated content control (Medvedeva, 2015). Big data analytics help to understand user needs, allowing libraries to customise services and predict research trends. Blockchain, which enables secure data storage, can revolutionise knowledge sharing and collaboration. The Internet of Things, consisting of a network of interconnected devices, can optimise resource management and create a dynamic learning environment (Isaenko, 2011).

Artificial intelligence (AI) assistants offer personalised learning methods tailored to individual needs. AI

algorithms can automatically analyse vast collections, identifying relevant information with high accuracy, saving librarians time and ensuring that users find the knowledge they need (Artificial intelligence in public libraries: Our civic mission, 2019).

Since 2018, Cambridge Public Library has been using AI in several projects, the first of which were "The Laughing Room" and Alterspace (Young, 2019). "The Laughing Room" was an interactive art installation where a comedic AI comedian reacted with laughter based on what visitors said. This exhibit aimed to make people think about how AI and surveillance affect their lives. Alterspace was an interactive exhibit where an AI-powered room responded with lighting, colour, and sound based on the visitor's preferences. This exhibit explored the concept of AI personalising the library experience (Fig. 3).

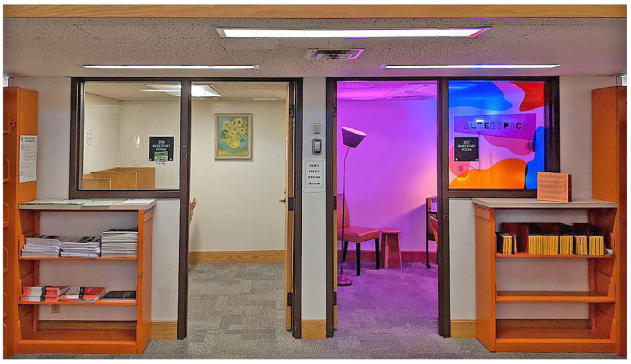

Figure 3. Alterspace – a room that automatically adjusts colour, lighting and sound to the user
Source: based on L. Young (2019)

The results of installing artificial intelligence in the Cambridge Public Library sparked conversations about the impact of AI and surveillance on human life, causing people to simultaneously feel happy and uncomfortable. A further discussion titled "Is AI Laughing at Us?" was held to delve deeper into these issues. The AI-powered room that adapted to visitors' preferences resonated with the idea of libraries as spaces that cater to individual needs. The exhibit was popular among visitors, including children.

Blockchain, as a secure registry technology, can revolutionise data sharing and collaboration. A platform where research results are stored on a blockchain ensures their authenticity and immutability, as well as facilitating transparent access and tracking of citations. The Internet of Things (IoT), which can include sensors embedded in books and shelves, provides real-time data on usage patterns, optimises resource allocation, and recommends relevant materials. Sensors in the physical space can create an energy-efficient and comfortable environment by adjusting lighting and temperature based on the number of people. Interactive exhibits based on the IoT can transform libraries into engaging learning spaces, sparking curiosity and igniting imagination (Massis, 2016). An example of such foreign experience can be seen in the study of IoT implementation in university libraries in Pakistan. This study showed that university libraries in Pakistan have implemented IoT-based devices, including smart air conditioners, automatic fire alarms, smart hand sanitisers, and smart security doors. In addition, university libraries used IoT elements, including automatic notification of checkout, registration of reading materials, self-checkout and self-registration system, user card recognition, and the use of Radio Frequency Identification (RFID) tags for security purposes. The main problems in the implementation of IoT applications were the identified lack of a well-networked and integrated environment, budget problems, lack of policy and strategic planning, and lack of technical personnel (Asim *et al.*, 2022).

Big Data analytics allows libraries to predict research trends, anticipate needs, and tailor services accordingly (Syniavin, 2024). Libraries can identify underserved communities through data analysis, enabling them to target outreach efforts and address the digital divide. However, with these opportunities come challenges. Data privacy, ethical considerations in algorithm development, and ensuring equitable access to technology are key issues: balancing the benefits of data analysis with user privacy remains critically important. Libraries need robust data security measures and transparent policies to earn user trust; artificial intelligence algorithms require careful development and monitoring to avoid bias and ensure fair access to information and resources; implementing these technologies requires significant investments in infrastructure and expertise.

To overcome resource shortages, Ukrainian libraries are actively engaged in project and fundraising activities, establishing partnerships, particularly with public organisations, and seeking support from international funds and foreign colleagues (Vernadsky National Library of Ukraine, 2024). Among other things, international book exchange (document exchange) is one of the forms of cultural and scientific cooperation in Ukrainian libraries, used to replenish library and information resources of libraries (Kot, 2015).

Despite the listed problems, the potential benefits of new technologies are significant. By thoughtfully and responsibly approaching innovations, public libraries in Ukraine can position themselves as important elements in the future, in research and science.

Conclusions

Technology has significantly influenced the implementation of innovations in libraries, offering new opportunities for both librarians and the public. As a result of the study, the main stages of development and implementation of technological innovations in the activities of Ukrainian public libraries were identified,

starting from the computerisation of libraries in the 1990s, namely: Computerisation of libraries (1990-2000); Development of the Internet (2000-2010); Use of social media (2010-2020); Implementation of new technologies (2020s).

Despite significant progress, challenges remain. There is still unequal access to technology, especially in rural areas. Cybersecurity threats and the need for in-depth digital literacy training require constant attention. It is important to consider the unique challenges and opportunities associated with the ongoing war in Ukraine. Studying its impact on the implementation and use of technology is crucial for understanding the resilience and adaptability of libraries in difficult times. In addition, it is necessary to recognise the diversity of Ukrainian libraries, which includes regional variations, urban and rural contexts, as well as different types, such as academic, public, and specialised libraries.

Ukrainian libraries are undergoing an exciting period of transformation due to rapid technological development. Research on this topic should delve deeper into the impact of the war on libraries. It would be interesting to explore how libraries have adapted and used technology to support communities during the conflict. Bridging the digital divide remains a critical task. Research should identify how to ensure equal access to technology in all regions and for all segments of the population. At the same time, increasing cybersecurity for libraries is an urgent need.

The future of libraries is closely tied to innovation. Exploring the potential of artificial intelligence, virtual reality, and other emerging technologies can open new horizons for library services. However, it is important to consider the diversity of libraries. From academic and public to specialised and rural – each type of library has unique needs. Research should help develop technology implementation strategies that take this diversity into account. Learning from international experience is also crucial. Studies should compare how other countries integrate technologies into libraries so that Ukraine can borrow and adapt best practices.

Furthermore, ethical aspects cannot be neglected. Research should help libraries develop clear standards regarding data privacy, algorithmic bias, and the protection of freedom of speech in the digital environment. Future research perspectives include a deeper exploration of how the war has affected access to libraries, the use of technology, and user behaviour; an analysis of how libraries have adapted their services and resources to support communities during the conflict; and research into best practices for library cybersecurity, taking into account the specific risks associated with war.

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Conflict of Interest

None.

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Еволюція розвитку та впровадження технологічних інновацій у діяльність публічних бібліотек України

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Анотація. Дослідження еволюції розвитку та впровадження технологічних інновацій у діяльність публічних бібліотек України є актуальним з огляду на зростання ролі інформації та знань у суспільстві, зміну потреб користувачів та необхідність підвищення конкурентоспроможності бібліотек. Мета роботи – проаналізувати етапи введення технологічних інновацій у роботу бібліотек та вплив нових цифрових технологій на послуги, що надаються бібліотеками. У дослідженні були використані такі методи як аналіз, узагальнення, пояснення та класифікація. Було зроблено огляд методів та етапів технологічних інновацій, опрацьовано роботи сучасних вчених та дослідників що займалися питаннями бібліотечних технологічних інновацій, досліджено вплив та перспективи новітніх технологій у роботі бібліотек. Впровадження технологій порушує низку етичних питань, таких як конфіденційність даних, упередженість алгоритмів та вплив на свободу слова. Технологічний прогрес відкриває перед бібліотеками великі можливості. Штучний інтелект може автоматизувати рутинні завдання, покращити пошук інформації та персоналізувати послуги для користувачів. Віртуальна та доповнена реальність дозволять створювати інтерактивні освітні та культурні програми, проводити віртуальні екскурсії бібліотеками та музеями. Блокчейн може забезпечити безпечне та прозоре управління даними, а також захистити авторські права. Технологічний прогрес розширив доступ до інформаційних ресурсів за межі фізичних стін бібліотеки. Електронні книги, онлайн-бази даних і цифрові архіви зробили величезні колекції доступними дистанційно, особливо цінними в географічно рознесених регіонах. До сучасних тенденцій впровадження технологічних інновацій у діяльність публічних бібліотек України належать використання штучного інтелекту, віртуальної та доповненої реальності, блокчейн. Дослідження має допомогти українським бібліотекам успішно впроваджувати технологічні інновації, щоб краще обслуговувати своїх користувачів та відповідати потребам суспільства в цифрову епоху

Ключові слова: інформаційні технології; веб-сервіси; електронні ресурси; бібліотечні інновації; блокчейн; інтернет речей; штучний інтелект

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The concept of "document" in the epistemological system of knowledge: A methodological discourse in the philosophy of science

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Abstract. Transformational changes in the modern scientific environment are conditioned by the information and technological development of all branches, among which document science has undergone significant changes due to digitalisation and the development of e-documenting, which leads to changes in the object of research and the expansion of interdisciplinary tasks and indicates the transition of the philosophy of science to a new stage of development. In the process of objectifying the conceptual search of philosophers of science, there was an evolution from relatively simple systems in the classical period to complex systems in the non-classical period and to complex systems that self-develop. The purpose of this study is to clarify the epistemological essence of the concept of "document" through the methodological prism of the theories of the philosophy of science. In the research process, general scientific methods and special methods of philosophy, documentation science, archival science, information science, and social communication were used. The synergy of general scientific and specialised methods, along with philosophical methodology, allowed for a comprehensive exploration of the concept of "document" as a sociocultural phenomenon, analysis of the philosophical characteristics of the document, and identification of interdisciplinary connections. Emphasis has been placed on positivist achievements, which have contributed not only to the activation of the search for and establishment of the informativeness of documents and their quantitative increase but also to the theoretical study of carriers of information from the past. Such processes have enriched knowledge about documents, contributing to the expansion of their methodological and epistemological boundaries. It should be noted that the post-positivist stage has caused philosophical discussions between representatives of the "historical school" and "critical rationalism". The structure-forming functions of scientific knowledge and the sociologisation of the examination of the scientific information space, based on the methodology of the philosophy of science, have led to the acquisition of modern characteristics by document science, the development of complex interdisciplinary

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connections that ensure the integrity of the study of the document phenomenon. Thanks to the methodology of the philosophy of science in the research, the ideas of the unity of scientific knowledge, the epistemological and philosophical methodological determinism of document science, and the integral significance of philosophy in constructing a holistic scientific picture of the world have been revealed. The conceptual and terminological toolkits and mechanisms for introducing the philosophical concepts of determinism, causality, space, and time into the documentary discourse have been defined. Such modern trends in the development of the philosophy of science and an interdisciplinary approach to the scientific and theoretical substantiation of document science issues will contribute to the development of the discussion on documentation science issues and will lead to the emergence of new theoretical and methodological developments in the field of social communications

Keywords: documentation science; philosophical methodology; scientific knowledge; theory of knowledge; post-positivism

Introduction

The philosophy of science is undergoing a new phase of development, characterised by a shift in its object of study and an expansion of interdisciplinary connections. The evolution of the objectification of conceptual inquiry in the philosophy of science can be traced from relatively simple systems in the classical period, through complex systems in the non-classical period, to complex self-organising systems in the contemporary period. These systems define and shape contemporary science.

The regulation of document systems is a crucial factor in the sustainable and formalised development of society, to ensure the preservation and transmission of information to future generations. It is well known that information recorded on a physical medium has the status of a document, demonstrating the dichotomous nature of the two important and interconnected terms "information" and "document" (Law of Ukraine No. 2657-XII, 2023). As society becomes more structured and sociocultural processes diversify, the volume of documentary material also increases. Formal and categorical features characterise transformative processes, the material characteristics of the information carrier, and so on. The philosophy of science has faced the challenge not only of structurally organising the field and developing new methods for harmonising existing documentary collections but also of developing methods for understanding document theory and integrating it into general scientific knowledge. Therefore, the philosophy of science acquires an integral and structure-forming significance, the ability to propose mechanisms for influencing the science of documents on the development of scientific knowledge.

The fundamental basis for the study of the concept of a "document" is formed by the studies of Ukrainian document specialists and archivists. In her research, document specialist V. Bezdrabko (2023) pays significant attention to establishing the content and features of the visualisation of archival information in terms of its technological capabilities and development trends. Ya. Kalakura (2020) conducts research on the development of the document within the system of social communications in the modern world, with a focus on the study of electronic sources within the structure of sociocultural information. M. Paliienko (2019) explores the sociocultural mission of the archive and new strategies for archival management, emphasising the importance of international openness and accessibility of archival documents and the development of new approaches to understanding documents. The prerequisites for the emergence and formation of documentation have been the subject of research by H.M. Shvetsova-Vodka (2023), which has prospects for further improvement of methodological support and refinement. A thorough analysis of theoretical and methodological support and disclosure of the specifics of documentary-information resources and their features in the system of scientific knowledge and the preservation of historical continuity is proposed in the article by L. Kovalska (2015).

The philosophical and cultural theoretical discourse is provided by publications and research findings of foreign and Ukrainian scholars, whose studies demonstrate an active scientific discourse and the development of thought on scientific knowledge and the development of the philosophy of knowledge. K.R. Popper (1934) emphasises the development in the researcher the ability to analyse and translate primary sources, highlighting the unreliability of induction as a method of scientific research, introducing falsifiability as a criterion of demarcation, and attempting to solve the problem of the "empirical basis". The German scholar J. Ryuzen (2010) considers the sphere of historical thinking, historical culture and consciousness and tries to find answers to the question of how people deal with the past, interpreting it to understand themselves, their present, and plan for the future. A classic exposition of the philosophy of science can be found in the research of S. Toulmin (1953), where, in the alternation of periods of "normal science" and scientific revolutions, the development of science is seen as the evolution of conceptual systems; the competition of research programs; a cumulative process of adding new truths to previously acquired knowledge; and a continuation of the general theory of organic evolution. Among contemporary Ukrainian philosophical studies, the research

of O. Gabovich & V. Kuznetsov (2022) is particularly noteworthy. In this article, the authors distinguish between various types of modern philosophy, and the specific features of each are analysed based on graph classifications of the respective philosophies, further emphasising the importance for all types of philosophy of science of using reconstructions of practical theories. In the development of the philosophy of science, there has been a noted interest in theoretical-methodological problems, revealing significant directions for further aspects of the study and improvement of the epistemology of the concept of "document".

The research aims to reveal the characteristic features of the scientific cognition process and to clarify the epistemological component of the concept of "document" based on the achievements of the philosophy of science.

The scientific novelty of the research lies in the structuring of the conceptual apparatus of philosophy in the sectoral study of the science of documents, the implementation of an analytical examination of the epistemological essence of a document/source of information through the use of philosophical methodology.

Materials and Methods

Both general scientific and specialised methods from philosophy, documentation science, archival science, information science, and social communication were employed in this research. The general scientific methods used included analysis and synthesis, which facilitated a comprehensive review of sources and literature, as well as the identification and integration of information related to the research problem. A comprehensive approach, combining general scientific and specialised methods, ensured not only a high-quality analysis of the chosen topic but also contributed to the formation of new scientific conclusions that made a significant contribution to the relevant field of knowledge. The review-analytical method allowed for an examination of the concept of "document" within the knowledge system of epistemology and revealed the methodological discourse of the philosophy of science. The historical method allowed for a retrospective examination of the object-subject component and the identification of the main stages in the development of documentation science and its philosophical interpretation. The method of analytical internet monitoring allowed for the examination of information from various sources and the identification of the features of preservation, transmission, and presentation of information about the object. The combination of specialised and general scientific methods with philosophical methodology has allowed for a deep exploration of the concept of "document" as a sociocultural phenomenon, an analysis of the philosophical characteristics of documents, and the identification of established interdisciplinary connections. Emphasis is placed on positivist achievements, which have contributed to the intensified search for and establishment of the informativeness of documents, their quantitative increase, and the theoretical study of previous information carriers. Such procedures have enhanced the understanding of documents and contributed to the expansion of their methodology and epistemology. It is worth noting that in the post-positivist stage, philosophical debates have taken place between proponents of the "historical school" and proponents of "critical rationalism". The application of structural analysis methods and the identification of the functions of scientific knowledge and the sociologisation of research into the scientific information space, based on the methodology of the philosophy of science, has contributed to the identification of the modern characteristics of documentation science. This has facilitated the further development of complex interdisciplinary connections that ensure the coherence of the study of the document phenomenon. This research employed the methodology of the philosophy of science to explore the interconnectedness of science and philosophy, the extent to which science relies on documentation, the significance of philosophy in forming a comprehensive worldview, and how philosophical concepts can be integrated into documentation science discourse in terms of causality, determinism, space, and time. The philosophy of science aids in understanding the nature of scientific knowledge, its structure, methods, and limitations. A crucial aspect of the study was to uncover how scientific knowledge is documented and preserved, as well as how documents influence the development of scientific theories and concepts. The methodology of the philosophy of science enabled the examination of the relationship between scientific knowledge and its documentation, revealing that scientific documents not only transmit knowledge but also shape it.

Results and Discussion

The philosophy of science is one of the most defining and at the same time most complex branches of philosophy and scientific knowledge in general. As early as the Modern period, drawing on the methodological positions of epistemology, the philosophy of science underwent significant development and institutionalisation. Scholars such as F. Bacon, R. Descartes, G.W. Leibniz, J.L. d'Alembert, D. Diderot, I. Kant, J.G. Fichte, and G.W.F. Hegel provided scientific grounding for the claims of philosophers, playing a decisive role in the development of subsequent directions of philosophical thought. In subsequent periods of development, the content and significance of the philosophy of science were determined by its place in society and worldview, as well as by the set of internal concepts and problems that arose historically. In the scientific substantiation of propositions about documents, the philosophy of science acts as a consolidated interdisciplinary study, during which researchers

operate with concepts from logic, sociology, information science, history of science, and others.

During the 19th and 20th centuries, the philosophy of science primarily focused on analysing the epistemological dimensions of science, forming a distinct philosophical discipline. The evolution and formation of the philosophy of science were clearly traceable in its gradual development and were characterised by a diversity of ideas. Representatives of positivism, neo-positivism, post-positivism, certain strands of neo-Kantianism, critical rationalism, and neo-rationalism contributed to the development of this philosophical direction. For these philosophical concepts, the philosophy of science provided the foundation for a problem field and its primary content.

At the same time, the core ideas of the philosophy of science had to evolve within the framework of contemporary concepts for which the problem of scientific development was not the primary task, and the analysis of science was embedded in and determined by broader philosophical contexts. Thus, representatives of Marxism, phenomenology, existentialism, neo-Thomism, and others contributed to the development of the main ideas of the philosophy of science. For these representatives, the themes and conceptual apparatus were defined by the limits of the philosophy of science's issues and were subsequently incorporated into the research focus of various philosophical movements (Toulmin, 1953).

The problem field of the proposed research requires the clarification of the conceptual apparatus that will allow for the free use of terms and the disclosure of the essence of the scientific problem of documented information in the methodological discourse of the philosophy of science. This list includes the concepts of science, information, document, knowledge, and scientific cognition.

Science is a special kind of cognitive activity aimed at obtaining systematic, ordered, justified, objectively true knowledge and clarifying the essence of the subject of study. Using the methodology of philosophy in their cognitive activity, scientists operate with abstractions and idealisations, which determine the nature of their perception of the object of knowledge. As a constitutive factor of sociocultural progress, science acquires the significance of a social institution with the functional provision of scientific cognitive activity.

Knowledge is a way of internalising the results of cognition, a process of reflecting reality that involves awareness of its existence (Blihar *et al.*, 2020). Knowledge is a product of social, material, and spiritual activity, expressed in symbolic form, social and individual memory, a communicative scheme of activity and communication, and the result of defining an object in the process of cognition. It serves as a subject's belief about a particular phenomenon, grounded in facts and rational arguments. Knowledge characterises the presence of certain properties and patterns in objects.

It should be noted that information is a sign system that forms an ideal message and reduces uncertainty/unpredictability (as a manifestation of being, its attributive properties (determinism)) in choosing one of several possible alternatives (Law of Ukraine No. 2657-XII, 2023). The axiomatic characteristics of information include its ideal nature, the possibility of storage and transmission using a material carrier, and a variety of forms (Dzyuba, 2001).

The highest level of reflection of objective reality, the process of producing true knowledge, is known as cognition. The process of cognition is closely linked to sociocultural circumstances and involves the acquisition and development of knowledge about the processes and patterns/necessities of the objective world, as well as their deepening, broadening, and improvement (Blihar *et al.*, 2020). Cognitive activity is an organic combination of direct and indirect, symbolic and figurative, logical-rational and intuitive-semantic components.

A document is a physical carrier that contains information, its primary functions being its preservation and transmission over time and space (Law of Ukraine No. 2657-XII, 2023). Documented information becomes evidence of any fact that has occurred and functioned at a certain time and plays an important role today. This is the objectification of information. Documentary information is certified and materialised, performing a constant function – to transmit and store it over time and space (DSTU 2732:2023, 2024). The definition of "document" attracts a wide variety of approaches to its interpretation and highlights the significant elements of a document, demonstrating its advantages at various stages of the scientific and technical development of the material component of this phenomenon, emphasising its functional properties, and its belonging to scientific, sectoral, and practical applications (Kalakura, 2020).

The concept of a "document" is the subject of the proposed research and, according to the Oxford Dictionary, refers to the primary designation of means for presenting or conveying information in text form (Simpson & Weiner, 1989). The increasing development of discourse surrounding the semantic component of the phenomenon of "document" has marked trends in the development of document science in the 21st century. Questions that require resolution include whether to classify only textual or also material examples as documents, and the specific stage at which a document is created. In the methodological framework of the philosophy of science, a document is viewed broadly as a result of a realised fact. In defining a document as a carrier of information, F. Bacon was one of the first to propose studying documents as a resource for historical knowledge (Harre, 1985). The philosopher appealed to the source-based interpretation of documented information, noting the significance of a specific type of official document. Notably,

L. von Ranke summarised the methodological foundation of source-based document study. In particular, his research predominantly featured primary sources – archival documents of a political nature, with the observation that what is not documented does not exist for history (Kovalska, 2015).

The direction of humanistic empiricism was founded by I. Droysen, who proposed his interpretation of history as an empirical science that relies on primary sources in its development (Kovalska, 2015). The philosopher's focus on primary sources and information resources in studying past facts and phenomena is based on comparing the information from documentary materials and personal observations, which are widely used in the process of scientific cognition. The French school of positivism contributed to the development of the documentation science direction. The positivists' perception of the historical past as a collection of verified facts was based on obtaining verified historical information, required by historians, mostly preserved in written documents. Positivists sought to provide historians with a tool/document with which they could "fill" history with the necessary historical content. The German school of history developed a source-based approach, which is based on the concept of a historical source, as opposed to the positivist understanding of documentary information.

The positivists S.-V. Langlois and C. Seignobos used the traditional French historiographical term "document" in their scientific study, which highlighted the impossibility of scientific historical knowledge without a source. This term highlighted the impossibility of scientific historical knowledge without a source. Thus, they reinforced the thesis of the superiority of historical sources over historical thought for scientific knowledge. In his reflections on primary sources, Langlois presented a document as "traces of people's thoughts and actions". C. Seignobos, supporting the idea of a document as a "trace", called it a historical document and divided it into two classes: material and psychological (Kovalska, 2015). The development of positivist views not only stimulated the search for historical documents and primary sources in research but also led to a significant quantitative increase and standardisation of the theoretical study of carriers of past information. Such trends in the perception of documents and primary sources in scientific knowledge have significantly enriched our understanding of documents and allowed for the definition of their methodological and epistemological boundaries.

The focus on socio-historical documentary information has given rise to various directions in the philosophy of science that study the document as a sociocultural phenomenon. Within the methodological framework of the sociology of knowledge and the sociology of science, the studies of M. Scheler, K. Mannheim, L. Fleck, and R. Merton explore the dichotomous relationship between science and specific styles of thought (Shinkaruk, 2002). As N.M. Shvetsova-Vodka (2023) notes, that social purpose and values are determining factors in the ambivalence of scientific norms. The rapid development and improvement of document production technologies, as well as methods of recording information on physical and digital media, transform its perception from one-dimensional to multi-dimensional. This allows for the determination of advancements in documentation technology and their integration into methodological approaches to documents as sociocultural phenomena. According to researchers, a document is defined by three components: information/data, a material/physical carrier, and the technology for its storage and identification. Using the methodology of the philosophy of science, and documentation scientists A. Sokolov and G. Shvetsova-Vodka note the emergence of a new documentary environment and the formation of the documentary memory of the noosphere (Kovalska, 2015).

The post-positivist period has given rise to philosophical discussions between representatives of the "historical school" and "critical rationalism". Leading directions of discourse have become the prospect of restoring the historical dynamics of knowledge and the inevitability of social and historical-cultural determinants of cognition (Haken, 1980; Harre, 1985). According to philosophers such as T. Kuhn, I. Lakatos, P. Feyerabend, and K. Hübner, there has been a growing interpenetration of philosophy and specific socio-humanitarian fields. This has led to the blurring of the subject matter and methodological boundaries between the philosophy of science and other humanities disciplines. On the other hand, there has been a methodological synergy of the social sciences with an urgent need to structure new scientific fields, including the science of documents (Shinkaruk, 2002). Not only philosophers, sociologists, and historians but also documentation scientists have taken on the task of addressing the problems posed by philosophers and analysing specific cognitive situations. The concept of a "document" is the central element of documentation science – a new field of study that lies at the intersection of various directions and theoretical approaches to the study of documents. A powerful scientific direction has gradually formed, grounded in the study of the document as a unit of the documentary/documentary-information resource of society, a fact and content of culture, and a structural unit of social memory. In general, documents are present in every sphere of human activity – scientific, applied, educational, informational, managerial, etc. It is the document that records the information of the present and preserves it for future use and processing. The peculiarities of perceiving, storing, and documenting information are demonstrated by the example of classical, non-classical, and post-non-classical philosophy (Fig. 1).

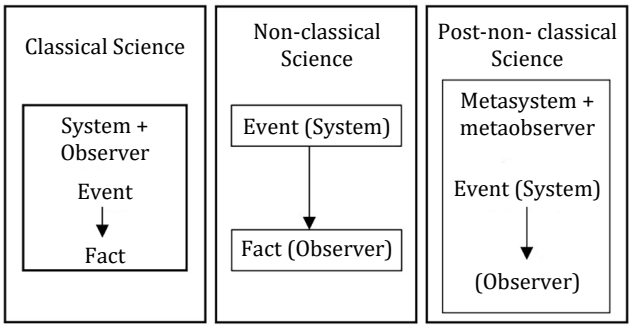

Figure 1. Relationship between event and information
Source: created by the authors based on V.I. Shinkaruk (2002)

With the completion of the formation of post-positivist concepts at the end of the 20th century, the question arose of the epistemological justification of previously proposed models. In particular, the development of appropriate methodological tools for researching analytical models of the cycle of humanities developed in the philosophy of science. In addition to the customary philosophical and methodological consideration of historical science and the clarification of the potential of documentary sources, the science of documents has undergone active development. At the same time, trends caused by the rethinking of the place and role of science, the antagonism between scientism and anti-scientism, and the development of countercultural/subcultural and religious movements have led to a crisis in the philosophy of science and even to the refutation, in the studies of P. Feyerabend, of its philosophical and general cultural significance (Blihar *et al.*, 2020). The structure-forming functions of scientific knowledge and the sociologisation of the study of the scientific information space within the methodological framework of the philosophy of science have led to the science of documents acquiring modern features; it has acquired broad and complex interdisciplinary connections that ensure the integrity of the study of the document phenomenon in the methodology of the philosophy of science.

According to postmodernist perspectives, humans are incapable of understanding, systematising, or changing the world. Postmodernists argue that the world is in a state of anticipating the exhaustion of history, progress seems illusory, and repetition becomes a style of thinking, taking on the characteristics of allusion, eclecticism, quotation, and borrowing. When a researcher cannot freely operate with primary information and gain access to original sources, they resort to secondary or mediated information, which allows for replication and serial reproduction (Shinkaruk, 2002). The postmodern era cultivates in individuals the foundations of liberal relations in the political and economic spheres, a culture of mass consumption, individualisation of needs, and pluralisation of lifestyles, thus making everything relative except relativity itself. Postmodern differentiation of social existence also affects the scientific sphere, creating new branches and directions of science, and the informational aspect of societal functioning gains significance. The new conditions of the post-industrial society changed the essence of the concept of "documented information" (Kovalska, 2015).

The accumulated experience of scholars and practitioners means that, in 2024, there is a need to rethink the concept of the document. To further develop the document in the latest technical conditions, it is necessary to determine how it can be utilised within a virtualised digital information space. Investigating the nature of documentary information and the document as a sociocultural phenomenon is the only way to address the current challenges facing document science. The development of the complex of information sciences leads to a scientific analysis of the informational characteristics of documents, stimulating active scholarly reflection on this field.

The philosophical exploration of the concept of a "document" encompasses ontological questions about the phenomenon of the document and its role in reconstructing historical processes, as well as gnosiological and logical-methodological problems of science (Kovalska, 2011). As A.E. Conversky (2010) notes, the methodology of cognition acts as a philosophical system through the processes of combining and logically standardising various principles, approaches, methods, rules, and norms of cognition, or as a science of the means of cognition. An example of the development of cognition is the combination of the principles of empiricism as a primary component in the study of anything. Idealists, as representatives of a separate direction in the methodology of philosophical science, in their reasoning gave a new impetus to the development of methodology, proposing to consider the patterns in thinking itself: the development from the concrete to the abstract, the controversy of the development of being and thought, reality and knowledge. The methodological principles of implementing document analysis methods and establishing their informativeness for scientific understanding are comprehensively revealed in the studies of famous philosophers such as E. Burckhardt, W. Dilthey, J. Droysen, G. Simmel, H. Rickert, and J. Ruesch (Blihar *et al.*, 2020). The studies of these scholars have developed general scientific and philosophical paradigms, as well as special methods of practical gnosiological activity and epistemology.

The science of documents is acquiring modern, and notably complex, connections that ensure the holistic study of the document phenomenon within a postmodern methodological framework. Postmodernists view humans as creations incapable of comprehending, organising, or improving the world. The development of the science of documents is occurring within the trends of the philosophy of science. Beyond the problems of the structure of scientific knowledge, the issue of its rapid

accumulation is also undergoing comprehensive analysis. The concept of scientific understanding is acquiring new meaning, based on which the philosophy of science justifies criteria for scientific validity, methodological foundations for scientific research, and standards for the selection and accessibility of theories. The expansion of the subject matter of the philosophy of science necessitates a thorough analysis of values, worldviews, and the identification of the range of social issues in science. The problem of the social justification and determination of scientific knowledge is arising, and directions for correlating science with other manifestations of thought are becoming more relevant as approaches to reconstructing the development of scientific knowledge.

Ukrainian researchers are actively contributing to the scholarly discourse on the development of documentation science, the study, and refinement of the concept of a document. In particular, V. Bezdrabko (2023) is actively advancing the scholarly discussion, including historiography, terminology, standardisation, and unification in documentation science. Global trends in implementing Ukraine's socio-humanitarian policy are presented in a research paper and have been tested at the conference "Applied Aspects of Modern Interdisciplinary Research" by L.A. Kovalska & G.E. Kovalsky (2022). Researchers highlight that among the pressing issues in the modern information environment are questions of document provision and problems of information preservation in socio-humanitarian activities. The issue of preserving documentary heritage, problems of archiving and providing access to information, its key characteristics and requirements for openness and access to documents are raised in the article of M. Paliienko (2019). L. Dubrovina *et al.* (2017) investigated the primary functions of libraries, archives, and museums as the main institutions for preserving and disseminating information in science and culture. Ya. Kalakura (2020) provides a thorough exploration of the concept of electronic sources and the phenomenon of sociocultural information, emphasising the need to preserve electronic documents not by their medium but by the method of recording information, which develops document science and expands the boundaries of perception and philosophical interpretation of the document in its contemporary form.

As an organic part of the sociocultural space, within the philosophy of science, a society's document system acquires the characteristics of a complex, self-organising, and self-developing system. This necessitates the development of a corresponding methodology of cognition using synergetic methods. Complex systems in a non-equilibrium state are a source of the emergence of a new system organisation or a source of self-organisation, that is, the ordering of their elements. The philosopher H. Haken (1980) emphasises that synergetics deal with complexly organised systems of various natures and levels of organisation (natural, social, cognitive, etc.). The researcher revealed a deterministic unity of diverse systems in the form of the spontaneous formation of structures, qualitative changes at the macroscopic level, and processes of self-structuring in open constructs. The difference between the synergetic approach and the classical one is due to the development of a research focus from simple systems to mastering complex constructs, from closed to open, from linearity to nonlinearity, and from equilibrium to non-equilibrium processes.

The rapid development of the sociocultural sphere is prompting contemporary concepts in the philosophy of science to turn to the widespread use of the dialectical method in scientific cognition, emphasising the object's integrity, self-development, and the contradictions of theoretical models. The weakening of established norms of rational scientific discourse is leading to a strengthening of the significance of extra-rational components. For documentation science, philosophy serves as an attractor – it integrates theoretical reflections on documents and helps to organise the methodological apparatus.

New approaches, grounded in postmodern methodological and paradigmatic theories of knowledge, have become more significant and innovative than traditional approaches to the study of history. The German researcher J. Ryuzen (2010) proposed using a modernist approach through traditional historical thinking. Scientific rationality and the pursuit of applied significance and practical application of empirical research are important components of the methodology of scientific research and the scholarly exploration of the past. Representatives of each of the distinguished philosophical directions formulate the characteristics of the development of historical science from the perspective of their own methodology, which has led to the distinctiveness of viewpoints and their justification. For instance, the Enlightenment successfully combined historical thinking with the fundamental requirements of rationality, historicism in its methodology employs classical methods of historical research, while post-historical approaches utilise diverse ways of expressing theoretical elements of historical interpretation. Consequently, the popularity of the philosophical concept of "time" is contributing to the active historicisation and dialecticisation of the fundamental principles of the science of documents. Drawing on postmodern methodology, it is worth considering that memories and memory are cultural drivers of contemporary life practices, while the linguistic form of historical narration is what the postmodern paradigm offers. Attention is shifting away from professional historical science, which is based on historical data and evidence from various documents, towards mass cinema and television, towards the audiovisual presentation of testimonies, and towards visualised documents. After literature and art became evident intermediaries of the historical, a demonstrative embellishment obscures the understanding of the past. It is important to consider prevailing trends and

to study the development process from the perspective of new methodologies. However, it is also essential not to entirely dismiss the undeniable advantages of past contributions: rational methods that transform historical information into knowledge and gnosiological results; these can be tested through subjective experience and the internal coherence of arguments. When scientific documents were processed under the conditions of modernism, many aspects and features of historical thinking were overlooked or underestimated. Contemporary times have led the scientific community to recognise the limitations and deficiencies of relying on a single methodology in scientific inquiry. The ideas of methodological pluralism have found expression in the studies of philosophers of science such as P. Feyerabend and W. Heisenberg. Methodological pluralism has become a satellite of modern science and public consciousness, and the application of diverse methods in modern scientific research has become the norm, and in some cases, a necessity to avoid subjectivity and bias (Blihar *et al.*, 2020).

Although this opposition is not absolute, postmodernism often contrasts these characteristics with the elements of scientificity. Conversely, by considering both aspects and understanding how they are interconnected, it can uncover the full complexity of history, its methodological autonomy, and its defining role in the cultural life of society. In the course of conducting scientific research, Western European historical thought intertwines with other non-Western traditions. Through such productive and open interaction, intercultural communication, which should address similar issues, will stimulate development and yield new and unexpected results. On one hand, it is necessary to integrate historical thinking with the processes of globalisation, to critically and consciously promote its involvement, and to transform it into a culturally productive force. On the other hand, it is essential to recognise that historical thinking has a unique and undeniable significance in this process and to emphasise and demonstrate its distinctiveness as historical.

The latest scientific advancements and the introduction of technology are changing the way of thinking about history, the past, and achievements. While scientific debate continues actively and there are no clearly defined paths for the development of stable scientific-theoretical systems, there are innovations from which fundamental changes are expected. In public historical culture, a vast number of images are directed towards collective historical memory in all its manifestations. Documentary forms of consciousness are rapidly losing significance and, instead, are gaining political influence and transmitting new subtexts (Kovalska & Kovalsky, 2022). Questions arise about whether a special order of the "historical" will continue to exist in an oriented connection between the past and the future, and what form of life will exist that has no significant connection to history. At the same time, new scientific communication tools allow for achieving politically approved results and create new strategies, forms, and content that have historical value and demonstrate the prospects for development (Ryuzen, 2010).

The media channels of the modern era, through which experiences and achievements are transmitted and interpretations of time are broadcast, are critically important for the diverse and unique manifestation of the historical in its dual meaning, namely documented information and its interpretation. J. Ryuzen (2010) notes that language plays the most important role in this case, although historical perception and formation also pass through an imaginary world such as image, sound, architecture, dance, and so on. In the development of historical science, writing and documented information are crucial, and historical memory also has an influence. For a long time, writing has been a defining phenomenon in the development of society, as the primary means of preserving socio-historical information, as a way of expressing thoughts and own reflections, and as a technology for storing achievements. Oral elements are still important and useful. New media types and cutting-edge information dissemination technologies in space and time are abandoning direct communication and breaking down the boundary between history as a means of communication and separating history as content. This distance significantly expands the experience of historical consciousness, increasing the scope of information and the need to engage sources. It also allows for new ways of collecting and controlling experiences. The possibilities of subjectivising historical interpretation, a separate practice of forming historical content, grow alongside the possibilities of objectification in working with historical experience and documents as carriers of testimony, as reflections of the past (Ryuzen, 2010). That is why the document, as a carrier of testimony, acts as an important artefact that allows researchers to study and interpret past facts, ensure the stability of the present and the axiological continuity of future societal development, and contributes to the preservation of historical documentary heritage and the support of scientific progress.

Conclusions

The development of the science of documents occurs in a dialectical interaction with the philosophy of science, one of whose primary functions is structure-forming. The philosophy of science has an integral function in the formation of documentation science, the methodology of interdisciplinary interaction, and scientific cognition. It is a methodological system of knowledge responsible for creating the preconditions for scientific thinking and the foundation that defines the orientations of document science problems. The achievements of positivism theory contributed not only to the activation of the search for documented historical past, their

accumulation and quantitative increase but also to the development of the theoretical basis for the study of documentary carriers of past facts. These processes significantly expanded knowledge about the document and the methodological boundaries of its study. The document acquires a connotation of quality and importance as a source of information, without which scientific knowledge becomes impossible or incomplete, which has led to the affirmation of the priority of the written documented source in the process of new scientific cognition and thinking. The modern document is an independent system with unique features and qualities that determine both common features and differences. It is characterised by the simultaneous presence of these properties, with each document having its own unique set of features. For the social sciences, such as document theory, the philosophy of science provides a comprehensive analytical toolkit for establishing specialised concepts and theories within the science. Thanks to its metascientific methodological characteristics, the philosophy of science distinguishes knowledge based on the principle of scientific validity, revealing the differences between scientific thinking and other methods and technologies of cognition, which should include the conditions of correctness and argumentation of scientific interpretation, the indisputable cognitive use of general scientific and special scientific laws and principles. The research results will contribute to the formation of new methodological complexes and general theoretical research in the field of social communications. Thanks to modern trends in the philosophy of science and an interdisciplinary approach to the scientific and theoretical substantiation of documentation science, it becomes possible to revitalise the discussion on the theory and practice of documentation science, source studies, and archival science.

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Conflict of Interest
None.

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Поняття «документ» в системі знань епістемології: методологійний дискурс філософії науки

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Анотація. Трансформаційні зміни в сучасному науковому середовищі зумовлені інформаційно-технологічним розвитком усіх галузей, серед яких документознавство, яке зазнало значних змін у зв'язку з оцифруванням та розвитком електронного документознавства, що призводить до зміни об'єкта дослідження та розширення міждисциплінарних завдань і свідчить про перехід філософії науки на новий етап розвитку. У процесі об'єктивації концептуальних пошуків філософів науки відбулася еволюція від відносно простих систем у класичний період до складних систем у некласичний період і до складних систем, що саморозвиваються. Метою даного дослідження є з'ясування гносеологічної сутності поняття «документ» крізь методологічну призму теорій філософії науки. У процесі дослідження використано загальнонаукові методи та спеціальні методи філософії, документознавства, архівознавства, інформатики, соціальних комунікацій. Синергія загальнонаукових і спеціальних методів, а також філософської методології дозволила всебічно дослідити поняття «документ» як соціокультурний феномен, проаналізувати філософські характеристики документа, виявити міждисциплінарні зв'язки. Акцент зроблено на досягненнях позитивізму, які сприяли не лише активізації пошуку та встановленню інформативності документів, їх кількісному збільшенню, а й теоретичному вивченню носіїв інформації з минулого. Такі процеси збагатили знання про документи, сприяли розширенню їхніх методологічних та гносеологічних меж. Варто зазначити, що постпозитивістський етап спричинив філософські дискусії між представниками «історичної школи» та «критичного раціоналізму». Структуроутворюючі функції наукового знання та соціологізація розгляду науково-інформаційного простору на основі методології філософії науки зумовили набуття документознавством сучасних характеристик, розвиток складних міждисциплінарних зв'язків, що забезпечують цілісність дослідження феномену документа. Завдяки методології філософії науки в дослідженні розкрито ідеї єдності наукового знання, гносеологічної та філософсько-методологічної детермінованості документознавства, інтегрального значення філософії в конструюванні цілісної наукової картини світу. Визначено понятійно-термінологічний інструментарій та механізми впровадження філософських концептів детермінізму, причинності, простору і часу в документознавчий дискурс. Такі сучасні тенденції розвитку філософії науки та міждисциплінарний підхід до науково-теоретичного обґрунтування документознавчої проблематики сприятимуть розвитку дискусії з питань документознавства та призведуть до появи нових теоретико-методологічних розробок у сфері соціальних комунікацій

Ключові слова: документознавство; філософська методологія; наукове пізнання; теорія пізнання; постпозитивізм

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Digital and socio-demographic aspects of the dissemination of library and information science education

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Abstract. The processes of digitisation in society have an impact on the technological, socio-economic, and demographic aspects of developing and implementing educational programs in the library and information sector. This results in an increased role for libraries, archives, and management structures as educational centers. The article aims to study the patterns of influence that the digitisation of society has on the technological, socio-economic, and demographic aspects of developing and implementing educational programs in library and information science at foreign educational institutions. Research methods are analysis, synthesis, logical generalisations, synchronous section, and content analysis. The findings reveal that the inclusion of educational components on digitalisation and information literacy in bachelor's and master's programs, as well as in postgraduate education programs for continuous professional development of specialists, contributes to improving education quality and adherence to educational standards in library and information science. The competitiveness of educational programs is determined by their alignment with labour market needs. The social desirability and status of the library and information science field are contingent upon shifting away from conventional notions regarding its societal function. The institutional functions of academic libraries are evolving as they engage in scientific research as research partners and provide scientific communication services. Innovative pedagogy in library and information science entails adherence to the values of social equity, diversity and inclusivity, and accessible education and research. Libraries are acquiring a dominant status as information and analytical centers. Digital technologies profoundly change the nature of the professional activities of library and archive workers. These trends drive the transformation of higher education towards international educational standards and modernisation of professional education content. The practical significance of the study is that its results can be used to improve and revise educational programs in library and information activities

Keywords: educational program; scientific information; technical information; program competencies; program learning outcomes; quality of education

Introduction

Digital technologies have a significant impact on social development, affecting electronic communication and access to various services such as education, healthcare, and banking. In addition, they are transforming traditional information structures into research and education centers with global access to resources and scientific achievements. The growing demand for comprehensive information is expanding the

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document flow and increasing the flow of various types of information. As a result, information infrastructure, including research institutions, reference services, and electronic document management, is also expanding to protect electronic documents. These factors determine the development of library and information education systems, with curricula adapted to the socio-economic and technological status of the state.

The expansion of information services and educational programs in foreign institutions is driven by the need for digitalisation, addressing socio-demographic issues, a developed social base for education, and meeting the demand for digitally competent young professionals in the labour market.

N. Khymytsia (2023) emphasises that integration into the global market for the provision of educational services and the labour market requires the study, adaptation and implementation of the positive experience of US universities in educational standards and training programs for specialists in higher education institutions of Ukraine. High educational standards of developed countries are benchmarks for developing countries. A.V. Humenchuk (2022) considers the modern vectors of development of higher library and information education in Latin America and Africa as those aimed at forming a graduated model of library and information education, modernisation and gradual transition to qualitatively new educational standards. M. Adamenko (2022) determines that digitisation is inextricably linked to the phenomenon of open knowledge, influences state and institutional policies in the field of higher education and forms the technological basis for derivative scientific concepts such as open access to information, open education and open science. The digital representation of data has revolutionised research practices, altering how research is conducted, stored, published, and disseminated. K. Markevych (2021) details the solution of socio-economic, political, cultural, educational, technological, and socio-demographic challenges associated with digitalisation at international and national levels involves encouraging the development of digital interaction between countries and establishing global standards that take into account economic, political and cultural differences, reducing digital inequalities between developed and developing countries and building digital technologies accessible to the entire population.

The digitisation, socio-demographic, and pedagogical aspects of expanding library and information science education are contextualised within the United Nations' Sustainable Development Goals (2015-2030) (17 Sustainable Development Goals, 2023). I. Koreneva (2018) explores the concept of sustainable development as inextricably linked to education, in particular, "education for sustainable development". I. Sichko (2015) considers this issue in terms of its essence and features, as well as European integration processes in modern education. O. Voskoboinikova-Huzieva (2020) argues that the new educational paradigm should promote the formation of a mindset that views all socio-economic and socio-environmental processes through the prism of sustainability and science-based precaution. O. Vysotska (2015) emphasises that the implementation of the Sustainable Development Goals aims to equip people with knowledge and skills for successful life in the new social and information environment, to enable them to actively contribute to the preservation and harmonious development of human society.

The article aims to study the regularities of the influence of processes of digitisation of society on the technological, socio-economic, demographic aspects of the opening and implementation of educational programs on library and information activities in foreign educational institutions.

In order to realise this goal, it is necessary to perform the following tasks: to identify trends in the use of educational programs in library and information sciences; to provide educational components related to digitisation in the humanities necessary for the training of librarians, taking into account foreign experience; to ensure that LIS educational programs meet the needs of the labour market and to promote the development of digital competencies of library professionals through continuing professional education.

The scientific novelty of the article lies in establishing the thematic focus of scientific research and identifying the specifics of training programs for specialists in library and information sciences at foreign universities.

The research methodology includes general scientific methods: analysis, synthesis, logical generalisations, synchronous section, content analysis. A synchronous section of publications indexed in the Scopus database from 2020 to 2023 was conducted. The content analysis of scientific articles made it possible to highlight the educational activities of universities on different continents and to identify the specifics of the content of library and information science curricula at universities.

Trends in the use of educational programs in library and information sciences

In the digital age, information has become a key asset and a powerful force in society. With the growth of large amounts of data, it is important for library and information science professionals to have skills in library management systems, understanding user behaviour, and performing analytical tasks such as data mining, text mining, knowledge classification, and information auditing. Progress in the field depends on the ability to conduct in-depth data and text analysis and mastery of information management technology. Skills and practical experience of LIS (Library and Information Science) specialists are not limited to information literacy. Proficient analytics specialists can utilise library user data to improve management and training systems.

An essential qualification for professional library positions in the USA is a Master of Library and Information Science degree (MLIS). A library school is a higher education institution that provides professional training for library workers. The first one was founded by Melville Dewey, the creator of the decimal system, in 1887 at Columbia University in the United States (Eberhart, 2016). Since the 1960s, there has been a shift towards electronic resources for information access with the development of telecommunications and computer networks. This transition from print to electronic media, and to information functioning beyond traditional library boundaries, has led to a reevaluation of the traditional definition of library activities and a tendency to broaden the scope of library education to include information and computer sciences. The iSchool is designed to advance the field of information in general (Olson & Grudin, 2009). There is an extensive network of library schools in the USA. Admission to an MLIS program at library schools typically requires a bachelor's degree in specific area. Most library schools in the US and Canada offer programs exclusively for university graduates who already hold other majors. Accreditation of these programs for an MLIS or MLS degree is provided by the American Library Association (ALA). This organisation provide accreditation of 65 programs at 60 institutions in USA and other countries (Accreditation Frequently Asked Questions, 2024). The bachelor's degree in LIS was largely phased out several decades ago (Wilson, 1966; White, 1976). The MLIS program at the University of California, Los Angeles (UCLA) gives understudies with a mix of conceptual, theoretical information, and viable encounter. Students learn modern library, archival, and information technology. UCLA's MLIS program, accredited by the ALA, is recognised as one of the most inventive and comprehensive in USA (Master of Library and Information Science, 2024). The University of Washington offers a master's program in library science (UW iSchool) in both educational and online modes (Master of Library and Information Science, 2024).

MLIS/MLS degree programs can vary significantly. The primary educational components typically include the study of information organisation methods, the concepts and ethics of information dissemination, as well as the creation and management of physical and digital resources. The educational component of instructive programs includes obtaining innovative abilities in different disciplines: information analytics and information administration; organisation store administration; digital libraries and digital preservation; data frameworks and data engineering; network equipment and program for computer network administration; integrated library systems; programming languages; web design, metadata and semantic web innovations; automation and natural language processing. Research methodology courses are offered for those pursuing a Doctor of Philosophy degree, while management courses are available for those aspiring to managerial positions in libraries.

A.R. Davis *et al.* (2023) pointed that comparative studies of library science educational programs highlight national traditions and educational peculiarities more clearly. Educational requirements for LIS programs in Croatia and the USA complement studies in comparative education and comparative library science. The educational path in LIS in Croatia is more structured, leading from a bachelor's degree to a master's degree and potentially a postgraduate license. Croatian programs emphasise technology and collection management more prominently. In contrast, US universities typically offer only MLIS/MLS master's programs, which include more management courses and offer greater flexibility in course selection. Both countries' programs tend to be flexible and easily adaptable. The curricula in both countries cover several fundamental courses in librarianship.

Digitisation of humanities in librarian training content

Digital Humanities (DH) is an interdisciplinary academic field that has become integral to library practice. However, the level of student preparation for such work in modern Library and Information Studies (LIS) programs remains a topic of debate. An analysis of ALA-accredited LIS degree programs reveals significant variation in the number and scope of DH courses offered across Canadian universities. While information and computer courses necessary for digitising library work are widely taught, project management training remains deficient in most programs (Isuster & Langille, 2023).

S. Das *et al.* (2023) indicated that Digital Humanities has gained considerable popularity among students, educators, and professionals in library and information science due to new employment opportunities in libraries, museums, archives, cultural heritage organisations, and scientific data. DH employs computational methods to address humanities and social sciences issues such as history, philosophy, literature, and language. DH introduces unique approaches to traditional inquiries. However, DH is still in its early stages in the educational activities of Indian universities. Research projects are being developed for LIS schools in the context of integrating DH courses into curricula, offering a comprehensive view of DH development trends in the LIS field in India.

The training of specialists in librarianship and information sciences has declined, evident from the discontinuation of professional educational programs at several universities in Spain. To avoid obsolescence in a rapidly evolving information landscape, this profession must explore new avenues of application. The roles of Intelligence Manager and Intelligence Analyst could potentially offer new fields of study and

professional careers. Spanish universities are adapting their educational programs in library and information sciences to cultivate competencies necessary for careers in "Intelligence Professional" and "Intelligence Analyst". These new professional profiles include a comprehensive array of subjects (Muñoz-Cañavate & Díaz-Delgado, 2021).

Developing literacy in information and communication technologies is essential for effective research data management and digital curation. Based on data from institutional websites of master's programs in LIS accredited by the ALA, the requisite technical and technological skills for librarians have been identified: knowledge of metadata standards, familiarity with data resources, proficiency in programming languages, and other interdisciplinary skills. Library practices increasingly rely on information and communication technologies for research data management (Costal *et al.*, 2020).

M. Cerny (2021) noted that, a self-assessment of digital competencies among students of LIS at Masaryk University in the Czech Republic reveals strengths in information literacy, data management, and communication and collaboration skills. However, students are inadequately prepared in individual competencies to serve as highly skilled information specialists. There is a notable deficit in programming competencies and technical skills. The information and library studies educational program requires innovation to meet the demands of digitally competent information professionals.

The alignment of LIS educational programs with labour market needs

Studies assessing the compatibility of educational programs with LIS to prepare students for youth service roles in public libraries have been relevant. A project funded by IMLS examined students' readiness for working with young people in public libraries. Surveys, virtual meetings, and discussions with practitioner focus groups, library administrators, and LIS educators revealed evolving trends in youth services within public libraries and identified gaps in current educational programs for youth librarianship. Researchers point out to significant shifts in youth service roles, highlighting discrepancies between traditional LIS curricula and the essential knowledge and skills for success in this domain (Rawson *et al.*, 2023).

An assessment of the relevance of LIS educational programs to the modern labour market in Pakistani universities, based on surveys of faculty, specialists, students, and employers in the information sector, reveals that current curricula do not meet market requirements. Issues include inadequate educational resources, inconsistent content in information and computer technology disciplines, irrelevant subjects, and insufficient practical training for LIS students. These findings underscore the urgent need for academic and governmental attention to the mismatch between LIS training programs and market needs, as well as students' perceptions of educational quality in information studies (Ismail & Khan, 2021).

The scientist P.T. Sibiya (2024) mentioned that The Fourth Industrial Revolution (4IR) and the advancement of digital sciences have fundamentally transformed the field of LIS, necessitating the inclusion of digital scientific content in educational programs at LIS schools in South Africa. However, there persists a gap between the demands of the labour market and the educational offerings of LIS programs. A survey involving scholars from LIS schools, academic librarians, and specialists from research institutions confirmed that LIS curricula often lack essential digital science components such as research data management (RDM), digitisation, metadata standards, open access principles, and institutional repositories. Collaboration among librarians, IT specialists, LIS researchers, humanities scholars, the South Africa Qualifications Authority (SAQA), and the Department of Higher Education and Training (DHET) is crucial to bridging this gap and ensuring graduates possess the necessary skills and competencies.

An in-depth examination of LIS professionals' training in digital sciences helps gauge the knowledge, skills, and competencies of graduates from the School of Library and Information Science. South African academic and specialised research institution libraries have initiated various initiatives in digital sciences, including digital scholarship. However, many librarians trained in LIS schools before digital scholarship. Those pursuing digital LIS fellowships must acquire knowledge and skills related to digital technologies with the help of short courses for enhanceing competencies, while institutions should allocate resources for infrastructure and training (Sibiya, 2023).

In Jordanian academic libraries, librarians' high levels of digital skills significantly enhance their utilisation and perception of technological innovations. These digital skills are actively applied in managing electronic library infrastructures and services. Gender, age, practical experience, library type did not notably affect these results, although funding for librarian training remains a substantial barrier to acquiring digital skills (Hamad *et al.*, 2021).

M. Aslam (2022) noted that, the global transformation of the role of academic libraries and library professionals is driven by technological advancements, the proliferation of digital resources, and the provision of innovative services. Professional publications retrieved from the EBSCO and ProQuest databases underscore that the most effective approach for librarians to acquire new competencies and adopt innovative systems involves rethinking traditional workflows and fostering collaboration across all levels. Academic libraries continue to play a pivotal role in society by providing essential services and information resources.

Digital competences of librarians in the implementation of continuing professional education

A crucial aspect of research involves qualitatively assessing the theoretical knowledge and practical skills of librarians in Canadian academic libraries regarding data processing, analytics, and management. Specifically, MLIS is examined for its effectiveness in providing adequate training and practical experience for librarians engaged in activities such as data management, data transfer services, and working with systems for creating, managing, visualising, and analysing various data types within academic institutions. Four primary skill groups in data processing for librarians are identified: conducting original research, understanding information coding technologies and quantitative methods, proficiency in metadata comprehension, and adaptability in rapidly acquiring new skills on the job. However, researchers indicate that while expertise in metadata, documentation, and information management remains crucial, MLIS programs are becoming less competitive compared to those offering hands-on experience with diverse data types and methodological approaches in a research context (Rod, 2023).

The author M. Borbély (2022) stated that in Hungary, the assessment of digital competencies among librarians of public libraries was conducted under the grant "Development of Museums and Libraries for All" by the Szabó Ervin Library in Budapest. A comprehensive study examined the impact of varying educational levels on digital literacy competencies among city librarians. Results highlighted that higher educational qualifications strongly influence digital competency across all literacy domains. The survey identified current digital skill levels among city librarians, identified areas for improvement, and underscored the necessity for targeted professional training.

In Croatia, at the "Ivan Goran Kovačić" City Library in Karlovac, the evaluation of actual digital competencies among professionals sheds light on their awareness and adaptation to modern digital technology demands for enhancing library services. Librarians self-assess their digital competencies based on experience in meeting user demands through information searching, selection, and storage. Most librarians independently enhance their digital skills outside formal professional development systems (Katić, 2022).

The authors F. Abbas *et al.* (2023) pointed that continuing professional development (CPD) remains pivotal for librarians to uphold competencies aligned with emerging trends. A study on CPD publication activities, utilising resources such as Scopus, Web of Science, Google Scholar, and LISTA, identified Skype, Zoom, Google Meet, and YouTube as principal digital video conferencing platforms widely utilised by professionals for remote CPD. Leveraging these channels holds significant potential for enhancing the technological proficiency of librarians.

There has been a noticeable shift in the institutional mission of academic libraries in Nigeria, with academic librarians increasingly engaging as research partners in scientific endeavors. This evolving role and competence of academic librarians in research partnerships represent a significant development in academic librarianship. Academic librarians now provide scientific communication services, fostering scientific cooperation within universities. This collaboration encompasses various facets: information identification and provision, information utilisation and evaluation, grant applications, formulation of research topics, literature and reference management, research data management, analytical literature reviews, manuscript creation, scientific publication, and research dissemination. Successful participation in research partnerships requires knowledge of research methodology and research data management. Essential skills include digital literacy, the ability to conduct information and analytical literature reviews, citation management, data curation and preservation, bibliometrics and information evaluation, and effective communication. Attitudinal indicators such as professionalism, patience, and empathy are also critical. To enhance their capabilities in research partnerships, academic librarians should engage in educational programs, seminars, and conferences focused on research methodologies. These activities are essential for acquiring necessary competencies and improving service delivery efficiency in research collaborations (Rabasa & Abrizah, 2022).

In turn, the organisation of distance learning has emerged as a primary direction in the digitalisation of professional training. Since 2007, the European Union has funded research aimed at identifying optimal models for distance education in information, library, and archive management. Many universities across Europe, following the British model, have integrated library, information, and archival specialties. The UK boasts advanced digitisation and information infrastructure, with formalised educational programs meeting national standards.

France and Spain also emphasise distance learning in these specialties, reflecting a broader European trend toward digital competence in information, archival, and library affairs. Educational initiatives focus on equipping teachers and students with digital competencies applicable to the educational landscape (Bachynska *et al.*, 2023). This should include training in information management, the use of electronic

resources, the integration of digital technologies into the learning process, and the development of innovative teaching methods that contribute to improving the quality of education and training professionals who are able to adapt to a rapidly changing digital environment.

Humanistic aspects of LIS education

As part of the "Development of Museums and Libraries for All" project, a nationally representative study in Hungary explored the correlation between the level of digital literacy and the gender and age of librarians in public libraries. The research, based on DigComp 2.1, assessed librarians' self-perceived competencies across five areas (Fig. 1). Librarians generally demonstrated a high level of information and information literacy, but faced challenges in content development. There was a marked gender disparity: more women had basic digital skills, while men were more likely to have highly specialised digital skills. Age had a minimal impact on information and digital literacy skills, but correlated with competencies requiring greater technological awareness. Younger librarians demonstrated higher communication and problem-solving skills than their older colleagues (Borbély & Némethi-Takács, 2023).

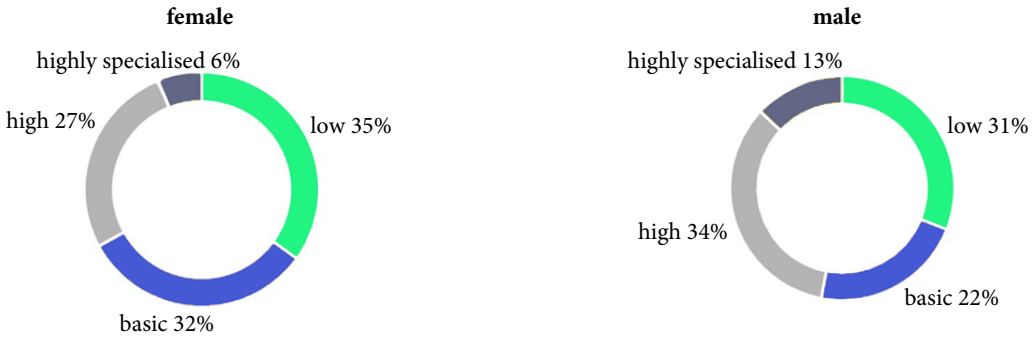

Figure 1. Results of self-assessment of librarians' digital competencies
Source: developed by the authors

The scientists D.E. Park & S.K. Ramos (2024) said that in academic libraries, diversity support programs aim to address systemic barriers and support students from marginalised communities. Collaborations between research librarians and undergraduate research supervisors are crucial in fostering social equity and communication to overcome barriers faced by students pursuing higher education. Also, the authores noted that at Federal Fluminense University (UFF), Brazil, undergraduate programs in "Archival Science" and "Library Science and Documentation" integrate disciplines such as Reference and Information Services and Cultural Action in Information Units. These courses aim to educate archivists and librarians as information and cultural mediators, emphasising the societal relevance of their roles. By leveraging information technologies of the cybercultural society – facilitating information exchange, interactivity, collaboration, and digital tools – students actively engage in the educational process, contributing to their humanistic and social education.

Social and pedagogical goals are realised through the array of disciplines offered in the undergraduate educational programs of "Archival Science" and "Library Science and Documentation" within the courses of library science, document science, and archival science at the Federal Fluminense University (UFF), Brazil. The integration of disciplines such as "Reference and Information Services" and "Cultural Action in Information Units" is viewed as complementary for educating archivists and librarians as information and cultural mediators. The logical, axiological, and moral connections between these disciplines strengthen the social orientation of educating information specialists who acquire the ability to act as conduits of information, culture, and cultural diversity. The use of information technologies in the cybercultural society – such as information exchange, interactivity, collaboration, and digital tools – ensures active student participation in the educational process, contributing to the humanistic and social education of archivists and librarians (Barros De Moraes & Mendes Cabral, 2023).

Thus, a synchronous section of publications on training in library and information sciences has shown the current issues of special scientific research, which covers the following areas: trends in the use of educational programs in library and information sciences, digitisation of humanities in librarian training content, the alignment of LIS educational programs with labour market needs is crucial, digital competencies of librarians in the implementation of continuing professional education, humanistic, socio-demographic, and pedagogical aspects of LIS education (Fig. 2).

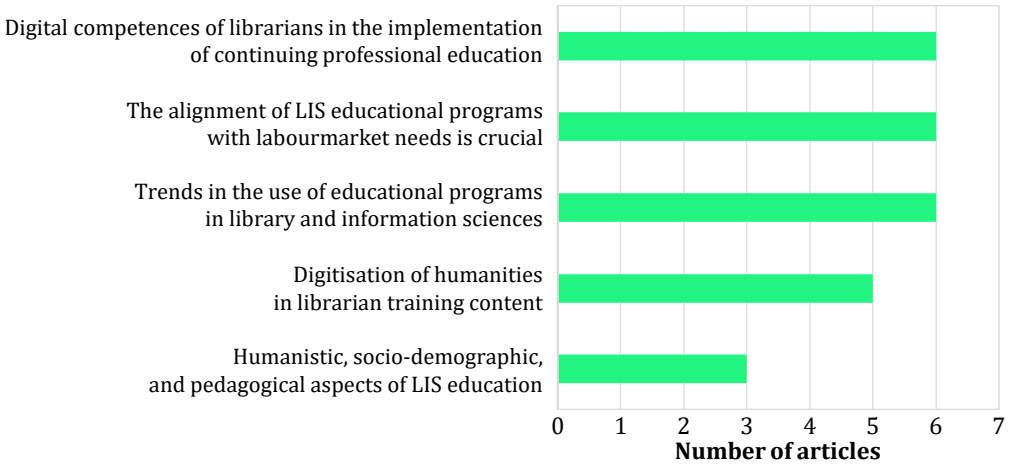

Figure 2. Relevant issues of special scientific research on LIS

Source: developed by the authors

Adhering to international educational standards and incorporating best practices in accreditation and educational activities during the initial stages of program formation enables the training of qualified specialists in LIS. Universities' participation in scientific discourse, even with modest achievements in mastering library and information sciences, facilitates their integration into the global scientific and educational sphere. Creative approaches to shaping educational content significantly enhance the attractiveness of obtaining bachelor's and master's degrees in LIS. The combination of program competencies and learning outcomes creates distinct focal points within educational programs and highlights the importance of incorporating digital literacy principles. Training specialists in library and information sciences contributes to raising the general educational level of the population, professionalising new segments of society, and enhancing information and library literacy across various foundational specialties. The deficiency in digital competencies among librarians underscores gaps in current educational programs and supports the argument for modernising educational strategies in specialist training, including the introduction of new educational programs and professional development. Education in library and information sciences, from socio-demographic and pedagogical perspectives, is rooted in the values of social justice, diversity, inclusion, open education, and scientific principles.

Conclusions

Digitisation and socio-demographic changes in humanitarian knowledge and the real economy have piqued significant interest among scientists and professionals in the experiences of educational institutions with long-standing educational traditions or those just beginning to offer library and information sciences training. Introducing educational programs in library and information sciences expands the social, professional, and demographic subsystems of social relations, diversifies the market for educational services, and meets labour market demands. Key trends in educational efforts in LIS, at the intersection of digitisation across all social sectors and socio-demographic aspects of societal development, include: digital competencies of librarians as integral components of LIS educational program content and continuous professional development for library and archive personnel; the competitiveness of LIS educational programs hinges on their alignment with labour market needs; the prestige and popularity of the library and information sciences field depend on reshaping traditional notions of its social role, with libraries assuming a dominant role as information and analytical centers; the institutional mission of academic libraries is evolving to include participation in scientific research as partners and providers of scientific communication services; for pedagogy in library and information sciences to be innovative, it must prioritise social justice, ensure diversity, foster inclusion, advocate for open education, and adhere to scientific principles.

Modern specialists need to be proficient not only in searching, processing, storing, and utilising industrial information across both traditional and electronic media but also in generating new knowledge. Digital technologies are revolutionising the roles of library and archive professionals, emphasising the dissemination of new information and knowledge. These trends are prompting higher education to align with international standards and modernise the curricula in information, library, and archival studies.

Further research could focus on studying trends in the implementation of best practices in the development and implementation of educational programs in library and information sciences at universities worldwide, particularly within higher education departments in Ukraine.

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Conflict of Interest
None.

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Цифрові та соціально-демографічні аспекти поширення бібліотечно-інформаційної освіти

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Анотація. Процеси оцифрування в суспільстві впливають на технологічні, соціально-економічні та демографічні аспекти розробки та впровадження освітніх програм у бібліотечно-інформаційній сфері. Це призводить до зростання ролі бібліотек, архівів та управлінських структур як освітніх центрів. Мета статті – дослідити закономірності впливу цифровізації суспільства на технологічні, соціально-економічні та демографічні аспекти розробки та реалізації освітніх програм з бібліотекознавства та інформології в зарубіжних навчальних закладах. Методи дослідження – аналіз, синтез, логічні узагальнення, синхронний зріз, контент-аналіз. Результати дослідження свідчать, що включення освітніх компонентів з цифровізації та інформаційної грамотності до бакалаврських і магістерських програм, а також до програм післядипломної освіти для безперервного професійного розвитку фахівців сприяє підвищенню якості освіти та дотриманню освітніх стандартів у галузі бібліотечно-інформаційної справи. Конкурентоспроможність освітніх програм визначається їх відповідністю потребам ринку праці. Соціальна затребуваність і статус бібліотечно-інформаційної галузі залежать від відходу від традиційних уявлень про її суспільні функції. Інституційні функції академічних бібліотек розвиваються, оскільки вони беруть участь у наукових дослідженнях як дослідницькі партнери і надають послуги наукової комунікації. Інноваційна педагогіка в бібліотекознавстві та інформології передбачає дотримання цінностей соціальної справедливості, різноманітності та інклюзивності, а також доступності освіти і досліджень. Бібліотеки набувають домінуючого статусу інформаційно-аналітичних центрів. Цифрові технології докорінно змінюють характер професійної діяльності бібліотечних та архівних працівників. Ці тенденції зумовлюють трансформацію вищої освіти до міжнародних освітніх стандартів та модернізацію змісту професійної освіти. Практичне значення дослідження полягає в тому, що його результати можуть бути використані для вдосконалення та перегляду освітніх програм з бібліотечно-інформаційної діяльності

Ключові слова: освітня програма; наукова інформація; технічна інформація; програмні компетентності; програмні результати навчання; якість освіти

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Digital society: State and development prospects

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Abstract. The digital society is characterised by the use of various technologies and exhibits diverse developmental trends. Digitalisation facilitates everyday life and enhances business process efficiency. The research aims to identify the origins of the digital society, assess its current state of development and future prospects, and analyse the impact of digitalisation on social life. The methodology is based on scientific research principles, employing general scientific methods of cognition, critical analysis, observation, and synthesis. The article reveals the role and significance of artificial intelligence in the development of the digital society and the potential problems and risks of its use: the generation and dissemination of misinformation, risks of violating personal privacy, risks of increasing inequality, and the emergence of ethical dilemmas in the use of artificial intelligence. It is concluded that alongside the opportunities opened up by the digital society, there are challenges and threats. These include overcoming the information crisis, recognising the priority of information compared to other resources, and forming a new sector of the information economy. Alongside these benefits, challenges arise, such as the impact of digital communication channels, the intrusion of technology into private life, and issues concerning the reliability of information. Ensuring cybersecurity and privacy is becoming a crucial and pressing task. It is also necessary to ensure responsible use of technology and artificial intelligence to avoid negative consequences such as inequality in access to technology and job losses due to digital transformation. While there is great potential for using technology to improve lives, its development and implementation must be carefully managed to maximise benefits and minimise risks. This will require global cooperation, responsible policies, ethical approaches, and the preparation of citizens for the realities of the digital world

Keywords: digitisation; technology; society; artificial intelligence; information society; digital era

Introduction

The digital society is evolving rapidly, transforming various aspects of people's lives. The increasing volume of data, widespread high-speed internet access, and the development of artificial intelligence technologies are creating countless opportunities that humanity can utilise for both personal development and professional activities and business. The digital society encompasses a wide range of technologies and trends. One key area is the Internet of Things (IoT), where various devices connect to the Internet to exchange data and interact with each other. This can simplify people's daily lives and increase the efficiency of business processes. Another important component is artificial intelligence, which is used to analyse large amounts of data, automate processes, and solve complex problems. The development of virtual and augmented reality will also contribute to changing how people perceive information and interact with their environment. This can have a significant impact on education, entertainment, and business. However, alongside these opportunities, there are also challenges and threats. Ensuring cybersecurity and protecting privacy are becoming important tasks. It is

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also essential to address the issue of the social responsibility of technology to avoid negative consequences such as inequality in access to technology and job losses due to digitalisation.

The issue of digitalisation is relatively new and under-researched, even though this process has encompassed most spheres of human activity. According to V.H. Voronkova & V.O. Nikitenko (2022), "theoretical knowledge about the digital society and the digital individual, as well as tactical issues related to digital technologies, will become increasingly important, especially in times of greater influence of social networks and the use of information and communication technologies, which impact social and economic changes, transforming entire sectors of the economy and individuals themselves". An analysis of the research by P.V. Kostetskyi & S.V. Ivantsov (2023) in the field of societal digitalisation has shown that the most relevant direction is the use of digital technologies in people's daily lives, although digital transformations of various sectors of the economy, particularly in the exact and natural sciences, are being studied with increasing intensity.

The problem of insufficient understanding of the essence of digitalisation is examined in a study by T. Dufva & M. Dufva (2019). The authors argue that in the 21st century, there is no comprehensive understanding of the digitalisation of societal life as a process, and therefore it is difficult to understand and assess its trends. The authors express the opinion that to understand digitalisation and its consequences, it is necessary to use novel cognitive approaches that differ from rational thinking. Such a position indicates the novelty and under-researched nature of digitalisation as a social phenomenon.

Several studies consider the interconnection between the development of the digital society and artificial intelligence and the challenges arising in this context. R. Iphofen & M. Kritikos (2019) examine the problem of legal regulation of robots and artificial intelligence. The problem lies in the fact that artificial intelligence can perform certain actions, but the responsibility for performing such actions is undefined. This gives rise to a range of ethical problems because if artificial intelligence is to bear responsibility for its actions, this would confirm its subjectivity. In this case, artificial intelligence must have its own rights and obligations, which must be specifically defined.

A collective of authors, K. Elliott *et al.* (2021), investigate the issue of responsibility in the use of artificial intelligence algorithms. It is worth noting that, as of 2024, there are no rules regulating this matter. While algorithms allow for the optimisation of certain functions, such as calculating credit risk, the decision-making of artificial intelligence poses threats of uncertain consequences. An analysis of the literature has shown that the issues of digitalisation, the formation of a digital society, and the use of artificial intelligence require further research. It is necessary to investigate the nature of this phenomenon, its current state, and future prospects.

K.V. Shymanska & V.V. Bondarchuk (2021) conducted a study on the state and prospects of the development of the digital economy in Ukraine. They emphasised that to build a digital environment for the national economy, it is necessary to ensure that it meets the needs not only of the state (government and other state institutions) but also of citizens and businesses, naming businesses and the public as the primary beneficiaries of the digitalisation of the economy and society.

Separately, it is worth noting the existing research on the ethical challenges of digitalisation and the use of artificial intelligence. Authors E. Kazim & A.S. Koshiyama (2021) outlined the ethical issues and frameworks necessary to guide the development of digital technologies and emphasised the importance of interdisciplinary approaches to addressing these problems. B.C. Stahl (2021) presented a different perspective on artificial intelligence and its ethical implications, reducing it to the complication of the structure of artificial intelligence systems and introducing the dimension of stakeholders.

This research aims to identify the origins of the digital society, assess its current state of development and future prospects, and analyse the impact of digitalisation on social life.

The scientific novelty lies in the identification and analysis of the advantages and risks arising in the process of developing a digital society, in outlining the significance of artificial intelligence in the development of a digital society, and in the potential problems of its use.

Materials and Methods

The methodological foundation of this research was based on the principles of scientific cognition and a systematic approach to identifying the problems of the digital society. The research was conducted in several stages using a complex of complementary methods. During the preparatory stage, the method of theoretical systematisation and generalisation was employed to identify the results and conclusions of previous studies. This method allowed for the creation of a theoretical basis for the research and the identification of key aspects of the digital society that require further study. Critical analysis was used to evaluate the existing opinions of authors regarding the digital society. The choice of this method was due to the need to identify the strengths and weaknesses of previous studies and to form one's own position on the research problem. During the main stage of the research, the observation method was used to collect empirical data on the current state of the digital society. This method facilitated the acquisition of relevant information about the actual processes of digitalisation. Analysis and synthesis were employed to identify the origins of the digital society; these methods allowed for the deconstruction

of the complex phenomenon of the digital society into its constituent parts and their integration into a coherent whole. A combination of quantitative and qualitative methods was utilised to achieve a deeper understanding of the research subject. Quantitative methods, such as statistical analysis, enabled the identification of numerical indicators reflecting the development of the digital society, while qualitative methods helped to uncover the causes and consequences of digitalisation. The concluding phase was conducted using comparative analysis, which was employed to identify the positive and negative implications of digitalisation for social relations. This method allowed for the comparison of various aspects of digitalisation's impact on society, leading to specific conclusions. Additionally, during this stage of the research, forecasting methods were applied to outline the future prospects of the digital society. Based on the identified trends and patterns, potential scenarios for further development in the digital realm were formulated.

A systematic approach was chosen as fundamental because the digital society is a complex system of interconnected elements that require a comprehensive study. Theoretical methods such as systematisation, generalisation, and critical analysis formed the basis for creating a solid theoretical foundation for this research, which allowed not only to systematise and structure existing knowledge but also to avoid repeating already known results. Systematisation allowed for the arrangement of information in a clear and logical order, generalisation aided in identifying common patterns and trends, while critical analysis provided the opportunity to meticulously assess and review the theories and methods of digitalisation, revealing their limitations and shortcomings. This approach ensured not only a deeper understanding of the research subject but also facilitated a focus on new aspects and advancements that have yet to be explored, thereby contributing to the development of new theoretical approaches and ideas. Empirical methods, including observation and both quantitative and qualitative studies, provided relevant data regarding the current state of the digital society. The forecasting method enabled the identification of future prospects for the development of the digital society, which is crucial for the practical application of the research findings. The combination of these methods ensured a comprehensive examination of the digital society, revealing its present condition, challenges, and developmental prospects, while also formulating well-founded conclusions and recommendations.

Results and Discussion

The digital society emerged as an evolution of the information society. This conclusion can be reached by analysing the conceptual foundations of the theory of post-industrial development and the information society. Examining A. Toffler's (1980) concept of the "three waves of civilisation" (agricultural, industrial, and information), the development of the digital society can be viewed as "the fourth wave". The digital society arises and develops within the framework of the information civilisation. Its properties and development prospects are based on the principles of technological and social determinism.

Identifying the essence of the digital society is inextricably linked to the study of contemporary changes in the institutional structure of society. In this case, the analysis of the development of new stable digital institutions and the digital information sphere of social life is based on the principles of the neo-institutional approach to the development of society. Within this framework, both the individual participation of social institutions in the development of the information society and the interaction between people and social groups are considered. In aggregate, this leads to the transformation of the information society into a digital society.

It is worth noting that the first forecasts regarding the formation of a digital society were linked to the theory of industrialism, formulated in the 1950s and 1960s by R. Aron and W. Rostow. According to their theory, the entire development of humanity is divided into three epochs: pre-industrial, industrial, and post-industrial (or information) (Rostow, 1959). The concept presented a fairly coherent model that described the stages of civilisational development of humanity on the path of technological progress and its parameters – the main resource of production (the level of development of production factors), the type of production activity, and the nature of basic technologies. R. Aron and W. Rostow demonstrated significant social changes in the information society, linked to economic trends where assembly-line production aimed at producing standardised products gives way to individualised products. This determines the trend towards the personalisation of production, focusing on the needs of a specific, rather than an abstract consumer. Such personalisation requires high-level technologies to identify and satisfy such needs. The formation of a digital society, where every member of society actively manifests themselves in the digital environment and leaves a "digital footprint", is a logical stage in the evolution of the information society.

However, the classics of industrialism and, later, post-industrialism described the digital society as a society that was only just forming. While they could trace the vector of its development, it was impossible to imagine the formation of a digital society without understanding digital technologies. Scientists from the period of industrialism and post-industrialism understood the importance of information as a resource and could only fix individual trends related to the increasing role of information and knowledge in society. In 2024, information is no longer considered a resource but rather an environment in which individuals, businesses, and societies as a whole function.

When examining the political and legal aspects of implementing an information (digital) society, it is essential to refer to the research conducted by Y.I. Krylova (2020). The author emphasises that the information society represents a new stage in the development of human civilisation, necessitating the adaptation of the political and legal system to the new realities of the digital society. This adaptation requires a comprehensive approach to regulating information relations and ensuring the digital rights of citizens. The global nature of informatisation and digitalisation is evidenced by the level of engagement of the global community in the digital environment (Fig. 1).

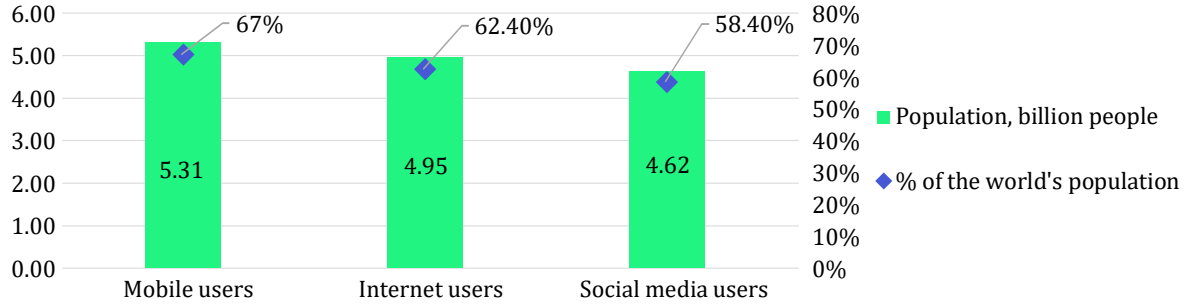

Figure 1. Engagement of the global society in the digital environment in January, 2022
Source: developed by the author based on data from Digital 2022. Global Overview Report (2022)

Technologies that can be rapidly deployed by providers to offer network access to specific computing resources (servers, data networks, storage devices) are becoming increasingly significant in digital societies. Cloud computing is opening up new possibilities for societal development across various sectors, from business to education and cultural projects. Cloud services enable data storage, transfer, and computations. In some cases, these processes can occur without direct human involvement, making them fully autonomous. The analytics firm Gartner has estimated consumer and company spending on cloud technologies in 2022-2023 and provided a forecast for 2024 (Fig. 2).

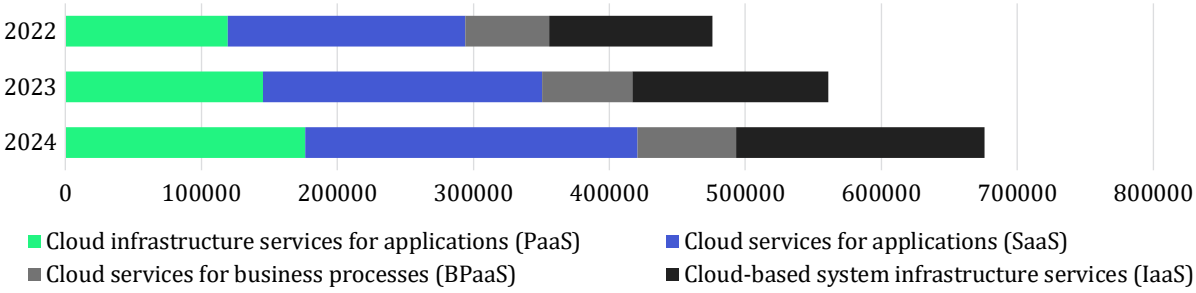

Figure 2. Forecast of end-user spending on cloud technologies in the world, USD
Source: developed by the author based on data from Gartner forecasts worldwide public cloud... (2023)

The digital society assumes that all data accumulated and utilised in both the public and private sectors are digitised. Data that cannot be digitised will remain outside of circulation in the course of information development, becoming neither sought after nor utilised. Therefore, all information generated in the contemporary world, as well as that which constitutes "heritage", primarily historical and cultural value, is subject to digitisation.

The formation of a digital society is characterised by trends such as the information explosion, manifested in a steady growth in data volume. In 2018, according to research by IDC and Seagate Technology, the total amount of data in the digital universe was 33 zettabytes, and by 2025, it is projected to increase to 175 zettabytes (Reinsel *et al.*, 2018). The development of the Internet of Things is characterised by the creation of a vast network of interconnected devices serving various purposes. This ecosystem encompasses a broad spectrum of technological, industrial, and infrastructural objects equipped with control, communication, and management modules. A key feature of these devices, including various appliances, sensors, and other technological solutions, is their ability to exchange data via internet connectivity. Such integration enables the creation of a unified information space where physical objects become active participants in digital processes, opening up new opportunities for automation, monitoring, and optimisation across various spheres of human activity. The development of the Internet of Things presents significant opportunities for the global economy.

In a digital society, the human individual takes on a new form as a digital "self". Every individual with a registered online account possesses a unique identity with distinctive digital attributes. In the digital age, each person generates a substantial volume of electronic traces that shape their digital profile. This profile comprises a diverse range of data stored in both publicly accessible and conditionally protected systems. It includes personal information posted on social media, financial transaction records, location data, advertising identifiers, and large volumes of multimedia content such as audio recordings, photographs, and videos. Additionally, the digital footprint includes a user's activity history across various mobile applications and websites. As a result, an individual's digital life becomes an integral part of their overall identity, forming a multifaceted and detailed portrait within the virtual space. This information is already widely used in 2024 for targeted advertising, retargeting marketing tools, and more. The emergence and proliferation of mobile internet, which has facilitated the rise of wearable devices, not only provides users with notifications and calls but also enables real-time monitoring of physical activity and alerts about potentially harmful health conditions. Furthermore, wearable devices expand human capabilities, such as Google Glass, which allows for more efficient use of visual perception by focusing attention on specific aspects of information.

The widespread adoption and relative accessibility of digital technologies offer significant advantages to their users. Specifically, concerning various aspects of societal informatisation, the World Bank in its report identifies the following benefits of a growing digital economy: increased labour productivity; enhanced company competitiveness; reduced production costs; creation of new jobs; and the alleviation of poverty and social inequality (World development report 2016…, 2016).

In the context of Ukraine's digital society development, it is important to consider the perspectives outlined by V.I. Liashenko & O.S. Vyshnevskyi (2018). The researchers highlight that the key drivers of Ukraine's growing information economy are the expansion of digital platforms and the development of blockchain technology. They note that the potential for Ukraine's digital economy lies in the expanded use of digital platforms, which are growth points for the modern information economy. Their study emphasises Ukraine's significant potential for digital transformation and outlines specific directions for innovation and investment in the digital economy. O. Karpenko (2020), in their monograph "Digital governance", provides theoretical and practical recommendations for implementing digital governance in Ukraine and thoroughly analyses the impact of the digital economy on society. D.O. Kotelevets (2022) explored the specific characteristics of Ukraine's digital economy, noting that as of 2022, Ukraine is not a global leader in the pace of digitalisation. The author also analysed the key indicators driving active economic digitalisation. O. Halushchak *et al.* (2023) studied the stages of digitalisation in Ukraine and identified the characteristics of each stage, noting that the digitisation process is constantly improving and penetrating various spheres of Ukrainian society. O.Y. Huseva & S.V. Lehominova (2018) examined the essence of digitalisation, which is crucial for business development and success.

It is worth noting that in 2024, it is impossible to imagine creating a startup or a new company without utilising digital technologies; in fact, companies are now being created and operating entirely based on digital technologies. However, alongside numerous benefits, digital transformation also carries risks: cyber threats, the use of personal data to manipulate behaviour, rising unemployment, the obsolescence of certain professions, a digital divide in education, and consequently, a disparity in wealth.

E. Kazim & A.S. Koshiyama (2021) offered a framework for understanding the future development of digital technologies in light of the ethical challenges arising from the convergence of the digital, physical, and biological realms. Notably, their research provides a focal point for comprehending the future of digital society. In their research, E. Kazim & R. Hanna (2021), focusing on the philosophical foundations of artificial intelligence ethics, argue that ethical frameworks guiding artificial intelligence development should prioritise human dignity and autonomy as these technologies increasingly influence the psychological, social, and political spheres. This research provides a fundamental understanding of the ethical considerations necessary for the development of a digital society, aligning with the need to ensure respect for fundamental human rights as digital technologies evolve. In a digital society, privacy remains a pressing concern. Therefore, the development of a digital society highlights the importance of confidentiality, where certain information remains outside the public domain. This applies to both businesses and individuals. The distortion, falsification, destruction, or even disclosure of certain information can cause significant harm. Even disruptions to the technological processes of collecting, recording, processing, and storing information can cause serious damage. Consequently, in modern digital society, cyberattacks and cyberterrorism have become significant threats addressed at both national and international levels.

It is also worth noting that the formation and development of a digital society has its advantages, which include: overcoming the information crisis and reducing information asymmetry; prioritising information over other resources; and the formation of a new economic sector – the information economy. Overcoming the information crisis and reducing information asymmetry can contribute to a better understanding of events and more informed decision-making at various levels. This increases civic awareness and engagement.

The prioritisation of information over other resources can be a key factor in achieving success across various sectors. Rapid and convenient access to information enables innovation, the development of new technologies, and the improvement of societal processes. Moreover, digital technologies provided significant advantages to companies during the COVID-19 pandemic when physical interactions were restricted. The development of a new economic sector, such as the information economy, generates employment, stimulates technological progress, and promotes sustainable development. This creates opportunities for new businesses and individuals to realise their potential in a digital environment with minimal resource requirements. Alongside these benefits, it is important to remember the challenges arising from the development of a digital society: the increasing influence of all digital communication channels, including low-quality ones, on society; the intrusion of information technology into people's private lives and business activities; the growing problem of ensuring accurate and high-quality information; the threat of breaches of digital data privacy; and the actual lack of security for personal information spaces.

The development of artificial intelligence within the context of a digital society both amplifies and deepens the benefits and risks associated with such societies. On the one hand, digitalisation and intelligent systems can significantly improve the efficiency of business processes, provide higher-quality technological solutions and foster innovation. On the other hand, the significant influence of digital communication channels can lead to the proliferation of low-quality information, threatening the objectivity and reliability of decision-making. It is crucial to refine algorithms for filtering and verifying information to ensure the quality of content generated within society. In this context, it is worth mentioning the ChatGPT neural network, which is capable of generating content but may produce completely fictional and inaccurate information. The developers of this neural network openly acknowledge and warn about this, yet the threat of using inaccurate information generated by neural networks is only increasing as digital society develops.

The development of a digital society is founded upon and accompanied by the generation of vast amounts of data, which must be processed for practical use. Artificial intelligence systems hold an undeniable advantage in this process compared to human resources. However, data interpretation and decision-making remain central to ongoing discussions. While the use of artificial intelligence systems for processing large datasets is highly efficient, as these systems can quickly and accurately analyse information, identify patterns, and make predictions, there are crucial aspects to consider within the context of data interpretation and decision-making in a digital society. The use of artificial intelligence for decision-making can raise ethical questions, particularly in areas related to privacy, equality, and fairness. It is essential to develop ethical standards and norms for the use of artificial intelligence in data processing and ensure their adherence.

Data interpretation requires not only technical expertise but also consideration of context and sociocultural factors. Ensuring positive interactions between artificial intelligence systems and humans aims to guarantee objectivity and fairness in problem-solving. Artificial intelligence systems learn based on the data they are provided. If the data contains distortions or biases, the systems may reflect these same issues in their outputs. It is crucial to consider and mitigate potential biases in training data. Elon Musk has repeatedly warned about the threats artificial intelligence poses to humanity but has also argued that AI could become "the most disruptive force in history" (Oros, 2023). The overarching goal of developing digital societies and artificial intelligence is to ensure transparent, fair, and ethical principles for artificial intelligence usage, which should contribute to the growth and improvement of quality of life and well-being in the digital age.

Conclusions

The development of digital society is underpinned by vast amounts of data, which play an increasingly significant role in various aspects of human life. This data has become a necessary foundation for diverse fields, ranging from business and medicine to education and public administration. In this context, artificial intelligence systems have become an integral component, enabling the efficient processing of large volumes of information and the automation of processes.

Alongside the growing capabilities of artificial intelligence, new ethical challenges have emerged. The use of artificial intelligence in addressing issues related to privacy, equality, and fairness raises questions about the ethics of such decisions. The efficiency of artificial intelligence systems should not overshadow their responsible use and consideration of ethical norms.

The evolution of digital society is determined not only by technological advancements but also by the ability to effectively utilise and interpret accumulated data. As digital society develops, people's perceptions of the world's approaches to business, and personal life organisation are also transforming. Alongside the immense potential of technology to improve lives, its development and implementation must be carefully managed to maximise benefits and minimise risks. This will require global cooperation, responsible policy-making, ethical approaches, and the preparation of citizens for the realities of the digital world.

Future research into digital societies should focus on developing models of adaptation for various social groups within digital environments, conducting in-depth studies of the ethical implications of digitalisation,

and exploring ways to bridge the digital divide. Investigating the transformation of the labour market and education systems within digital economies is also a crucial area of research, as is examining the potential of digital technologies to enhance democratic processes. Ongoing research into the psychological impact of digitalisation, cybersecurity, and the environmental consequences of digital technology remains essential. Interdisciplinary research, innovative methodological approaches, and studies of national digitalisation characteristics are recommended to develop a comprehensive understanding of the digital society phenomenon and to devise effective strategies for managing digital transformation.

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None.

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Цифрове суспільство: стан та перспективи розвитку

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Анотація. Цифрове суспільство характеризується використанням різних технологій та має різні тенденції розвитку. Цифровізація допомагає полегшити повсякденне життя та підвищити ефективність бізнес-процесів. Мета дослідження полягає у ідентифікації витоків цифрового суспільства, оцінці сучасного етапу його розвитку та перспектив розвитку у майбутньому, а також аналізі впливу цифровізації на суспільне життя. Методологію становлять принципи наукового дослідження, використано загальнонаукові методи пізнання, критичний аналіз, спостереження, синтез. У статті розкрито роль та значення штучного інтелекту у розвитку цифрового суспільства та потенційні проблеми і ризики його використання: генерація та поширення недостовірної інформації, ризики порушення особистої приватності, ризики посилення нерівності та виникнення етичних дилем використання штучного інтелекту. Сформульовано, що разом із можливостями, що відкриваються у цифровому суспільстві, виникають виклики та загрози. Серед них – подолання інформаційної кризи, визнання пріоритетності інформації порівняно з іншими ресурсами та формування нового сектору інформаційної економіки. Разом з цими перевагами виникають виклики, такі як вплив цифрових комунікаційних каналів, проникнення технологій у приватне життя та проблеми достовірності інформації. Забезпечення кібербезпеки та приватності стає важливим та актуальним завданням. Також необхідно забезпечити відповідальне використання технологій та штучного інтелекту, щоб уникнути негативних наслідків, таких як нерівність у доступі до технологій та втрата робочих місць через цифрову трансформацію. Поряд з великим потенціалом використання технологій для покращення життя, потрібно ретельно керувати його розвитком та впровадженням, для максимізації переваг та мінімізації ризиків. Це вимагатиме глобального співробітництва, відповідальної політики, етичних підходів та підготовки громадян до реалій цифрового світу. Практична цінність статті полягає у висвітленні ключових тенденції цифровізації та рекомендацій щодо адаптації до цифрових змін. Ця інформація є цінною для науковців, політиків, підприємців та громадських діячів, що сприятиме кращому розумінню викликів та можливостей цифрової епохи та формуванню ефективних стратегій розвитку в умовах технологічних трансформацій

Ключові слова: цифровізація; технології; суспільність; штучний інтелект; інформаційне суспільство; цифрова ера

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Information and library services for library users: Innovative approaches and vectors modifications

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Abstract. The relevance lies in the in-depth analysis of the problems of development and transformation of library and information services, as well as in the changed user requests and information needs caused by the information development of society. The purpose is to explore the benefits of using the latest technologies and services in information services in the context of research by Ukrainian library professionals; to analyse the dynamics of library development and its modification in the system of user service. The study used general scientific methods (analysis, synthesis, generalisation) and approaches: socio-cultural, socio-communicative, and systemic. The current challenges of informatisation of society and the rapid expansion of the volume and content of information resources raise the issue of revising the methods of work in the field of reference and bibliographic services for libraries. This requires the development of scientific principles of modern activities of reference and bibliographic services aimed at providing information to users and based on a systematic approach to the formation, organisation and use of reference and information resources. Also, in the study of trends in the use of cloud services as an innovative tool in libraries in the era of digitalisation, which has become an effective means of expanding the possibility of remote access to library collections, resources, promoting the storage and analysis of data for more convenient user service. The results of the study may be important for employees of methodological and bibliographic departments, Internet centers in libraries, and can also serve as a basis for a more detailed study of specific aspects of this topic by library practitioners, teachers and students studying in information and library specialty programs. They can also be useful for replenishing the information base on the organisation and development of reference and bibliographic services in libraries

Keywords: transformation of the library sector; innovative library technologies; reference and bibliographic services; remote services; electronic library resources; cloud services; mobile libraries

Introduction

In the 21st century, when informatisation and globalisation play a key role in various spheres of life, the relevance of this topic becomes extremely important. The task of the library: to move from the information society to the concept of an open library and knowledge society (Bilous, 2024). This means the introduction of modern technologies that improve access to information, develop electronic resources, digitise collections, and create innovative services for users. Digital platforms and software enable libraries to create online catalogues with quick and easy access to bibliographic records. Using mobile applications allows users to quickly find the information they need. The development of artificial intelligence and machine learning – to automate the processes of indexing and analysis of bibliographic data. Updating and modernisation of information and library services has become the subject of research by many scientists. The author V.O. Kopaneva (2020) encourages a new approach to the transformation of the library industry, which will be based on the conceptual

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principles of the "leader" model.

In the monograph, O. Zhelai (2021) emphasises the importance of improving remote forms of information and information-analytical user service. Scientist V. Medvedieva (2019) is engaged in the study of the functioning of the social institute in the media space. The introduction of multimedia technologies into the activities of libraries is the need to organise high-speed data transmission facilities in the information-library space. In particular, T. Granchak (2019) notes that openness and close interaction between the library and society leads to a new model of communication and services: flash mobs, intellectual games, library classes, co-working spaces, trainings. Cloud services play a significant role in providing information services to library users. Gradual transformation of libraries into media libraries expands functions and remote information services by combining traditional books with a collection of DVD, BLU-RAY and audio CDs, e-books, multimedia educational programs, as noted by S.E. Orekhova & N.M. Lynska (2019).

The scientists A.V. Rzheusky *et al.* (2015) in their work note and propose service delivery models using cloud technologies, such as: software; platform as a service; desktop as a service; infrastructure as a service. Advantages of cloud technologies: saving money on the purchase and maintenance of computer equipment, software, availability. This helps optimise the work of libraries and ensures more efficient use of their resources.

The researcher H.V. Salata (2022) draws attention to: the library website, electronic catalogue, e-mail and managers (Facebook Messenger, Messenger Lite, WhatsApp, Telegram, Viber). Many cloud providers install authentication and authorisation mechanisms. It is important for libraries to have built-in systems for monitoring and detecting threats in cloud services. Advantages: detect potential attacks or security breaches in a timely manner. Cloud technologies open up new perspectives for optimising management processes: working with web multimedia storage services, such as photo services (Picasa, Panoramio), video services (YouTube), geoservices (Google Maps) and document management (Slideshare, Google Docs, SkyDrive). The author I. Yarema (2022) emphasises that in library service there is a combination of established practice with the possibilities of information and communication technologies. Innovations are based on the latest information technologies: organisational (e-catalogues, databases), service (virtual services), product (e-collections, multimedia products), technical (presentation of information on websites, social networks, blogs, messengers), business (paid services). The advantage of digital technologies is the possibility of a comprehensive approach to solving the problems of library and information services.

The purpose of the study is to analyse the achievements of library professionals in the context of introducing new services in information and library services to users.

The scientific novelty of the study lies in a comprehensive study of the emergence of various means for organising, storing and transmitting information, which requires a revision of traditional methods of work in the field of reference and bibliographic services of libraries. In turn, this means improving the methods of preparation and provision of information services, and thus leads to the development of new strategies to ensure maximum satisfaction of users' needs for access to information. Therefore, it is important to clarify the importance of using cloud services that allow storing and processing large amounts of information on remote servers, making them accessible from any location and device with an Internet connection.

Materials and Methods

To complete the study of the topic, the following methods were used: scientific observation, comparative method, methods of analysis and synthesis, descriptive, structural and functional (Table 1).

Table 1. List of methods used

Scientific observation	Comparative method	Methods of analysis and synthesis	Descriptive	Structural and functional
Formulation of the goal and object of scientific research, development of an observation plan, interpretation of the obtained results, formulation of conclusions	Studying and identifying trends in the transformation of traditional information and library services and user services through new library services	To make an attempt to conduct an in-depth study of the existing (implemented in library practice of the latest technologies) in library processes, to reveal the possibilities of information and library services in Ukrainian and foreign libraries. To analyse and substantiate the feasibility of mobile libraries as one of the latest innovations in the library and information sphere	Trace the development and transformation of traditional library services into modern ones. Select material and describe the activities of social institutions and their information and library services. Identify one or more innovative library services that are most accessible and in demand in Ukraine and other countries. Describe and analyse library services and innovative approaches in the field of information and library services	Structure the processed material in accordance with the publication plan and the requirements of a professional journal. To focus on the activities of libraries caused by new user needs. To study the competencies that a librarian should have in order to provide quality library services

Source: developed by the author

The research methodology is based on the use of general scientific approaches: socio-cultural, socio-communicative, systemic, as well as on the application of general scientific methods (analysis, synthesis, generalisation). The methodological basis is the socio-cultural approach in combination with the systemic, socio-cultural and informational approaches, which together made it possible to analyse the paradigm of information and library services in the context of innovative methods and library practices. The use of comparative and content analysis methods allowed us to identify significant features of the development of library institutions in Ukraine and the United States. This analysis revealed the current tasks and challenges they face in the modern world. These methods were used to solve the following tasks, namely: research of scientific sources: monographs, professional publications, electronic resources, library websites and reveal the concepts within the outlined topic; identify innovative approaches to the organisation of information and library services for library users; characterise traditional forms and justify the expediency of implementing remote user service; to study and analyse the experience of academic libraries, public Ukrainian and foreign libraries in the field of information and library services; outline traditional forms, identify innovations in the work of each library and explore the advantages of interactive services.

During the research, materials were collected through a thematic search in electronic libraries and archives, as well as using the source base of official websites and scientific publications of leading Ukrainian and foreign scholars. The following sources were used in the study: Official website of Poltava Regional Universal Scientific Library named after I.P. Kotlyarevsky (2024); Official website of Ternopil Regional Universal Scientific Library (2024). Based on the official websites of two public libraries, in particular: Ternopil Regional Universal Scientific Library and Poltava Regional Universal Scientific Library named after I.P. Kotlyarevsky, an analysis of the "Virtualna Dovidka" service was carried out as an innovative library service for fulfilling the requests of virtual users. The advantages and disadvantages of the Virtual Help desk are determined. The correctness of the formation of the request and the registration form was checked. The following data were analysed of Official website of Vinnytsia Military Administration (2024). As a result of the analysis of the works of the authors L.A. Dubrovina & O.S. Onyschenko (2009), K.V. Lobuzina (2012), S. Chukanova (2012) were selected and taken into account statistical data on the activities and trends of the reduction of public libraries as of the beginning of 2020. Data on the implementation of remote forms of information service for users using the library's electronic catalogue, webportals and a number of others innovative forms of information-library user service were selected as a result of the analysis of research by the authors O. Serbin & S. Halytska (2013), V.O. Kopaneva (2020), O. Zhelai (2021).

Results and Discussion

The information society reflects a new era of civilisational development, where knowledge and information are becoming the main resources. This society is characterised by the rapid development of technology, which affects all spheres of life, including economy, politics and culture. The role of the library in this context is becoming extremely important, as it plays a key function in providing access to knowledge and information, contributing to the informatisation of society and its further development.

At the legislative level, the concept of "reference and bibliographic services" is interpreted as services related to servicing information consumers in accordance with their requests. This includes the provision of references and other bibliographic services aimed at meeting the needs of users in searching for and obtaining information (Isayenko, 2011). According to T. Dobko (2013), reference and bibliographic services consist of processes related to accepting one-time requests from users, systematic search for information in various sources, transferring information to users about various types of documents (handwritten, printed, electronic) and identifying various facts in information sources. The Law of Ukraine No. 32/95-VR (2022) defines the tasks of the library in the process of forming a new information society. According to this law, the library in the modern world acts not only as a place of information storage, but also as an active participant in the development of information resources and a guide in the global information space.

Innovative library technology is not only the process of creating or improving products and services, but also the integration of creative, research, and practical efforts into all areas of library activity. It encompasses the development of new methods and tools for storing, organising and disseminating information, and contributes to increasing the accessibility of cultural and educational resources to the public. This technology affects all aspects of library work, from bibliographic activities to the organisation of cultural and educational events (Isayenko, 2011). The topic of researching library and information services in the electronic environment has gained significant development in light of the growing use of digital technologies.

The active research, development of methods and approaches to providing information assistance to library users is announced in the scientific works of the ukrainian researcher T. Dobko (2013), in particular, in the monograph "Reference and bibliographic activities of scientific libraries of the National Academy of Sciences of Ukraine: Formation and development (20th century - the first decade of the 21st century)". In the

monographic study, the author reveals the methodological principles, types, forms and directions of reference and bibliographic services, as well as its formation as a component of scientific and bibliographic services. Special attention is paid to the formation of reference and bibliographic services as a component of scientific and information activities in the system of library communications. The author also identified the continuity of traditions and means of introducing innovations into the activities of libraries. The researcher examined both traditional and modern terminology in the field of library science and proposed conceptual approaches to the organisation of reference and bibliographic activities of scientific libraries, taking into account changes in the information environment and information technology communications, and thus user needs and social priorities. The study analysed the foreign experience of reference and bibliographic activities in the context of constant and dynamic growth of information resources.

The research conducted by O.O. Isayenko (2011) has made a significant contribution to the study of the terminology and features of the practical implementation of reference and bibliographic services in the online environment in the activities of libraries of various levels. The research of the scientist allowed to better understand and assess the impact of Internet technologies on meeting the information needs of users, as well as to develop effective approaches to improving library services in the online environment.

O. Serbin & S. Galytska (2013) research also addresses the issue of reference and bibliographic services. In particular, the authors publication examines the processes of information optimisation and develops a collapse/expansion methodology that allows for effective data volume management. In addition, the author proposes a classification of collapse/expansion processes that takes into account the evolution of the structure and functions of library science. The possibilities of using modern technologies to optimise information flows are analysed, which opens up new prospects in the field of library activities. The field of librarianship is constantly undergoing innovations and transformations aimed at improving access to knowledge and information. One of the key goals is to introduce modern technologies that contribute to more efficient user service and improve the quality of services. This includes automation of library processes, development of digital resources, introduction of virtual services, and provision of access to electronic collections. Such initiatives contribute to the development of a modern information environment, increase information literacy and meet the knowledge needs of users. Also, the scientists emphasises and analyses the state of implementation of information technologies, in particular, on the example of the Vernadsky National Library of Ukraine (VNLU), he reveals the work of the Electronic Catalogue as a component of the reference and search apparatus and a component of the library's automation system, its functions and purpose. Vernadsky National Library of Ukraine (VNLU) uses the multifunctional library automation system (LAS) IRBIS64 to process new arrivals. This system combines all technological stages of document processing within the technological cycle "Document Path" and is a complex of automated workplaces and processes. Electronic catalogues and other automated systems become the basis of the organisation of information and search activities of the library, which contributes to the improvement of the quality of user service and the development of the library industry as a whole.

The study conducted by L. Kononuchenko (2011) notes the active involvement of ukrainian libraries in the implementation of local and regional computer networks, the use of modern information technologies and the creation of their own electronic information resources at the beginning of the 21st century. The researcher emphasises the importance of applying the latest technologies in librarianship, as these technologies significantly increase the level of satisfaction of users' information needs. According to the study, in the 90s of the 20th century, the level of satisfaction with the service in regional universal scientific libraries was 59%, and at the beginning of the 21st century 92%. The introduction of new services based on information and communication technologies contributed to the active study of the impact of modernisation processes on the quality of information and library services.

The Internet environment has a significant impact on modern library users, as they increasingly prefer virtual communication and quick access to information. Internet technologies are changing the work of libraies, adapting their traditional forms of information activities to modern requirements. In modern digital world, libraries provide a variety of remote services to ensure that users have convenient and efficient access to information even when they are working remotely. These services include access to electronic catalogues, e-books, databases, audiobooks, magazines, and other digital resources. Remote services expand users' options for selecting and obtaining information. In addition, they allow libraries to attract new audiences, including those who have limited access to traditional library services due to geographical, physical, or other limitations.

Remote services also help to optimise library workflows and ensure efficient use of resources. For example, they allow social institutions to effectively manage user requests via e-mail, online chat, or phone (smartphone or iPhone), which greatly facilitates communication and reduces the time spent waiting for a response. Thus, an important advantage of remote services is their impact on the development of information literacy of users. Librarians can therefore provide advice and teach users how to effectively search, evaluate, and

use information resources on the Internet. Thus, modern remote services are becoming an important tool for providing access to information and improving the level of service provided by libraries.

In the third millennium information and communication technologies are central to many aspects of our lives. Their active use contributes not only to an increase in the amount of information in electronic form, but also to the emergence of new types of electronic resources. They also contribute to the creation of various types of electronic docu ments, including electronic publications, audio and video information, and multimedia products. As pointed V. Vergunov (2014), libraries in the modern world play not only the role of distributors of ready-made information, but also actively become producers of their own electronic information resources. Such resources are formed with the help of a wide range of bibliographic, abstract and full-text sources.

The main goal of a modern library and its subdivisions is to ensure high-quality and prompt satisfaction of users' information needs. One of the key areas of this activity is reference and bibliographic work, which includes the formation of a reference and bibliographic collection and the provision of appropriate services. The effectiveness of this activity depends on the quality of the bibliographic apparatus, professional skills of the bibliographer and availability of the necessary material and technical support in the library. The dynamics of library development, fast and efficient search for reliable information is becoming a key task. Information technology provides us with a wide range of tools to achieve this goal. Online databases, electronic resources, and search engines allow us to search for and retrieve information in the fastest possible way. At the same time, it is important not to forget about traditional methods of bibliographic services, such as librarians' consultations and work with reference sources. The combination of these approaches allows us to provide users with high-quality and comprehensive information support. T. Loga (2016) note that reference and bibliographic services for remote users are developing in three directions (Fig. 1).

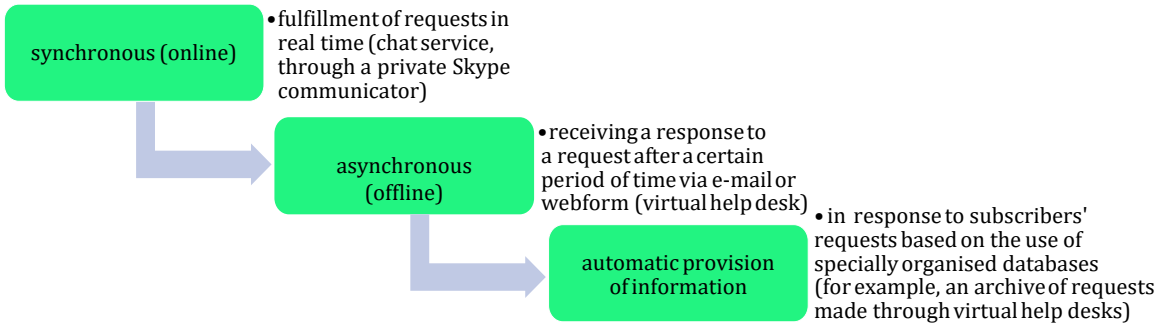

Figure 1. Modern forms of library user service

Source: based on T. Loga (2016)

Given the growing information needs of users and rapid changes in the technological environment, O. Isayenko (2011) monograph is a source of knowledge for understanding current trends in the library sector. By analysing the experience of best practices in the implementation of innovative technologies, the author provides important insights for the further development of library information systems. A significant contribution to the study of this issue is the monograph by N.E. Kunanets (2013) "Information and library services for users with special needs: History and modernity". The author emphasises the specifics of serving users with different forms of nosology. The researcher proposes to use the hierarchy analysis method to choose the way of presenting knowledge in the information system for serving users with special needs. The weights of objects obtained by the method of expert evaluation help to determine the ontological approach as the most convenient way to represent knowledge, which is flexible and easily adaptable to changes in the process of serving this category of users.

Scientists are actively researching the computerisation of bibliographic activities in Ukrainian libraries. Ukrainian researcher I.O. Davydova (2005) focusing on the automation of library processes, establishing the continuity of traditions and methods of introducing innovations. The authors of the monograph L.A. Dubrovina & O.S. Onishchenko (2009) substantiate the main trends in the development of libraries and librarianship in Ukraine in the 20th century. L. Kudrya (2009) announces the use of modern information and communication technologies, taking into account the virtual online exhibition, substantiates their advantages and provides vivid examples of virtual exhibitions on library websites.

The introduction of computer and telecommunication technologies open up new opportunities for users, therefore: physical readers have different needs, which include access to various electronic resources in the library. It can be an electronic catalogue, a digital library, local and network resources of electronic collections, etc. At the same time, virtual readers usually get access to library services through the institution's website on

the Internet. Modern trends in bibliographic service include operational organisation of access to electronic catalogues, information about library resources, databases, and electronic libraries in real time. In addition, they provide access to virtual services, such as electronic delivery of documents, virtual reference service, viewing of electronic library exhibitions (review of new literature in the format of electronic slide presentations or images of annotated book covers) (Lobuzina, 2012). For example, web-based bibliographic guides, lists of useful websites, and other navigation materials are becoming a necessary element for libraries in the modern information environment. Each library is actively working to create such resources that contain selected and verified information for prompt and high-quality user service.

One of the forms of reference and bibliographic services for remote users is reference service in the virtual reference service mode. This is an innovative approach that allows providing access to information resources and library services online. This service provides users with the opportunity to get the necessary information and consultations anytime and anywhere. The main principles of the virtual reference service are: general accessibility, openness, and free of charge for all users; promptness of request fulfillment; mandatory processing of milestones of accepted requests and provision of a response; as well as mandatory notification of the impossibility of fulfilling the request; interpersonal communication between librarians and remote users, as noted O.S. Onishchenko (2024). Its main characteristics are the following advantages (Table 2).

Table 2. Benefist of the Virtual Help desk

Online accessibility (users can obtain information through the library's website; e-mail; chat or other special messaging platforms)	A wide range of services: the virtual reference service provides access to a variety of services, such as information search, assistance in using databases, preparing research papers	Accessibility support. The virtual reference service allows the library to ensure accessibility of its services for different categories of users: people with disabilities and those who are in different time zones	Monitoring and analysis: information about users' requests and needs can be used to improve the quality of service and develop the library's collections

Source: developed by the author

It is worth noting that one of the most recent innovations in the library and information sector is mobile libraries. For example, here is the Vinnytsia mobile library "Ideas Box" for leisure and youth development. On October 24, 2022, a presentation of the library was held at the regional Youth Center "Square". According to the Official website of Vinnytsia Regional Military Administration (2024), the "Ideas Box" mobile library, developed by the organisation Bibliotheques Sans Frontieres (Libraries Without Borders), is an innovative non-formal learning tool aimed at children and youth. This mobile learning center is equipped with a variety of resources, including Internet access, a printer, tablets, board games, e-books, paper books, and a movie theater. The goal of this initiative is to provide access to education and culture in places where these resources may be limited or unavailable. The "Ideas Box" mobile libraries at KVADRAT serve not only as places for recreation, but also as centers for education and youth development. Thanks to the wide range of available resources, they create unique conditions for meaningful leisure and self-development. In addition to entertaining board and computer games, each tablet is equipped with educational materials in English, German and French for individual study. This allows young people to develop their skills and improve their knowledge in a way that is convenient for them, contributing to their personal and professional growth. In times of war, the mobile library functions as a space for the integration of internally displaced persons. Victor Tchaikovsky, Head of the IT sector at KVADRAT, noted that the main advantages of such mobile libraries are their independence from power supply and access to mobile Internet (Official website of Vinnytsia Regional Military Administration, 2024). This means that they can be deployed anywhere, even in areas with limited or no infrastructure. Their autonomy is ensured by their own power generator, which allows them to operate without interruption and provide access to cultural and educational resources even in remote or crisis areas.

For example, in the early 1850s, the idea of mobile libraries in the form of "walking libraries" pulled by horses appeared in England. This approach made it possible to provide access to books in remote and sprawling areas. A similar initiative was also introduced in the United States in 1905 in Washington County, Maryland, where the first mobile library of its kind was established. In the United States, bookmobiles serve users of various groups: schoolchildren, nursing homes, hospitals, and prisons. These mobile libraries provide access to literature and other information resources to those who cannot physically visit regular libraries (Mobile Libraries…, 2024).

In the 21st century, the Internet provides many opportunities for reference, bibliographic and information services to users, which primarily led to a revision of traditional approaches in the activities of library staff, including bibliographers. Library staff must be able to use the Internet to search, analyse, and evaluate information, and become experts in the use of digital

resources. Such reorganisation of reference and bibliographic services is becoming necessary to ensure effective service in a rapidly changing digital reality.

It is worth noting that the reference service in the library was launched by Melvil Dewey back in 1884, when he worked at Columbia College (now Columbia University, USA). This service has undergone numerous changes, especially with the advent of Internet technologies. The first attempts at real-time virtual communication with users took place in the mid-1980s in the United States, initially through e-mail, and from the 1990s to 2024, mainly through the "Ask a librarian" service. It is quite difficult for a remote user to navigate the information products offered by the library or to search for information on the Internet on their own. Accordingly, a new form of reference service for remote users "Virtual Reference Service" has become widely used. In the professional literature, the following synonyms for the term "virtual reference service": "chat help", "electronic help", "digital help". The polysemy of the term does not refute the importance of reference and bibliographic services, but rather enhances its significance. All of them mean reference and bibliographic services for users that take place in the electronic environment using various communication channels: e-mail, chat, web forms (Prygornytska, 2013).

In Ukraine, the introduction of such a service dates back to 2003. In the age of digitalisation, electronic reference services should provide a wide range of services: professional thematic search; making inquiries about the availability of publications and clarifying the background information of documents stored in the collections of a particular library; search for factual information; navigation of the library website; navigation of Internet resources; formation of electronic collections of reference and bibliographic publications (Kovalova, 2013).

H.M. Shvetsova-Vodka (2004) interprets the term "virtual reference" or "virtual reference and information service" and uses them as synonyms for similar terms: "digital reference", "electronic reference", "live reference". Online reference and bibliographic services are when a user can submit his or her information request via the Internet and receive a response in the same way. This saves time for the user, and for the library it is good advertising and popularity as a reference and information center. The author distinguishes the following types of library reference and bibliographic services via the Internet: via e-mail; chatting; organisation of the "Virtual Reference" service under a special program. Almost all researchers support this position. In particular, S. Chukanova (2012), a researcher who studies traditional and virtual library services.

One of the most important for website users is the virtual reference service section, which is a product of the library's information and analytical activities. This section provides for the preparation and provision of information and reference products, including answers to users' requests, recommendations on how to search for information, as well as access to various resources and databases. The virtual reference service provides prompt and convenient access to the necessary information, which increases the efficiency of user service and expands the library's capabilities in the digital environment.

Research confirms that the most accessible and popular service among library users is the Virtual Reference service, due to its high convenience and accessibility. In contrast, e-mail services are not widely used as an independent form of reference and bibliographic services. Chat-based consulting also requires a significant investment of time, as well as constant access to the Internet (Official website of Ternopil Regional Universal Scientific Library, 2024). The website can be accessed quickly and easily from any search engine. The Virtual Reference Service is a separate section. Before creating a request, the user must familiarise himself with the Rules of the Service, such as: 1. General Provisions (basic principles of work: general accessibility, openness and free of charge for all users; promptness of fulfillment of requests; mandatory processing of all requests and provision of a response). 2. Rules of operation of the LDC (universality: for all categories of users, regardless of whether the user is a library reader). Separately, information about restrictions in the fulfillment of the request, in particular: incorrect requests are deleted, issues related to writing scientific papers are not taken into account, and inquiries requiring complex scientific and professional search are not fulfilled. The full list is available on the library's website.

It is mandatory for the user to clarify the purpose of the request and the amount of information required. Librarians-bibliographers perform various types of references, such as thematic, local history, factual, clarifying, address references. In virtual reference and bibliographic services, the problem of repeated requests often arises. Therefore, a characteristic indicator of the service is the presence or absence of an electronic archive of completed references, which allows to effectively manage and analyse user requests. That is why the Rules of the Virtual Reference Service on the library's website state that before asking a question, it is recommended to consult the "Reference Archive" (Official website of Ternopil Regional Universal Scientific Library, 2024). If the user does not find a "ready-made answer", then he/she registers on the website and fills in all the fields of the form. Electronic help desks have a number of advantages, as they allow anyone to contact anyone, from any location and at any time. The user receives a written, qualified response by email within one to three days, depending on the complexity of the request.

Registration form of the virtual help. The purpose of the innovative library service is to fulfill one-time

requests of virtual users. Anyone can use it, regardless of the fact of their registration, age, level of education, place of residence. Before making a request, the user should familiarise himself with the Regulations on the virtual help desk. Clear announced rules provide a comprehensive answer in order to correctly form an information request. The registration form is simple, you need to fill in all the fields (name, email, select the category to which the user belongs, the purpose of the request and select the send button) (Fig. 2).

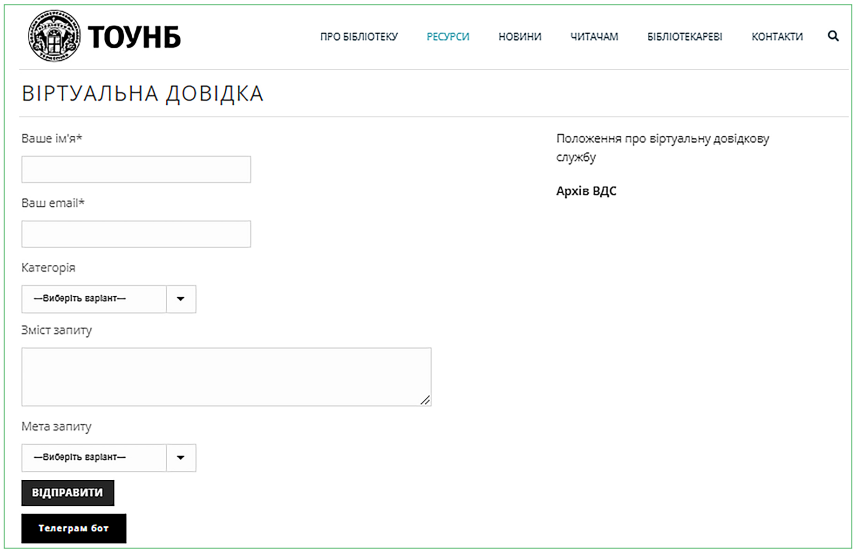

Figure 2. Registration form of virtual help
Source: based on Official website of Ternopil Regional Universal Scientific Library (2024)

The archive of certificates can be searched manually by browsing the array of requests formed in chronological order by year (since 2017), and then within a year, by the subject of user requests. Each completed certificate contains information about the person who prepared it (Fig. 3).

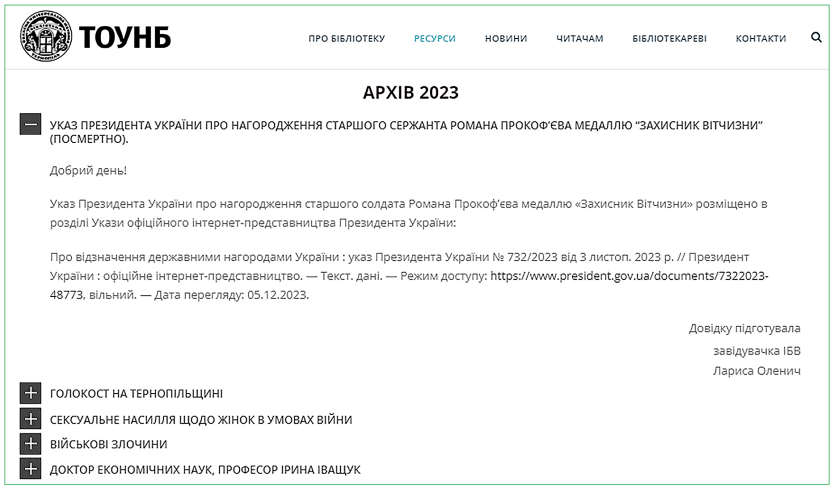

Figure 3. An example of a completed virtual help
Source: based on Official website of Ternopil Regional Universal Scientific Library (2024)

Official website of the Poltava Regional Universal Scientific Library named after I.P. Kotliarevsky (PRUSL) (2024) can be accessed quickly and easily from any search engine. The "Virtual Bibliographic Reference" of the I.P. Kotliarevsky POUNL offers the same services as the TBNL. The archive of questions can also be searched manually by browsing the array of queries formed in chronological order. The search by month and year (since November 2009) is excellent. Also on the website of the I.P. Kotliarevsky POUNL, for efficiency and ease of search, the user is offered a field where he can search for information by keyword or phrase. In contrast to the TOSL, the website of the I.P. Kotliarevsky UDL does not list the bibliographer by name.

On the library's website, in the Library Services section, there is a Virtual Help. The registration form is quite simple and convenient. In the fields of the form, you need to enter your name, email, question, enter a secret code, duplicate it again and send the generated request. Also, before the registration form, the Rules for the use of the Virtual Help Service are submitted, which the user must familiarise himself with before starting to formulate a request. It is also posted on the Archive page of questions submitted by month and year of implementation (Fig. 4). This is how the execution of an information request on the website is designed: in the form of Questions and Answers (Fig. 5).

Figure 4. Registration form of virtual help

Source: based on Official website of Poltava Regional Universal Scientific Library named after I.P. Kotlyarevsky (2024)

Figure 5. A sample of completed Virtual Certificate for April, 2024

Source: based on Official website of Poltava Regional Universal Scientific Library named after I.P. Kotlyarevsky (2024)

In general, the Virtual Reference service in both libraries is quite well represented, as the answer is relevant to the user's request and is provided promptly. In contrast to the centuries-long development of libraries in the world, the formation and development of libraries in the U.S. dates back to the 19th century. During this period, public libraries began to form in the U.S., becoming important cultural and educational institutions. In particular, in 1854, the Boston Public Library was opened, which became one of the first large free libraries in the country.

L. Filipova (2020) notes that modern libraries in the United States, including public and academic libraries, are an important element of the country's digital infrastructure. They provide access to the Internet, digital books, audio recordings, images, databases, electronic

reference and information services, and have professional librarians who support these resources and help users navigate the digital world. All public libraries in the country provide Internet access, and most of them are the only provider of free access to online resources in local communities. This is made possible by the financial support of patrons, government programs, and the assistance of local communities. Thanks to modern technologies, libraries have become not only knowledge storage centers but also active participants in the life of their communities. They organise educational programs, digital literacy trainings, seminars, and cultural events. In addition, libraries adapt their resources to the needs of users with special needs, ensuring that information is accessible to all. Libraries are funded through a variety of sources, including government grants, private donations, and partnerships with non-profit organisations. This allows libraries to expand their services and introduce new technologies to improve the quality of user experience.

There are more than 9000 public libraries in the United States (16000 with branches) that offer free access to books, computers, the Internet, and educational activities across the country. As noted by L. Filipova (2020), the future trend of digitalisation in American libraries, where projects are already being developed to introduce artificial intelligence (AI) technologies into their activities. Libraries are adapting their work to new technologies, and such projects are already predominantly used in academic libraries. For example, the Massachusetts Institute of Technology (MIT) is working to create a technical infrastructure so that library collections can use machine learning algorithms and be read using AI tools. This allows not only to automate processes but also to provide users with more accurate and relevant search results. Other new developments include the use of bots in academic libraries. For example, at the University of Oklahoma library, a chatbot helps students with questions about searching subject databases. Chatbots can answer standard queries, direct users to the right resources, and even provide advice on information searches. However, experts are concerned whether this technology will lead to the replacement of human librarians with their technological counterparts. This issue raises discussions about the role of librarians in the future and the need to adapt their professional skills to new conditions. The introduction of AI and other innovative technologies in librarianship will continue, but it is important to strike a balance between technological innovations and the human factor, which remains key to effective user service.

Deborah Long, assistant director of Louisville Public Library (Ohio), as a user of this libary, shares an interesting innovative solution in user service (Fig. 6). The author notes that the library has created a separate room that has been converted into a multifunctional space – a sensory room with an Experia USA play floor. The room was created by Experia USA. The gaming area is equipped with a projector for displaying educational and sensory games, a computer with a motion sensor, software, and a foam mat. In particular, the motion sensor allows the software to respond to the player's movements. The room can be booked in advance to meet the needs of the user, both for educational and leisure purposes (Smith, 2022). For teenagers, it is used when watching sensory fairy tales, for adults – during yoga classes on chairs (adults sitting on a chair can touch the floor with their feet and be in a simulated pond with fish). While in the sensory room, library users can jump in a pile of virtual leaves, create fire works on a rug, and simulate playing the piano, creating beautiful patterns with their movements. For example, the sensory room plays an important role for users with special needs, in particular, children with autism like "The Hungry Hippos" game, where a child steps on a virtual lever to make the dragon eat the balls. Such innovative solutions implemented in the library turn them into active participants in social and cultural life (Conway, 2022).

Figure 6. Louisville Public Library (Ohio)

Source: based on C. Smith (2022)

This approach and innovative solutions in the public library of Ohio turns it into an active participant in cultural and social life, transforming to meet the needs of everyone, providing a useful and interactive recreation for both children and adults.

Conclusions

Librarianship is constantly changing and adapting to the requirements of the present, obviously in a state of significant dynamic changes caused by the rapid development of technology and transformations in the information environment. One of the key trends in the development of libraries is the growing role of electronic technologies. In particular, libraries are the third millennium actively using online resources to provide reference and bibliographic services, which allows users to have quick and convenient access to information even in remote regions. Online reference services are becoming increasingly popular, as they provide users not only with information but also with the opportunity to interact with librarians and other users to share experience and knowledge.

One of the key aspects of these changes is the transition to the virtual space, which opens up new opportunities for libraries in the field of user services. Online reference and bibliographic service is an important element of this process, which allows to provide access to information even in the absence of a physical presence in the library. This approach helps to optimise the processes of searching for and obtaining information, making them more efficient and convenient for users. Thus, the development of online reference and bibliographic services is becoming an important task for modern libraries aimed at improving the quality of service and meeting the needs of users.

In particular, cloud services have really changed the paradigm of libraries, expanding their capabilities and making access to information more convenient and efficient. These technologies allow libraries to offer a wider range of services, including access to electronic resources, virtual consultations, online courses and other forms of distance learning. Thus, libraries are turning into real digital information centers that meet the needs of the modern user for information and knowledge. Libraries, including public libraries, are actively using Google's cloud services to facilitate their work and improve user access to information. For example, Gmail is used to communicate with users, and YouTube is becoming a convenient channel for publishing video materials, including video tutorials, cultural programs, and presentations. Hangouts allows for video conferencing and chats, which allows libraries to hold online meetings, consultations, and even virtual events for users. These services help to improve user experience and empower libraries in the virtual environment.

The intellectual aspect of librarianship is shaped both by the external environment and by the high level of librarians' awareness of innovative technologies and forms of service. Accordingly, innovative approaches contribute to the continuous development and improvement of libraries, which contributes to the growth of both the qualifications of library workers and the library sector as a whole.

Prospects for further research are in the most comprehensive study of remote service of virtual users in Ukrainian and foreign libraries, because the advantage of using modern technologies in library service makes it possible to provide high-quality services to various categories of users.

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Conflict of Interest

None.

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Інформаційно-бібліотечне обслуговування користувачів бібліотек: інноваційні підходи та векторні модифікації

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Анотація. Актуальність дослідження полягає у поглибленому аналізі проблем розвитку і трансформації бібліотечно-інформаційних послуг, а також у зміні запитів користувачів та інформаційних потреб, зумовлених інформаційним розвитком суспільства. Мета – дослідити переваги використання новітніх технологій та сервісів в інформаційному обслуговуванні в контексті досліджень українських бібліотекознавців; проаналізувати динаміку розвитку бібліотек та їх модифікацію в системі обслуговування користувачів. У дослідженні використано загальнонаукові методи (аналіз, синтез, узагальнення) та підходи: соціокультурний, соціально-комунікативний, системний. Сучасні виклики інформатизації суспільства та стрімке розширення обсягів і змісту інформаційних ресурсів порушують питання про перегляд методів роботи у сфері довідково-бібліографічного обслуговування бібліотек. Це вимагає розробки наукових засад сучасної діяльності довідково-бібліографічних служб, спрямованої на інформаційне забезпечення користувачів і заснованої на системному підході до формування, організації та використання довідково-інформаційних ресурсів. Також у дослідженні вивчено тенденції використання хмарних сервісів як інноваційного інструменту в бібліотеках в епоху цифровізації, що став ефективним засобом розширення можливостей віддаленого доступу до бібліотечних фондів, ресурсів, сприяння зберіганню та аналізу даних для більш зручного обслуговування користувачів. Результати дослідження можуть бути важливими для працівників методичних та бібліографічних відділів, інтернет-центрів бібліотек, а також слугувати основою для більш детального вивчення окремих аспектів цієї теми бібліотечними фахівцями-практиками, викладачами та студентами, які навчаються за програмами інформаційно-бібліотечних спеціальностей. Вони також можуть бути корисними для поповнення інформаційної бази з питань організації та розвитку довідково-бібліографічного обслуговування в бібліотеках

Ключові слова: трансформація бібліотечної галузі; інноваційні бібліотечні технології; довідково-бібліографічне обслуговування; дистанційне обслуговування; електронні бібліотечні ресурси; хмарні сервіси; мобільні бібліотеки

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The role of Ukrainian zemstvos in the formation of their public library space

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Abstract. This research into the participation of local self-government bodies in the second half of the 19th and early 20th centuries in the formation of Ukraine's public library space is crucial given the need to study the factors that influenced the creation of Ukrainian book culture, national consciousness, and state-building. This study aims to characterise the role of Ukrainian zemstvo self-government bodies in the establishment of the Ukrainian public library space during the second half of the 19th and early 20th centuries. The research methodology is based on the principles of scientific rigour, historicism, sociocultural and modernisation approaches, as well as general scientific (induction, logic, analysis, synthesis) and specifically historical methods: narrative, historical-genetic, and structural-functional analysis. The cultural and educational development of the Ukrainian village by zemstvos, a component of which was their public library work, from the 1860s until the fall of the Russian Empire, was a major direction of activity of these self-governing institutions, upon whose success the national progress of Ukrainians depended. In this sphere, the foundation was laid for the future public space of the Dnieper Ukraine. The establishment, at the expense of zemstvos and through their organisational efforts, of public libraries with broad, free access for all village residents, alongside the development of rural schools, was the alpha and omega of peasant Ukrainian life at that time. It shaped the region's book culture and elevated the social activity of the largest social class. Thanks to the democratic zemstvo intelligentsia, during the revolution of 1905-1907, demands were made to increase the network of rural libraries, cooperation between zemstvos and Prosvitas expanded, and the Ukrainian printed word became more entrenched. The emergence of peasant republics in 1905, one of which was in Sumy, where peasants published a newspaper declaring the tsarist authority abolished, against the backdrop of zemstvo achievements in expanding the network of public libraries and education, demonstrated that the early 20th century marked an intensification of public library development in Ukrainian villages. This period also saw the maturation of the national consciousness among peasants and laid the groundwork for the Ukrainian Revolution of 1917-1921, a pivotal stage in Ukraine's state-building efforts. The study of this topic will contribute to understanding the role of local self-government bodies in the functioning of Ukraine's public library space under modern conditions, national identification among Ukrainians, and their consolidation in the face of hostile invasions

Keywords: public libraries; local self-government; zemstvo self-government; people's libraries; rural libraries

Introduction

The effective operation of local self-government institutions is a realisation of the principles of popular sovereignty and contributes to the strengthening of democratic institutions. In 2022-2024, when Ukrainians are resisting a full-scale Russian military aggression, fighting for their right to a sovereign state and physical existence, demonstrating loyalty to the values of the Western world, and integrating into the European social and political space, it is extremely important to actualise the roots from which the branches of democracy in Ukraine have grown. At the same time, the significant role of libraries in national progress is

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undeniable, as the communicative environment created by book culture spreads certain ideas and determines public dialogue in solving social problems. Given this, defining the role of local self-government bodies in the second half of the 19th and early 20th centuries, in particular, in the establishment of the Ukrainian public library space serves to understand the achievements of Ukrainian library development, the development of effective local self-government, the national identification of Ukrainians, and their consolidation in the face of Russian military aggression.

Ukrainian library development in the second half of the 19th and early 20th centuries, particularly in the realm of public libraries, has not escaped the attention of researchers. However, this topic has not received comprehensive consideration in contemporary academic discourse. The activities of rural public libraries, which were under the jurisdiction of zemstvos, have been highlighted fragmentarily and primarily in regional studies. L. Luchka (2008) devoted attention to the functioning of rural libraries and the participation of zemstvos in this process within the context of Katerynoslav province. In particular, in her article "Libraries of the early 20th century Ekaterinoslav province: History of formation and development (based on "Materials on the history of public libraries of cities and zemstvos of Russia")", the researcher, based on the processing of historical sources, provided a detailed description of the state of library affairs in the region. In another study, "The zemstvo of Katerynoslav region and the filtration of library collections in the second half of the nineteenth and early 20th centuries", historian L. Luchka (2018) characterised the attitude of conservative zemstvo members towards library affairs in her region.

O.B. Ajvazian (2014) dedicated a study to the Podillia region. In her research "Public libraries of Podillia province in the late 19th and early 20th centuries", the author analysed the activities of rural libraries in this region from the late 19th to the early 20th century and characterised the contribution of zemstvos to their establishment. In a more extensive and detailed study created in collaboration with O.B. Ajvazian & V.S. Prokopchuk (2016), the evolution of library affairs in the Podillia region is presented within a longer period – throughout the second half of the 19th century until the beginning of the Ukrainian Revolution of 1917-1921.

The development of rural libraries in Southern Ukraine and the participation of democratically-minded zemstvo activists in this process has become the subject of study by N. Khersonets (2012). O.V. Volos (2010) highlighted the contribution of zemstvos to rural library development in the Kherson part of southern Ukraine. K.S. Buhaienko (2021) focused on rural libraries in the Cherkasy part of this region. In particular, she demonstrated the number of rural libraries in the counties of this governorate based on statistical data. N. Prots (2020) examined the assistance provided by Kharkiv zemstvos to the establishment of rural libraries. She focused on the problems of financing and supplying rural libraries in this region and their cooperation with public organisations.

Overall, researchers have given insufficient attention to zemstvo self-government as a factor in the formation of rural public library spaces. In light of this, there is a pressing need to synthesise the experience of zemstvos in shaping the public library space of Ukraine during the second half of the 19th century and the early 20th century.

This research aims to determine the impact of zemstvo self-government bodies on the formation of Ukraine's public library space in the second half of the 19th and early 20th centuries.

Scientific novelty – for the first time in historiography, the role of zemstvo self-government bodies in Dnieper Ukraine in shaping its public library space in the second half of the 19th and early 20th centuries is characterised in the context of Ukrainian library development and the creation of preconditions for the development of a national public space.

Materials and Methods

The methodological foundation of this research was based on a comprehensive combination of various approaches and methods, allowing for a deep and comprehensive study of the topic. The principles of scientific rigour ensured objectivity and accuracy throughout the research process, helping to avoid subjective judgments and speculation while guaranteeing that the results aligned with historical facts. The principle of historicism involved consideration of historical evolution and context, which was crucial for understanding the changes in library development in Ukrainian villages during the second half of the 19th and early 20th centuries. This approach also facilitated an analysis of how historical events influenced the development of libraries and their role in the lives of local communities. The sociocultural approach enabled an analysis of the relationship between library development and the sociocultural environment in which they operated. This helped to understand how libraries impacted the cultural and educational life of Ukrainian villages, and how societal changes were reflected in library activities. The modernisation approach allowed for an evaluation of the impact of imperial policies of social and economic modernisation on library development, particularly the formation and growth of rural libraries. This approach also revealed how modernisation processes affected the functioning of libraries and their ability to adapt to new conditions. The application of general scientific methods, such as induction, logic, analysis, and synthesis, ensured the systematic nature of the research. The inductive method allowed for generalisations based on the study of individual cases, which is

crucial for constructing a comprehensive picture of library development in Ukrainian villages. Logical methods helped structure the research, ensuring a coherent presentation of the material, thereby facilitating its understanding and interpretation. Analysis and synthesis enabled a detailed examination of specific aspects of library activities and the consolidation of the results, contributing to a well-rounded understanding of the subject matter. Specialised historical methods, such as narrative, historical-genetic, and structural-functional analysis, played a key role in the research. The narrative method helped reconstruct the history of library development by recounting significant events and facts from the second half of the 19th to the early 20th centuries. The historical-genetic method traced the origins and evolution of library activities, which is essential for understanding the role of zemstvos in the establishment of rural libraries. The structural-functional analysis method enabled the examination of libraries as part of a broader socio-cultural system, revealing their functions and significance within the context of social life. Thus, the combination of various methodological approaches and methods allowed for a comprehensive and impartial study of zemstvo self-government's role in rural public library development. It also facilitated the assessment of the achievements and challenges in this sphere, as well as the identification of its significance in laying the groundwork for the Ukrainian Revolution of 1917-1921.

Results and Discussion

The institutionalisation of the term "public library" dates back to the 1990s, although the first such libraries spread across Europe and the world from the 18th century thanks to international organisations like IFLA and UNESCO. These libraries are considered to be a vital tool and bastion of democracy, serving as centres of social and cultural life for local communities. By developing various communication channels and collaborating with local authorities on the development and implementation of socio-cultural programmes, these libraries meet the educational, professional, recreational, and other needs of local residents, providing broad access to information sources (Official website of The Great Ukrainian Encyclopaedia, 2024).

The emergence of the first public libraries in Ukraine dates back to the 1830s and 1850s. They were established based on collections from private individuals, state-provincial institutions, commercial entities, and educational establishments. I. Pryjmak (2015), T.R. Karoieva *et al.* (2015), and V. Sokolov (2020) point to the emergence of such libraries in Odesa, Kyiv, and Zhytomyr. Authors I.P. Stepanenko & L.F. Iziumova (2015) highlight the city of Zaporizhzhia in this regard. K.S. Buhaienko (2021) mentions the cities of Cherkasy, Kaniv, Chyhyryn, and Uman. V. Doroshenko (1949) notes that it was precisely in the 19th century that the first true libraries appeared – organised collections of books that became accessible to a wider range of people.

The introduction of zemstvo self-government in 1864, which extended its jurisdiction over rural areas, created conditions for the formation of public library spaces in villages. At that time, 90% of the population of Dnieper Ukraine resided in rural areas, which were home to the primary producers of goods and the main taxpayers whose labour significantly contributed to the income of this agrarian country. As zemstvo self-governing bodies were formed (both the deliberative (assemblies) and executive (boards)), these structures were based on a multistate principle. Zemstvo representatives included elected delegates from village councils – alongside representatives of the nobility, urban classes, clergy, and officials – who were often village elders, but potentially any member of the rural community (a self-governing entity within the volost) could become a leader of the volost. The direct functions of the zemstvos encompassed the management of local affairs shared by all residents of the districts and provinces. Democratically inclined representatives, along with hired employees of zemstvo structures such as hospitals and schools (the so-called "third element" of the zemstvo), actively promoted the democratisation of districts and provinces, primarily seeking to meet the needs of the peasantry. The level of education and organisation of the rural population was crucial for intensifying agricultural production and the success of modernisation measures, which the ruling class undertook on an empire-wide scale at the start of the era of the so-called "Great Reforms" (Verkhovtseva, 2011; 2018).

The active involvement of zemstvos in library development began in the 1870s, following a period of organisational consolidation and experience in local governance. A significant boost was provided by the government's 1871 authorisation for literate peasants to use school libraries and the publication in 1873 of the "Catalogue of books for use in primary public schools" (Khersonets, 2012; Karoieva, 2021). This catalogue included 91 theological works, 42 loyalist historical texts, and 59 fables, novellas, and stories. However, the 1876 Ems Ukaz, which prohibited the inclusion of books in the Ukrainian language in library collections, hindered the widespread development of rural libraries. Concurrently, libraries were being opened at zemstvo primary schools, initially funded by village communities. Gradually, the zemstvos assumed a significant portion of these costs. From the late 1870s, the zemstvos began organising a new type of rural library – public libraries – characterised by their universal accessibility and free services. Depending on whether books could be borrowed for home use or were only available for reading on-site, these institutions were referred to as either public libraries or public library reading rooms (Official website of Municipal Institution..., 2023; Zemlyaivolya.net..., 2024). As with zemstvo activities in general, their

involvement in libraries was overseen by the Ministry of Internal Affairs. Permission to open a library was granted by the local governor, who also approved, together with officials from local structures of the Ministry of Education, the charter of each library. The initiative to open a specific rural library was taken by the powiat zemstvo, while the governorate zemstvo supplied each library with sets of books (a government-approved selection) and funds for the initial furnishing of the premises. Powiat zemstvos were responsible for the day-to-day management of libraries, providing them with equipment, and paying librarians' salaries, while governorate zemstvos purchased books and periodicals, and compiled library catalogues. Libraries were often located in schools, volost councils, or the homes of doctors or teachers. Teachers typically became the first librarians. To oversee public libraries, boards were established, headed by representatives of local nobility, clergy, and doctors. Local zemstvo commissions also provided oversight for the libraries (Prots, 2020).

Following the assassination of Tsar Alexander II in 1881, the government intensified its surveillance of zemstvo activities and rural education in general. Restrictions became more stringent as the authorities sought to prevent the spread of revolutionary propaganda in the countryside. From 1884, the operation of rural libraries was regulated by the "Temporary Rules" and "Alphabetical Lists of Printed Materials Allowed in Public Libraries". In 1890, the "Rules on Free Public Reading Rooms and the Order of Supervision Over Them" were issued, which strengthened the control of officials and clergy over these libraries, particularly in terms of their collections. Library collections were restricted to educational, didactic, "monarchist", and religious literature, as well as publications from the "cheap library" series (Khersonets, 2012; Sharoshkina, 2017). However, works of a belletristic nature, which typically made up nearly half of a library's collection, as well as historical, agricultural, and natural science publications, were also permitted. Democratic-minded public figures condemned this selective distribution of literature in the countryside, advocating for the experience of European countries where there was freer access to the printed word (Prots, 2020).

The development of rural libraries was significantly impacted by their funding. Libraries were initially allocated a fund of 100 karbovanets (krbs), but subsequent funding could be significantly reduced or even cut entirely. For instance, in Chernihiv province in 1894, the zemstvo spent 60000 krbs on maintaining 247 reading rooms across all districts, but this figure dropped to just 15000 krbs in 1897. This lack of consistent funding adversely affected the quality of library collections and made it difficult to maintain adequate staffing. Inconsistency in funding and maintenance between powiat and governorate zemstvos further hindered the development of rural libraries. Often, they could not agree on the division of responsibilities and funds (Official website of Municipal Institution…, 2023; Zemlyaivolya.net…, 2024). As noted by I.P. Stepanenko & L.F. Iziumova (2015), in Katerynoslav province in 1897, there were heated discussions between powiat and governorate zemstvos regarding the maintenance of rural libraries. The governorate zemstvo rejected requests from powiat zemstvos for funding from the governorate budget, arguing that it was the responsibility of the district structures. Another problem was the dependence of zemstvos on rural communities in this area. These communities were expected to provide premises for the library, heat it if necessary, and pay the salary of a custodian. For example, in 1897 in Katerynoslav powiat, the local zemstvo abandoned plans to open reading rooms in its villages because no rural community provided suitable premises. For similar reasons, the development of public libraries in Zaporizhzhia was slow: between 1897 and 1898, such libraries were established in only 11 out of 22 villages in the Melitopol volosts.

A characteristic feature of rural library development was the cooperation between zemstvos and state, particularly educational, structures, as well as public societies. In 1888, at the request of the director of folk schools in Katerynoslav province, the local governorate zemstvo allocated 2000 krbs to fund rural libraries, which were distributed among all libraries in the region according to each powiat. In Kharkiv province, the governorate zemstvo actively collaborated with the Kharkiv Society for the Dissemination of Literacy among the People, as noted by researchers O.B. Ajvazian & V.S. Prokopchuk (2016) and N. Prots (2020). Researcher V. Siedykh (2019), analysing the activities of Committees for the Care of Public Sobriety in Kharkiv province in the late 19th and early 20th centuries, noted that libraries were used not only as a tool for providing information but also as a means of addressing social issues, such as promoting a healthy lifestyle.

Thanks to the work of libraries, zemstvo self-government had a significant impact on the cultural and educational development of rural areas. Zemstvo spending on these needs increased, and the range of activities diversified. In addition to traditional and, at the time, quite effective methods (such as homeschooling for children and adults, self-education groups), new initiatives were introduced. For instance, the organisation of zemstvo agricultural warehouses was initiated, which procured and distributed agrarian and educational literature, as well as instructional materials for schools among the peasants. This initiative was spearheaded in 1868 by the prominent scholar, Professor Mykola Beketov from Kharkiv University, who also served as a member of the Kharkiv powiat zemstvo. Between 1879 and 1890, powiat zemstvos purchased literature worth over 157800 krbs through this depot and subsequently opened their own warehouse (Prots, 2020). The adoption of this experience by zemstvos in other

regions significantly influenced the supply of books to rural libraries and increased the effectiveness of such zemstvo work. In Katerynoslav province in 1901-1902, there were a total of 2364 readers. Book circulation in this region was almost 13900 volumes. The free library reading room at the People's Reading Auditorium had about 1000 visitors. The Loshkarivka rural reading library served 649 people in 1901 (Luchka, 2008). In Kyiv province, as of January 1911, the largest number of folk libraries was opened in the Chornobaiv, Zvenyhorod, and Cherkasy powiats, as well as 13 libraries each in the Kaniv, Chyhyryn, and Uman powiats (Fig. 1).

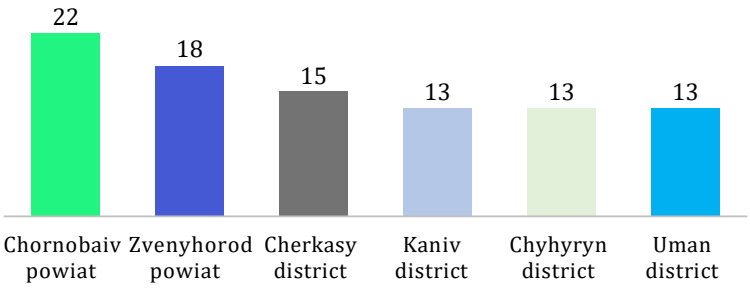

Figure 1. Number of rural libraries in the powiats of Kyiv Governorate as of January 1911
Source: compiled by the author based on K.S. Buhaienko (2021)

There was also progress in the organisation of library services: reader requests were fulfilled using handwritten and card catalogues, with the alphabetical catalogue being the primary one, although systematic and chronological catalogues were also compiled (Luchka, 2008). In addition to book lending, rural libraries engaged in educational activities. For instance, they organised readings that typically covered topics such as history, religion, agriculture, and general culture. For example, in Chernihiv province in 1902, 6000 people participated in 29 readings. In the right-bank governorates and Kherson province, lectures were given to audiences using "magic lanterns with foggy pictures", accompanied by illustrations using a special projector (Volos, 2010).

One stage in the development of public rural libraries was the advocacy of zemstvo members during the revolutionary movement of 1905-1907 for improvements to rural libraries. Zemstvo members championed the "right of citizenship" for the printed word in rural areas. In Katerynoslav province, they demanded the removal of restrictions on the number of periodicals and books in these libraries. Kharkiv zemstvo members proposed in 1906 to increase the annual maintenance of such libraries to 600 krbs (Prots, 2020). The culmination of popular resistance during the revolution was the creation in 1905-1906 of peasant republics – Sorochyntsi in Poltava province, Sumy in the same-named powiat, and others. In the Sumy Republic, in addition to the "abolition" of private land ownership and its transfer to the people, and other measures to democratise life, the "Peasant Gazette" was published, one of the issues of which the tsarist government was declared "outlawed" (Verkhovtseva, 2018). The publication of this newspaper and its transformation into a mouthpiece for the revolutionary peasantry became possible thanks to a certain level of book culture.

Concessions made by the government under pressure from the revolution included the repeal in 1905-1906 of the 1890 rules for rural libraries, which allowed for a greater diversity of books, and the lifting of restrictions on Ukrainian printed materials. Cooperation between zemstvos and Prosvitas, which contributed to the expansion of the rural library network, also increased (Ajvazian & Prokopchuk, 2016). As a result, the number of zemstvo rural libraries in Ukraine increased significantly. In total, 4094 zemstvo libraries were operating in Ukraine in 1910. The largest number of such libraries were in Volhynia province – 999; Kharkiv province – 789; Poltava province – 767; Katerynoslav province – 578; Taurida province – 327; Chernihiv province – 298; Kyiv province – 88; and Podillia province – 49 (Fig. 2). This strengthened the position of Ukrainian print, shaped Ukraine's book culture, and contributed to the national consciousness of the largest social group – the peasantry.

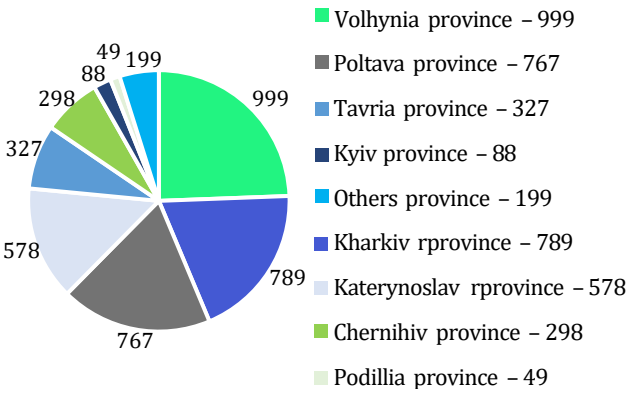

Figure 2. Number of zemstvo rural libraries by region in Ukraine in 1910
Source: compiled by the author based on O.B. Ajvazian (2014)

A negative aspect of zemstvo public library work was the emergence of reactionary zemstvo members who called for suppressing the political activism of peasants, as happened in Kharkiv province in 1912 (Prots, 2020). In Katerynoslav province in 1912, zemstvo members of Novomoskovsk powiat conducted a "filtration" of books, removing from the fund of the Popasnevska library-reading room and destroying as "unsuitable for their purpose" the publication "Moses as social reformer!" by the American publicist H. George and the play "Hedda Gabler" by the Norwegian playwright H. Ibsen (Luchka, 2018).

On the eve of World War I, zemstvos were granted new powers to facilitate the implementation of the government's project to introduce universal primary education in the country. Zemstvos received significantly increased state subsidies and were provided with favourable conditions for obtaining loans. Within this framework, zemstvo officials paid more attention to public libraries in rural areas. An additional impetus was given to this in 1911 during the First all-Russian Congress on Librarianship. In particular, the section on public and people's libraries, headed by S. Siropolko, emphasised the need for widespread democratisation of the library movement. This intensified the public library activities of zemstvos in rural areas (Volos, 2010).

The revolutionary spring of 1917 saw zemstvos transformed into organs of local self-government. The national-cultural activities of these institutions were intensified. Leaders of national governments saw zemstvo self-government as the foundation for Ukraine's democratic progress. Consequently, the role of this institution in developing the socio-cultural life of local areas was significant. Local Prosvita organisations provided substantial assistance, contributing to the establishment of new libraries and the replenishment of existing collections. As a result, the network of rural libraries in Ukraine expanded significantly (Sorochan, 2011). This laid the groundwork for the development of a Ukrainian public sphere in the Dnieper Ukraine, fostered national identity among the peasantry, and contributed to the Ukrainian Revolution of 1917-1921 – a pivotal stage in Ukrainian state-building. At the same time, this process was made possible by the preceding, almost half-century-long experience of public library work by Ukrainian zemstvos.

Conclusions

From the 1870s to 1917, zemstvos played a significant role in shaping the Ukrainian public library landscape. As part of their cultural and educational development efforts in rural areas, alongside the establishment of rural schools, they dedicated significant resources to opening public libraries. These libraries were freely accessible to all village residents, who constituted the largest social group in Ukrainian society during the second half of the 19th and early 20th centuries – the peasantry. Despite government restrictions on the dissemination of printed materials in rural areas, including strict control over the book collections and overall activities of rural libraries, the work of zemstvos in this area was democratic in nature. It fostered a book culture in the Dnieper Ukraine, encouraged social activism among the peasantry, and laid the groundwork for the development of a Ukrainian public sphere. The zemstvo self-government's library-building efforts faced challenges such as insufficient funding for rural libraries from zemstvo budgets, inconsistencies between district and provincial zemstvos in terms of their responsibilities for supporting these libraries, and the refusal of rural communities to provide premises for them. A crucial factor in this development was the cooperation between zemstvos, state educational structures, and public societies. With the onset of the 1905-1907 revolution, thanks to the efforts of zemstvo members, there was a noticeable increase in the network of rural libraries and the initiation of cooperation between zemstvos and Prosvitas in this field. In 1905, numerous state-like revolutionary formations, peasant republics, emerged in Ukraine. In the Sumy district, in such a republic, peasants published their own newspaper, in which they declared the tsarist government abolished. All of this evidence that at the beginning of the 20th century, thanks to the zemstvos, the intensive process of establishing public libraries in Ukrainian villages influenced the social activism of the peasantry, shaped their national consciousness, and created the preconditions for the Ukrainian Revolution of 1917-1921, which was of a democratic nature and became a key stage in Ukrainian state-building in the first quarter of the 20th century. At the beginning of this revolution, there was a rapid surge in library activity in Ukrainian villages. This was made possible by zemstvo's work in developing the public library sphere in the second half of the 19th and early 20th centuries.

A promising direction for further research on this topic is a detailed study of the activities of hired zemstvo employees (teachers, librarians, zemstvo administration officials) in Ukrainian governorates in the context of rural library development, with a focus on the oppositional and anti-imperial nature of this activity in the context of the formation of the preconditions for the Ukrainian Revolution of 1917-1921. Additionally, a deeper study of the cooperation between zemstvo self-government bodies and Prosvitas in rural library development at the beginning of the 20th century would be beneficial.

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Conflict of Interest

None.

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Земства України у формуванні її публічно-бібліотечного простору

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Анотація. Дослідження участі органів місцевого самоврядування другої половини XIX – початку XX століття у формуванні публічно-бібліотечного простору України є важливим завданням з огляду на необхідність вивчення чинників, що впливали на творення книжної культури України, національну свідомість українців, їх національне державотворення. Мета роботи – охарактеризувати роль органів земського самоврядування українських губерній у становленні українського публічно-бібліотечного простору впродовж другої половини XIX – початку XX століття Методологія дослідження ґрунтується на принципах науковості, історизму, соціокультурному й модернізаційному підходах, а також методах загальнонаукових (індукції, логіки, аналізу, синтезу) і спеціально-історичних: наративному, історико-генетичному, структурно-функціонального аналізу. Культурно-освітня розбудова українського села земствами, складником чого була їх публічно-бібліотекотворча праця, з 1860-х років і до падіння Російської імперії була магістральним напрямом діяльності цих самоврядних установ, від успіху яких залежав національний поступ українців. У цій сфері закладалася база майбутнього публічного простору Наддніпрянської України. Заснування коштом земств та їх організаційними зусиллями народних бібліотек із широким доступом до них на безоплатній основі всіх мешканців села, разом з облаштуванням сільських шкіл, було альфою і омегою життя тогочасної селянської України, формувало її книжну культуру, підносило суспільну активність найбільшої соціальної верстви. Завдяки демократичній земській інтелігенції під час революції 1905-1907 років висувалися вимоги щодо збільшення мережі сільських бібліотек, розгорталась співпраця земств із Просвітами, вкорінювалося українське друковане слово. Поява в 1905 році селянських республік, у одній з яких – Сумській, селяни видавали газету, якою оголосили царську владу скасованою, на тлі досягнень земств у розбудові мережі народних книгозбірень і освіти, засвідчили: на початку XX століття в українському селі інтенсифікувалося становлення публічно-бібліотечної справи, визрівали національна свідомість селян і передумови Української революції 1917-1921 років – ключового етапу українського державотворення. Студіювання теми сприятиме осмисленню ролі органів місцевого самоврядування у функціонуванні публічно-бібліотечного простору України за сучасних умов, національній ідентифікації українців, їх консолідації в протидії ворожим вторгненням

Ключові слова: публічні бібліотеки; місцеве самоврядування; земське самоврядування; народні бібліотеки; сільські бібліотеки

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