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SPECIFICS OF USING DIGITAL TECHNOLOGIES IN THE DESIGN OF LITERARY AND ART PUBLICATIONS

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The article examines current trends in the application of digital technologies to the design of literary and art publications and discusses their implications for the future of the field. It explores how augmented reality, QR codes, gamification, and interactive typography can be integrated into book design and layout. The paper identifies key challenges faced by the publishing industry in adopting innovations, including limited technical resources, insufficient digital competence, and resistance to change. Examples of digital components incorporated into literary and art editions are analyzed, demonstrating how content, aesthetics, and interactivity can be effectively combined. The study highlights the potential of QR and augmented reality technologies as tools for enhancing engagement with younger audiences. Future research should focus on developing methodological guidelines for integrating innovative design and technological solutions, taking into account genre-specific features and modern printing capabilities.

Keywords: *digital technologies; literary and art publication design; augmented reality; QR codes; gamification; interactive design; book layout.*

Problem statement. In today's world, as the way people perceive information continues to evolve and visual experience gains importance, traditional art book publishing faces the need to rethink how content is presented to meet the expectations of younger audiences.

Despite the rapid advancement of digital technologies, the publishing industry still shows limited integration of innovative solutions into the design and layout of literary and artistic publications. This results in several challenges. Printed editions often lack interactive or multimedia elements, reducing their appeal to readers accustomed to digital platforms. Modern tools such as augmented reality, adaptive typography, and innovative layout design remain underused, although they could greatly enhance the aesthetic, communicative, and informational value of books. In addition, there is a shortage of practical methodological frameworks for incorporating digital technologies into publishing processes while considering genre specifics and the ways contemporary readers perceive digital content.

Analysis of recent studies and publications. To enhance user experience in modern media, there is a growing trend toward integrating digital technologies into print publications. Augmented reality (AR) and cross-media formats, in particular, enable the creation of interactive content that combines traditional print with video, audio, and

animation. Studies show that these technologies increase reader engagement, broaden interpretive possibilities, and foster a deeper understanding of a book's content [1–2]. In education, AR tools are increasingly used to motivate children to read, creating new forms of interaction where physical books are complemented by virtual elements, making the learning process more engaging and accessible [3].

In Ukrainian book publishing, notable progress has been made in implementing digital innovations. Multimedia projects that merge print with digital components are forming a new paradigm in which books are perceived as multimedia platforms. These practices enhance the informational density of publications and help establish a modern publishing culture aligned with the dynamics of the globalised media space.

Noteworthy examples include *Mozart 2.0* by Dorzh Batu (Staryi Lev Publishing House), which integrates QR codes linking to music and animation that deepen the artistic context of the text [4]. Valery Markus's "Traces on the Road" combines prose with video materials, intensifying emotional engagement and documentary authenticity [5]. Max Kidruk's "Until the Light Goes Out Forever" is accompanied by a mobile app with an interactive map and chatbot, providing a new level of reader immersion. Mariana Savka's poetry collection "Optics of God" employs colour filters to reveal hidden illustration layers, highlighting the author's distinctive visual concept. Finally, Aliona Vorobyova's art book "The Art of Living During Chemotherapy" fuses digital communication aesthetics with classic typography, creating a multilayered representation of personal experience [4].

Overall, the analysis of scholarly and literary-art publications demonstrates that digital technologies – especially augmented reality and multimedia formats – are becoming integral to contemporary Ukrainian book publishing. They are shaping a new concept of the book as an integrated platform that unites print, visual, audio, and digital elements, reflecting the evolving ways in which modern readers perceive information.

Purpose of the article. The main objective of the study is to analyse the challenges of introducing and implementing innovations in publishing and to explore innovative approaches to book design and layout, taking into account genre specifics and the current technological capabilities of printing production.

To achieve this objective, the following tasks have been set:

- to identify key challenges in adopting innovations within the publishing industry;
- to explore innovative design and technological approaches to book layout and visual composition;
- to substantiate the choice of interactive and stylistic techniques for book design according to literary genre.

Presentation of the main research material. The publishing industry is undergoing a profound transformation driven by digitalization. Artificial intelligence (AI) is increasingly influencing content creation, raising the need to balance innovation with ethical and responsible AI development [6, 7]. According to Market.us, resistance to change within traditional publishing houses remains a major obstacle to adopting AI technologies. Publishers express growing concerns about plagiarism, copyright violations, and the protection of intellectual property [8, 9].

In today’s competitive environment, digital transformation addresses key industry issues such as transparency, monetization, and audience engagement. However, navigating the digital publishing landscape also presents challenges concentrated in four main areas: audience growth, engagement, conversion, and customer retention [10]. Rising production, distribution, and marketing costs continue to exert financial pressure on both publishers and authors [11]. Small and medium-sized publishers, in particular, face a dilemma — how to invest in technology to remain competitive despite limited resources. Resistance to organizational change, especially among experienced employees, remains common [8]. At the same time, there is a shortage of professionals who combine traditional publishing expertise with advanced technological skills [12].

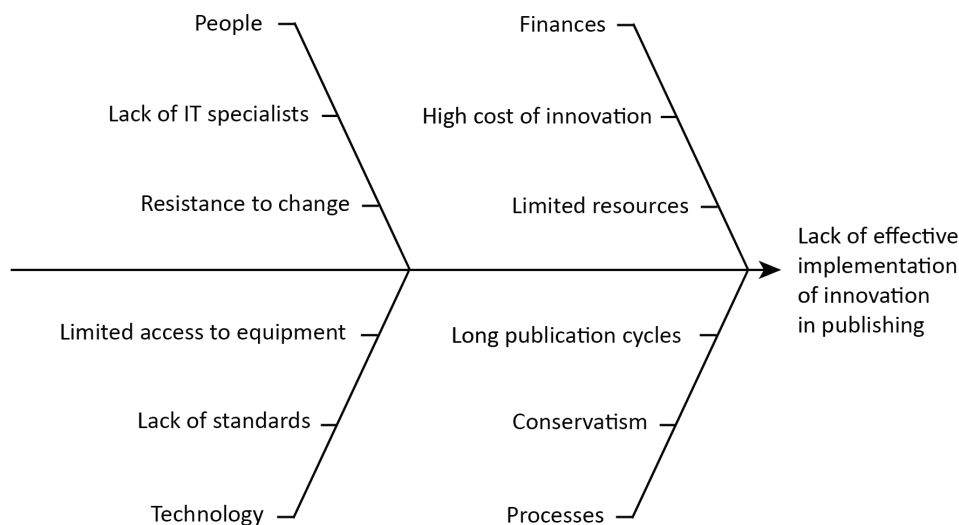


Fig. 1. Key barriers and challenges to innovative transformation in the publishing industry

Expert forecasts suggest that maintaining relevance, openness, and the adoption of AI will be key challenges for digital publishers in 2024. According to the Reuters Institute, most surveyed publishers plan to expand video, newsletter, and podcast production. Innovative approaches are being implemented to integrate commercial content into platforms, transforming user interaction from passive consumption to interactive engagement with purchase opportunities.

The problem of introducing innovations in publishing is complex, encompassing technological, financial, organizational, and cultural dimensions (Fig. 1). This issue is also relevant in the Ukrainian market, which faces additional challenges due to the ongoing war [13]. Successful implementation requires a balanced approach considering technological capacity, human factors, financial constraints, and ethical considerations. Publishers must develop gradual adaptation strategies, invest in staff training, and collaborate with technology partners.

Innovations in book design and layout offer new opportunities for reader interaction with text and visuals. Current practices include QR codes, augmented reality (AR), gamification, and stylized layouts that combine traditional formats with digital aesthetics. QR codes, originally developed in Japan to optimize production, now serve as a digital communication tool, linking text to multimedia content such as audio, video, and animations [14–17]. AR overlays digital objects onto real-world images, enhancing reader engagement through 3D visualization and interactive experiences, particularly in science fiction, fantasy, and children’s literature [15, 18]. Gamification transforms reading into an interactive game, as demonstrated by Jason Shiga’s “Meanwhile and the Choose Your Own Adventure” series, which allow readers to influence story outcomes [19, 20].

Modern layouts often mimic digital interfaces, including chats, news feeds, and mobile applications. This approach creates a familiar environment for young readers and is particularly suitable for genres such as autofiction, diaries, and psychological drama [21]. Comparative Table 1 illustrates how innovative technologies can affect the perception of a literary work, considering theme, genre, target audience, and design.

Table 1

**Comparative characteristics of the use of innovative technologies
in literary and artistic publications**

Technology	Characteristics	Literary genre	Complexity of implementation	Interaction with the reader
QR Code	Simple integration of multimedia	Historical novels, biographies, encyclopedic editions	Low	Indirect
AR (Augmented Reality)	Bringing illustrations, objects, and scenes to life	Fantasy, sci-fi, children’s literature	High	High
Gamification	Choice of scenarios, quests	Detective, adventure	Medium	Very high
Stylised Layout	Adaptation to social media and messenger aesthetics	Diaries, publications for older children	Medium	High
Layout Modernisation	Mimicking the visual language of web platforms, apps, CMS	Documentary prose, contemporary drama, meta-narratives	High	High

When selecting appropriate technologies, the following factors should be considered:

- Theme: science fiction, documentary, psychological work;
- Target audience: children, teenagers, adults;
- Narrative structure: linear or branching;
- Aesthetics and narrative style: restrained, experimental, visually oriented.

The table shows that using digital technologies in book publishing works best when authors, designers, and readers are considered together. Simply adding QR codes or AR

is not enough; these tools must enhance the story and visuals. For example, a QR code can link to an author's commentary or an audio excerpt, while AR can bring a character or scene to life, helping readers visualise the action. Gamification can let readers make choices in the plot, turning reading into an interactive experience.

By matching technology to the genre and target audience – using AR in science fiction, gamification in adventure stories, or QR codes in biographies – publishers can make books more engaging and memorable. This approach shows that printed literature can coexist with digital interactivity, giving readers richer experiences while keeping the physical book relevant in the digital age.

Future research should focus on developing comprehensive methodological guidelines for integrating innovative design and technological solutions into the creation of literary and artistic publications, taking into account genre specifics and contemporary printing capabilities.

Conclusion. The analysis of the modern book publishing process with respect to the application of innovative technologies indicates that digital transformation goes beyond the simple shift to electronic formats. It requires a rethinking of the very structure of printed publications, achieved through the integration of visual, multimedia, and user-familiar behavioral codes.

Theoretical findings suggest that technologies such as QR codes, augmented reality (AR), user interface-oriented layout approaches, and the use of visual language can significantly transform the reading experience, turning it from passive observation into active, interactive engagement. The selection of specific technological solutions should be guided by the genre of the work, the characteristics of the target audience, the objectives of the publication, and its aesthetic parameters. For instance, in psychological drama and philosophical prose, the inclusion of QR codes and AR elements can provide access to the author's comments and audio fragments, enriching the interpretive depth of the text. In children's literature for middle and high school readers, interactive games, AR character animations, and gamified elements can increase engagement and sustain interest. Science fiction benefits from AR technologies that visualize complex narratives, technological descriptions, and scientific data, enhancing the reader's understanding and immersion. In autofiction, QR codes or AR elements incorporating handwritten notes, audio memories, or short video clips can intensify the sense of personal presence and emotional connection with the author.

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ОСОБЛИВОСТІ ЗАСТОСУВАННЯ ЦИФРОВИХ ТЕХНОЛОГІЙ В ОФОРМЛЕННІ ЛІТЕРАТУРНО-ХУДОЖНІХ ВИДАНЬ

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Статтю присвячено аналізу особливостей застосування інноваційних цифрових технологій у оформленні літературно-художніх видань. Здійснено комплексне дослідження сучасного стану книговидавничої галузі з акцентом на цифрову трансформацію, що змінює традиційні підходи до дизайну, верстки та взаємодії читача з друкованим продуктом. Встановлено, що впровадження цифрових технологій у книжкове оформлення не обмежується електронними форматами, а передбачає переосмислення структури друкованого медіуму через інтеграцію мультимедійних, інтерактивних та поведінкових кодів, знайомих сучасному користувачеві. Проаналізовано потенціал технологій QR-кодів, доповненої реальності (AR), гейміфікації та UI-орієнтованої верстки у формуванні нової якості читачького досвіду – від споглядального до інтерактивного. Визначено, що вибір технологічних рішень залежить від жанрової специфіки твору, цільової аудиторії, естетичних параметрів та видавничих завдань. Наведено приклади доцільного застосування інновацій за жанрами: AR-елементи у науковій фантастиці та кіберпанку для візуалізації технологічних описів; QR-коди та AR-анімації у дитячій літературі для залучення читача; медитаційні аудіофрагменти у психологічній прозі; AR-спогади та відеофрагменти в автофікшн.

Зроблено висновок, що впровадження інноваційних дизайнерських і технологічних рішень дозволяє сформувати нову форму читачької взаємодії, у якій друкована книга стає продовженням цифрового досвіду користувача, зберігаючи глибину, структуру та авторську цілісність друкованого слова. Окреслено перспективи подальших досліджень, спрямованих на розробку методичних рекомендацій щодо інтеграції таких технологій у видавничу практику.

Ключові слова: цифрові технології; оформлення літературно-художніх видань; доповнена реальність; QR-код; гейміфікація; інтерактивний дизайн; верстка.

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