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Digital Art Collections of Libraries of Higher Education Institutions

Objective. Digital collections of artistic direction are of great value to society from cultural, social and economic points of view. The article aims to study the existing digital art collections created by libraries of higher education institutions, to analyse the subject matter, structure, assess the scope, accessibility and usability. **Methods**. The study was conducted on the basis of a content analysis of 5 digital art collections launched by libraries of leading higher education institutions of Ukraine: National University of Kyiv-Mohyla Academy, Ukrainian Catholic University, Scientific Library of Yurii Fedkovych Chernivtsi National University, Kyiv National University of Culture and Arts, Kharkiv State Academy of Design and Arts. **Results**. A content analysis of digital art collections of libraries of higher education institutions of Ukraine was conducted. Integration into the scientific and educational space of the studied collections occurs mainly through their use in the educational process and research practices, which allows us to state that the potential of the studied resources remains only partially realized. **Conclusions**. It was found that digital art collections are currently presented in a rather fragmentary manner within the framework of local digital projects of individual higher education institutions. The main problematic aspects of the technical, technological and organizational implementation of digital art collections were identified. Directions for their development were proposed.

Keywords: digital library; digital art collections; libraries of Higher Education Institutions; usability of digital art collections; digital cultural heritage

Introduction

Art collections in digital format are a powerful resource for the preservation and study of cultural heritage, visual culture, art history, and cultural anthropology. This is the basis for Digital Humanities. The world is dominated by trends in the preservation of artistic heritage by various participants in the information society through mass digitization, aggregation of digital collections within international digital platforms (Europeana, Gallica, Digital Public Library of America, etc.), representation in virtual exhibitions, modeling and reproduction of art objects based on artificial intelligence tools, 3D visualization, immersive technologies, etc. The vector of integration of digital art heritage into science and education by university libraries is actively gaining momentum. Ukrainian libraries in wartime conditions focus their activities mainly on the preservation of artistic cultural heritage. A few digitization initiatives are implemented by individual libraries with the aim of creating digital copies of art artifacts. Against this background, libraries of higher education institutions are increasingly playing the role of leading centers for the

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preservation, digitization and representation of works of art - painting and graphics, book design, sculpture and decorative and applied arts, architectural materials, examples of theatrical and musical art, cinema, photography, etc. However, now they face new important tasks of integrating digital art collections into educational ecosystems, their popularization in the digital space for a wide range of users, in particular representation on international platforms.

Literature review

Over the past decades, the world has been watching how many countries have implemented large-scale measures to digitize all possible artifacts and sources, create multimodal cultural content, and ensure its accessibility to a wide range of users. Cultural institutions are testing the latest technologies and methods of work, mastering digital platforms, and opening up new opportunities for expanding user audiences. The introduction of digital innovations is gradually changing the configuration of the entire cultural heritage sector: from the creation of resources to the consumption of cultural services, which is reflected in numerous scientific publications. However, today, as scholars note, digital infrastructures mainly function as data aggregation platforms (Humbel et al., 2025). Large-scale global digitisation efforts have so far resulted in the conversion of at least some of these collections into digital data (Colavizza, Blanke, Jeurgens, & Noordegraaf, 2022).

At the same time, theorists and practitioners increasingly emphasize that "cultural heritage consists of resources inherited from the past, in all their forms and aspects - tangible, intangible and digital (born digital and digitized), including monuments, places, landscapes, skills, practices, knowledge and expressions of human creativity, as well as collections held and managed by public or private institutions" (Barbuti, 2021). Against this background, it is emphasized that today "digitization and digital creativity are becoming social and cultural manifestations of the modern era" (Marina, 2021). And a new task is to rethink digital collections not only as technical infrastructures, but also as cultural objects and sources of knowledge for future generations in the long term (Barbuti, 2021). Such a task directly concerns digital collections of the artistic direction, the peculiarity of which is that they not only preserve works of art in digital format, but also provide them with new ways of existence, representation, interpretation and interaction.

Digital libraries and repositories are already being actively analysed in world science, while studies of Ukrainian university art collections are rare.

The objective is to investigate existing digital collections of the artistic direction created by libraries of higher education institutions, to analyze the subject matter, structure, assess the volumes, accessibility and usability of the collections.

Methods

The study was conducted based on content analysis of 5 digital art collections deployed by libraries of leading higher education institutions in Ukraine. Resource monitoring was carried out during June 2025.

Results and Discussion

Digital art collections created by university libraries are now becoming not only a repository of digitized artifacts, but also an interactive environment for their visualization, research, analysis, and interpretation. Thanks to the use of digital tools and methods, researchers are able to conduct multi-level comparisons, perform semantic analysis, track historical and cultural contexts, and create new models of artistic heritage representation. Thus, digital art

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collections are integrated into interdisciplinary research, becoming a valuable resource for historians, art historians, librarians, archivists, cultural scientists, etc. However, in Ukraine, various digital art collections are deployed only by individual HEIs.

The digital collection of National University of Kyiv-Mohyla Academy (https://dlib.ukma.edu.ua/) combines academic and private collections (the collection of Vira Vovk) and provides open online access with multimedia support to works of fine art by Ukrainian artists, folk art, manuscripts, photographs, and artifacts from different countries as examples of world cultural heritage. A separate component of the digital collection is the Art Collection of Kyiv-Mohyla Academy (https://dlib.ukma.edu.ua/exhibits/show/art-collection), which includes over 500 works. On the Omeka platform, it is categorized by genres: painting, graphics, sculpture, decorative and applied arts. Each object has a separate page with a description, bibliographic description, metadata (author, year, material, size, etc.). Some works are accompanied by extended scientific comments. Images are presented in high quality, which allows for detailed consideration. In some cases, several angles or photo options are provided, but there is no 3D format, which is relevant for the presentation of sculpture or decorative and utility objects. There is no "virtual room" function or interactive gallery. Users have access to a full-text search by title, author, keywords), but the search does not always support advanced parameters (for example, a filter by date of creation, technique, geography). The collection opens correctly on mobile devices. In general, the collection is oriented towards interdisciplinary use in science, education and cultural life and is available within virtual exhibitions and a virtual museum.

The Library of the Ukrainian Catholic University (UCU) within the digital library (https://dlib.ucu.org.ua/collections) presents collections that include graphic and historical and cultural objects, which are important elements of the artistic heritage. First of all, these are digitized liturgical books (XVII–XVIII centuries), important due to their historical, artistic and religious significance. A valuable visual archive of the historical city, consisting of 912 pre-war postcards with views of Lviv. Archives of the satirical and humour magazine "Lys Mykyta". As part of the Atla Digitization Grant program of the UCU, the library participates in the creation of a collection accessible to the world community through the Atla Digital Library: 37 unique Cyrillic editions of the XVII–XVIII centuries. (liturgical literature of the Lviv Dormition Brotherhood, as well as editions from Kyiv, Pochaiv, Univ). The value of UCU's digital collections lies in their illustrated antique engravings and manuscripts, decorative bindings, postcards, handwritten works and notes, which are of great importance to the history of book printing and artistic traditions.

Analysis of the user functionality of the UCU digital library makes it possible to state that it has a simple, intuitive and understandable interface – main menu, clear structure, sorting capabilities, search by tags. At the same time, the functionality is limited to a category overview and basic content viewing (only pdf, jpg formats). There is no multimedia support for objects that require it. For example, records have only text descriptions and are presented without digitizing audio tracks. The collections also lack personalization, interactivity and analytics tools that would create additional opportunities for user interaction with the content of the collections and allow it to be transformed into a full-fledged tool in the field of Digital Humanities and digital cultural heritage.

The Scientific Library of Yurii Fedkovych Chernivtsi National University is developing the digital library "Bucovinensia" (https://bucovinensia.chnu.edu.ua/), which is an important resource for the preservation and presentation of the cultural heritage of Bukovyna. It contains collections covering various aspects of the history, art and culture of the region with a total of 286 documents. In particular, works of fine art (miniature sculpture, portraits, paper miniature), rare books, film and phonographic documents, photo souvenirs (photos and negatives), collections of graphic and musical publications, etc. are of particular interest.

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The digital library "Bucovinensia" offers users convenient navigation. The collections are created by subject and type of presentation of digital objects. The interface allows searching by various criteria, which facilitates access to the necessary information. "Bucovinensia" is built using the digitized collections management system "The Information System "Digitized Content Visualizator" (IS DC-Visu)", which actually acts as a "showcase" of this digital library. It provides document filtering by categories, searches by collections, titles, authors, years and enables visualization of digitized content in a user-friendly digital format, supports viewing multi-page documents and a gallery mode. However, the project currently lacks artifacts in 3D format and multimedia objects.

A thorough analysis of the digital art collections of the Kyiv National University of Culture and Arts (https://dcvisu.knukim.edu.ua/) demonstrated an innovative and creative approach to their implementation. Currently, the DC-Visu portal hosts two active art collections: "The Wonder of Trypillia: A Virtual Museum of Works Inspired by Trypillia", which contains a 3D collection with reconstructions of Trypillia ceramics in digital format (3D models, photographs, identity); and "365: Chronology of Creative Resistance..." - a catalogue-calendar in image and PDF format (13 photos, 1 PDF) dedicated to design resistance (posters and graphic works). Filtering materials allows sorting by name, year, date, type of object, content format, themes, period, language, material, technology, enabling quick navigation through the large volume of objects presented. The projects have a distinct context - from cultural and historical (Trypillia) to social (creative resistance during the war). There are 3D models (a rarity in Ukrainian academic collections) and graphic/text objects.

A review of the digital art collections of the library of Kharkiv State Academy of Design and Arts (https://www.ksada.org/) allowed us to state the presence of thematic virtual exhibitions that present artistic content in a curatorial format. Kharkiv State Academy of Design and Arts implements several online exhibitions available through the academy's website: "Crimea is Ukraine!" — a book exhibition and a virtual exposition dedicated to the Crimean Tatar heritage; "Ukrainian Architecture in the Funds of Kharkiv State Academy of Design and Arts library", "Vasyl Yermilov (1894–1968) — Ukrainian Constructivism" — a detailed presentation of the artist's work. Other exhibitions are devoted to design catalogues, the work of teachers, etc. This approach demonstrates the library's comprehensive work on online representation of artistic materials. However, this is accompanied by major limitations, in particular, the lack of a separate platform or a developed digital infrastructure for the permanent preservation of art collections. Users are not able to create personal selections, agent recommendations, or interactive interaction. All exhibitions are implemented as separate events, but without a centralized art catalogue.

Thus, the study of digital art collections of university libraries in Ukraine showed that they are at the stage of formation and active development. Their content covers a wide range of materials – from fine art, architectural heritage and decorative and applied works to unique musical and graphic publications, postcards, liturgical books and photographs.

The collections selected for the study are the most developed digital resources of the artistic direction in Ukraine, which demonstrate a systematic approach to implementation, provide thematic classification of materials, and use modern platforms (Omeka, DC-Visu), which increases the convenience of their use.

The volumes of collections are currently small and vary from several hundred objects (NaUKMA, ChNU) to single exhibition projects (KSADA). There are isolated examples of the use of 3D models (KNUCA), which is rather a unique feature of the Ukrainian project.

Accessibility in most collections corresponds to international practices: open web access, support for mobile devices, basic search tools. At the same time, functionality is often limited to viewing images and PDF documents without multimedia integration.

Usability of collections also varies: from intuitive interfaces (UCU, Bucovinensia) to resources with limited search and lack of personalization or interactive interaction tools (KSADA).
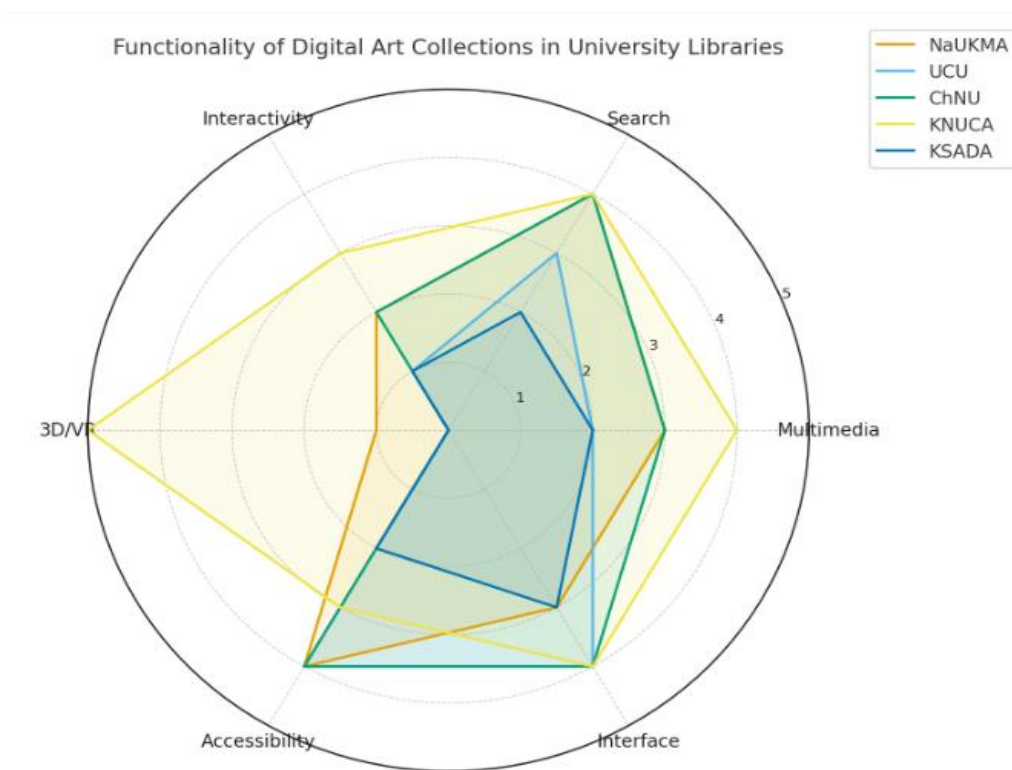

Fig. 1. Functionality of digital art collections of university libraries

Integration into the scientific and educational space of the studied digital collections occurs mainly through their use in the educational process and research practices, which allows us to state that the potential of the studied resources remains only partially realized.

Conclusions

Digital collections are a dynamic element of social growth and an important component of the new digital cultural heritage. However, in Ukraine their creation is carried out in a delimited manner, according to different standards, by various socio-communication structures, in particular, libraries of higher education institutions. The situation with the digitization of unique art collections of libraries and their representation in the digital space remains problematic. For example, as a result of the analysis of the resources of the library of the National Academy of Fine Arts and Architecture, not a single digital asset was found that would present the existing powerful fund of art materials of the library of this higher education institution. And this example is not a single one.

The conducted analysis of digital art collections of HEI libraries makes it possible to state that their user functionality currently corresponds to the level of academic digital resources, is sufficiently developed for viewing and familiarizing with art materials, but in many cases is limited for research and interactive work. In particular, among the problematic aspects that need to be resolved at the level of each digital collection, the following can be identified:

- Lack of detailed viewing of objects with metadata, image enlargement, extended description, designation of historical context;

- Uneven level of description of objects: part of the object (for example, a separate book cover) in the description contains a minimum of data;

- Lack of advanced search parameters (for example, filter by date of creation, technique of execution, geography, etc.);

- Lack of connections between collections (for example, access points "other works by this author", "similar works", etc.);

- Weak contextualization of objects in digital collections: providing additional information about the origin, history, cultural or scientific significance, connections with other objects, events, phenomena, figures, etc.);

- Lack of tools for personalizing user work (user bookmarks, personal accounts, selections, exhibitions, adding tags to collection objects, etc.);

- Lack or absence of interactive functions, multimedia tools, artificial intelligence technologies (for example, automated image analysis), 3D formats, AR and VR technologies and scenarios for their use by users of collections (virtual rooms, interactive galleries, reconstructions, games);

- Lack of user interaction tools: commenting, discussion, evaluation, sharing on social networks directly from the site;

- Lack of integration with digital research services (API, web analytics);

- Lack or weak optimization of resources for mobile devices;

- Non-compliance with the WCAG 2.1 accessibility criteria of digital collections content for people with disabilities.

Therefore, the technical, technological and organizational aspects of creating digital art collections require a more reflective approach. The strategic task should be the management of these resources, which will guarantee long-term preservation, accessibility for various users, compatibility and their reuse.

Despite the fact that the transmission of artistic heritage has already become revolutionary thanks to digitization, the current task is to find new ways for its mastery by users, primarily in the educational sphere. In particular, this can be achieved through the creation of detailed 3D scans and high-precision digital copies or models of art artefacts in collections; their implementation in the functionality of artificial intelligence technologies, elements of virtual and augmented reality, the Internet of Things; the use of gamification approaches and user involvement in interactive exhibitions, virtual tours, etc.

The specific weight in the development of digital art collections should be given to the study of the user audience and the creation of a higher value of artistic heritage, which can be conveyed through a personalized approach, in particular in higher education institutions. In addition, digital art collections should become not only a resource for academic, educational and public use, but also the basis for the implementation of cultural diplomacy – the representation of Ukraine in the international space through artistic heritage.

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Цифрові мистецькі колекції бібліотек закладів вищої освіти

Мета. Дослідження наявних цифрових колекцій мистецького спрямування, створених бібліотеками ЗВО України, аналіз тематики, структури, оцінка обсягів, доступності та usability. **Методика**. Дослідження проведено на основі контент-аналізу 5 цифрових мистецьких колекцій, започаткованих бібліотеками передових ЗВО України. Моніторинг ресурсів здійснювався протягом червня 2025 року. **Результати**. Проведено контент-аналіз цифрових мистецьких колекцій бібліотек ЗВО України. **Висновки**. Констатовано, що мистецькі цифрові колекції нині доволі фрагментарно представлені в межах локальних цифрових проєктів окремих ЗВО. Виявлено основні проблемні аспекти техніко-технологічної та організаційної реалізації цифрових мистецьких колекцій. Запропоновано напрями їх розвитку.

Ключові слова: цифрова бібліотека; цифрові мистецькі колекції; бібліотеки закладів вищої освіти; зручність користування цифровими мистецькими колекціями; цифрова культурна спадщина